

ORIGINAL RESEARCH

Language Proficiency and Academic Success of Bilingual Hispanic Nursing Students along the US-Mexico Border

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<https://doi.org/10.47988/janany.4491588158643655.2.2>

Abstract

Background: The Texas Department of State Health Services reported an enrollment of 29.7% Hispanic heritage students in nursing schools in 2020. Hispanics comprise of 18.5% of the total US population. Hispanic communities are less likely to speak proficient English than non-Hispanic Whites due to lack of language concordance. A diverse nursing workforce is necessary to accommodate the changing community. English as an additional language is frequently identified as a barrier to a nursing degree. This study examined how English proficiency affects nursing academic success of non-BSN and BSN nursing students. **Methodology:** Non-experimental descriptive quantitative research with two open-ended questions were employed. Students from 27 non-BSN and BSN programs along the U.S.-Mexico border were surveyed. Participants (N = 158) self-reported Grade Point Average (GPAs) on a 4.0 scale and completed two language proficiency instruments, the Language Experience and Proficiency Questionnaire (LEAP-Q) and the English Language Acculturation Scale (ELAS). Participants responded to questions related to strategies that were either beneficial or barriers to their learning and success. **Results:** Regression of GPA on predictors of English proficiency yielded non-significant models. Convergent validity between the two language proficiency instruments was supported, and reliability was similarly high. MANOVA analysis revealed students on a BSN versus non-BSN program hold higher GPAs. Non-BSN students showed higher Spanish language proficiency than those on a BSN program. Seven themes emerged from the question data, three themes showed that English as an Additional Language (EAL) benefits students (support, communication, and academic resources) and four were barriers to learning (finances, time management, language, and self-perception). **Conclusion:** A diverse bilingual nursing workforce is essential to meet the future needs of the US. Even though language proficiency did not predict academic success, students enrolled in non-BSN and BSN students who utilized both languages were academically successful.

Keywords: EAL nursing education, Language proficiency, Bilingualism, Nursing education

Funding: This research did not receive any support, financially or in kind.

Conflict of Interest: The authors have no known conflict of interest (COI) to disclose.

Language Proficiency and Academic Success of Bilingual Hispanic Nursing Students along the US-Mexico Border

The Texas Department of State Health Services (DSHS, 2021) reported an enrollment of 16.6% Hispanic heritage students in registered nursing (RN) schools in 2019; that increased to 29.7% in 2020. Faculty in higher education recognize that the number of international students who speak English as an Additional Language (EAL) or are bilingual has swelled in recent years. From 2009 to 2019, the enrollment of Hispanic students in US colleges and universities increased by 48% (Institute of Education Science, 2021). Hispanic students now constitute 19.5% of the total students enrolled in higher education. Twenty-seven percent of Hispanic students have diverse language backgrounds, an increase from 22% in 2009. In 2018, 75.2% of all Hispanic students in the United States (US) public schools cited Spanish as the most frequently spoken language at home (National Center for Education Statistics, 2021). Hispanics comprise 18.5% of the total US population, and it is expected that Hispanics will constitute 28.6% of the nation's population by 2060 (US Census Bureau, 2021). With the increase in the minority population, it behooves us to educate a diverse nursing workforce to meet the changing needs of our communities (Sepulveda et al., 2022).

Hispanic nurses account for 5.4% of the US nursing workforce (Cheshire et al., 2020). The Hispanic community is at an increased risk for health care inequities due to the poor conditions of daily life and social factors such as income, educational level, occupation, and social support (US Department of Health and Human Services, 2021). Hispanics are 20 times less likely to speak proficient English than non-Hispanic Whites (US Census Bureau, 2021). Language discordance can create a greater health care disparity gap among this population. According to the US Department of Health and Human Services (2021), the Hispanic population is twice as likely to be diagnosed with cancer, 1.3 times more likely to die from diabetes, and less likely to receive recommended immunizations compared to non-Hispanic Whites.

Trust is the bedrock of effective interpersonal communication between nurses and patients, and it is essential in providing quality care (Kwame & Petrucka, 2021). Conversely, language concordance between nurses and Hispanic patients can improve the quality of interpersonal interaction. A diverse nursing workforce is needed to meet the Hispanic community's language needs and to reduce many of the health care disparities this community experiences.

Background

Bilingual students of any origin face unique challenges during their education, including overcoming the challenges to write, comprehend, and communicate in a language different from their native tongue (Abrar et al., 2018). Luque and Morgan-Short (2021) indicated a necessary interaction between language and cognitive processes in bilingual individuals that allow them to control both native and additional languages to achieve linguistic proficiency. To achieve this, they must have cognitive academic language proficiency (CALP) and basic interpersonal communication skills (BICS). Both of which are critical components of the Cummins

Language Proficiency model that was used as the guiding framework for this study (Cummins, 1980).

Al Shamsi et al. (2020) discussed the need for research to explore the impact language barriers have on quality care when the medical language is different from the native language spoken by the patients and the health care team. This is known as the use of "English for a specific purpose," where the learner uses the English language for the purpose of health communication. This type of communication requires the learner to understand the context, grammar, and syntax necessary to communicate with others. Garcia Hernandez et al. (2019) stated, "education and communication processes are inseparable; one cannot happen without the other" (p. 3). The use of English for a specific purpose can help provide clearer communication among the health care team members, prevent unsafe practices, and improve the quality of care.

The terms used with bilingual education are diverse; therefore, a clearer definition of these terms is important for this study. English as a Second Language is a commonly used term that refers to individuals who have a language other than English as their first language (Matsubara, 2020). Another term that is important to address is English as a Foreign Language. The learner is taught English in school but interacts in a society where this is not spoken (Saarikoski, 2020). This is recognized as a global learner where the learner can interact with countries where English is the primary language. More recently, the term evolved to English as an Additional Language, where "learning English is adding to the student's capacities, either as a bilingual or multilingual learner, rather than displacing the language the student acquired earlier" (Bracken et al., 2017, p. 6). Bracken's definition was the most representative of the sample in this study.

Cummins Language Proficiency Model

Cummins (1980) developed the Cummins Language Proficiency Model to explain the language proficiency in minority, bilingual children. Cummins divides language proficiency into dimensions that can be measured by assessing reading, writing, listening, and speaking skills. These measures are strongly related to general cognitive skills and academic achievement. Language proficiency is further explained by two major areas, Cognitive Academic Language Proficiency (CALP) and Basic Interpersonal Communication Skills (BICS). CALP is comprised of general language proficiency, cognitive skills, and educational progress. BICS is more related to accent, oral fluency, and sociolinguistic competence, independent of CALP. Other concepts included in this model are the length of residence (LOR), which considers when learners acquire cognitive academic skills, at a younger or older age.

Abriam-Yago et al. (1999) addressed the importance of language acquisition among EAL nursing students. The use of the Cummins Model of Language Proficiency among EAL nursing students allows nursing faculty to develop effective teaching strategies that can help students achieve the higher cognitive

level required to interpret abstract concepts presented in class discussions, lectures, and textbooks. Nursing faculty can help EAL nursing students develop the CALP threshold by creating meaningful learning opportunities that promote the analysis, synthesis, and evaluation of class information to function at the highest level of Bloom's taxonomy.

Purpose

Multiple researchers have examined academic success predictors among the general population of nursing students enrolled in registered nurse (RN) non-Bachelor of Science in Nursing (BSN) and BSN programs. Al-Alawi et al. (2020) conducted a systematic review of predictors of students' success in baccalaureate nursing programs and identified pre-nursing GPA, collegiate science courses, and standardized entrance exams as predictors of academic success. Even in studies that include EAL nursing students, there is no clear indication of the impact of EAL on academic success. Al Shamsi (2021) conducted a review of literature on challenges that EAL nursing students experience when integrating into a specific learning environment. The review revealed that language and culture played an important role in academic success among these students. One of the studies reviewed reported that effective communication was primordial to relay information to teachers, peers, and other healthcare providers. Subsequently, Fooladi et al. (2018) suggested the need to collect standardized data among bilingual students enrolled in programs that help students obtain their registered nurse (RN) license to address these ongoing concerns.

This study had two purposes. The first purpose was to explore the role of language proficiency based on Cummins' model of language proficiency (experience, proficiency, preference, and acculturation) and the impact of language proficiency on academic success (self-reported GPA greater than 3.0). The second purpose was to identify the learning modalities and barriers that bilingual nursing students face while completing their nursing education.

Methods

A non-experimental descriptive quantitative research approach was used to gather information on the dimensions of language proficiency to understand the impact that EAL had on the academic success of bilingual non-BSN and BSN nursing students. In addition, two open-ended questions related to barriers and facilitators for success in nursing school were included to expand and enrich the quantitative data. These provided a complete picture of the student's perception of the influence of language proficiency on their academic success. The study received university-based Institutional Review Board approval.

Academic success can be interpreted in different ways. Academic success can be conceptually defined as the fulfillment of all course requirements in the projected time by utilizing specialized cognitive and linguistic abilities required to perform the academic-related task (Alyahyan & Dustegor, 2020). EAL nursing students need to have the language abilities to communicate the necessary information to be academically successful. The operational definition of academic success for this study was an overall self-reported 3.0 grade point average (GPA) on a 0 to 4.0 scale that demonstrates successful academic

achievement in prior classes. This is based on previous research studies where a GPA greater than 3.0 have predicted academic success among nursing students (Capponi & Mason Barber, 2020; Gartrell et al., 2020). The GPA should demonstrate the successful completion of all course requirements at this point in time.

Sample

A convenience sample of bilingual Hispanic nursing students was recruited through 27 non-BSN and BSN nursing programs along the US-Mexico border. Non-BSN programs included Associate Degree in Nursing (ADN) and LVN-RN programs; and BSN programs included Bachelor of Science in Nursing and RN-to-BSN degree programs; some BSN programs included tracks for accelerated second-degree students. Participants met the following eligibility criteria: English as an additional language; ability to read, write, and speak English; males and females ages 18 and over; enrolled in a non-BSN or a BSN nursing program along the US-Mexico border; and access to a computer and the internet to complete the online survey.

A power analysis using G* Power (Erdfelder et al., 1996) was used to determine the sample size. A total of 75 participants was needed to meet a *priori* power and effect size. Oversampling protected incomplete data or ineligible participation to meet the goals of a power of .80, an alpha of .05, and a medium effect size of $f^2 = .15$. A total of 158 data entries were received, and 62% percent of the entries met study requirements.

Measures

Language Experience and Proficiency Questionnaire (LEAP-Q)

The instrument captures important contributors to language status such as language competence, age of language acquisition, mode of language acquisition, prior language exposure and current language use, and the level of cultural identity for each culture recognized (Marian et al., 2007). Participants rated items from 0 to 10 (0 = *not a contributor*; 10 = *most important contributor*) for their speaking, listening, reading, and writing proficiency. The LEAP-Q showed a Cronbach alpha of .85 for the first language acquisition and .92 for the second language when tested for internal consistency reliability with 52 multilingual individuals (Marian et al., 2007). The LEAP-Q showed a Cronbach alpha of .86 for the Spanish language acquisition and .87 for the English language acquisition for this study. Language proficiency dimensions were specifically measured with mean months spent in an English environment (experience), fluency of English language (proficiency), the choice of bilingual students to read a text available in English (preference), and cultural identity (acculturation). With an 11-point scale, the LEAP-Q is considered to address variations in bilingual students (Kaushanskaya et al., 2020).

English Language Acculturation Scale (ELAS)

A five-item assessment of language proficiency, the English Language Acculturation Scale (ELAS), was included to determine if a shorter assessment might be sufficient for assessing English proficiency in this population. Participants rated themselves on 5 items related to language (speak, read, language spoken at home, thinking, and interacting with friends). The items were evaluated

on a scale of 1 to 5 (1 = *only non-English language* to 5 = *only English language*). The ELAS showed a Cronbach alpha of .94 with corrected item correlations between .84 and .89 when tested with 1,400 students (Salamonson et al., 2013). For this research study, ELAS showed a Cronbach alpha .84.

Data Collection

Nursing deans and program coordinators of non-BSN and BSN nursing schools located along the US-Mexico border were recruited by phone calls or emails. A total of 27 nursing programs including Associate in Nursing Degree (ADN), Licensed Vocational Nurse (LVN) to RN, Bachelor of Science in Nursing Degree (BSN), and Registered Nurse (RN) to BSN were recruited. No diploma programs were identified. Data collection was conducted through Qualtrics (Qualtrics, LLC, Provo, Utah, USA), an online survey platform.

Data collection was conducted virtually through an online Qualtrics survey in a three-month period from April through July 2017. Deans and/or program coordinators were encouraged to share the Qualtrics link through various online media including but not limited to school emails, learning management software programs, and social media. Participants received an electronic informed consent prior to answering any study questions. A total of 158 anonymous data entries were obtained, and 62% of these met all data analysis requirements (no critical missing data).

Data Analysis

Quantitative Analysis

Descriptive statistics were computed from the demographic information for both groups, non-BSN and BSN nursing programs. LEAP-Q data were tabulated to obtain scores for the dimensions of language proficiency and a total score. Data from the five-item ELAS were summed. All data were analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY, 2019).

Additional Analysis

A total of 98 free-text responses were reviewed for content analysis; an approach used to extract coding categories derived directly from the data, for the two open-ended questions related to barriers and facilitators in nursing school. With this approach, the researcher was able to reduce the amount of text collected into categories for a better understanding of the research information (Graneheim et al., 2017). To better appreciate the relationship between language proficiency and academic success, the following questions were considered: 1) What language learning situation and modalities do bilingual nursing students find most beneficial to their academic success? 2) What barriers to academic success do bilingual nursing students encounter most frequently?

Procedures to Enhance Control and Rigor

Quantitative Control Measures

EAL nursing students from different nursing programs along the US-Mexico border were included to increase sample heterogeneity and provide a more accurate representation of the target population. Students received outlined English instructions at the beginning of the survey to minimize incomplete responses. Multiple measures from LEAP-Q and ELAS with strong

psychometric properties were used to increase measurement validity and better understand implications related to language proficiency in the bilingual nursing student population.

Additional Analysis Enhance Rigor

Documented textual data were read word by word to identify categories and themes for facilitators and barriers. The principal investigator first read and re-read the document to ensure rigor in identifying initial topics. Two qualitative experts reviewed textual data to ensure the correct identification of categories and themes. The research team met to discuss the identified categories and themes. No discrepancies were encountered, and research triangulation was achieved.

Results

Figure 1

U.S. and Mexico Border Participant Distribution (Map Mexico, 2022)



A total of 158 surveys were received; 87 surveys met the inclusion criteria (complete data) and were used in the final analysis. Chi-square or t-test test were conducted to examine demographic differences between non-BSN and BSN student survey entries; no significant differences were reported for gender ($p = .30$), dominant language ($p = .91$), native language ($p = .33$), age of English acquisition ($p = .02$), age of English proficiency ($p = .06$), English language use ($p = .94$), Spanish language use ($p = .76$), and reading as a contributor for learning English ($p = .57$). A significant difference was found with age ($p < .001$). Please see Figure 1 for the geographical distribution of the survey responses. Seventy-eight percent of the total respondents were female, and 21.8% were male. In the non-BSN program, 75.8% of the participants were female compared to 84% of the BSN students, and 24.2% of the non-BSN participants were male compared to 16% of the BSN students. Participants' mean age was 27.19, (SD = 7.05, range 18 - 52). Mean age for the non-BSN program was 28.61, (SD = 7.51), and 23.50 for BSN students (SD = 3.79). Seventy-one percent of the participants were enrolled in a non-BSN program [ADN (83.9%) and LVN to ADN (16.1%)] and 28.7% were enrolled in a BSN program [BSN (84%) and RN to BSN (16%)]. Eighty-two percent of participants had some college or a college degree among the non-BSN group and 76% for those in the BSN group. Seventy-seven participants stated English was their native language. For the non-BSN group, 61.3% stated English as their dominant language compared to 60% of

the BSN participants, and 74.2% of the non-BSN participants indicated English as their native language compared to 84% of the BSN program. Fifty-six percent identified themselves as Hispanic or Mexican American in terms of cultural identification. Bilingual nursing students reported a mean age of English language acquisition of 5.79 ($SD = 4.41$); the mean age for non-BSN students was 6.02 ($SD = 4.94$) and 5.24 ($SD = 2.68$) for BSN students. In addition, participants reported a mean age of English language proficiency of 8.98 ($SD = 1.20$); the mean age for the non-BSN student was 8.89 ($SD = 1.31$) and 9.20 ($SD = .87$) for BSN students.

English language use was reported as $X = 65.24\%$ of the time, $SD = 22.20$ when interacting with others compared to Spanish $X = 34.65\%$ of the time, $SD = 22.66$ for both groups. For the non-BSN participants, English language use was $X = 65.02\%$ of the time, $SD = 22.39$ when interacting with others compared to Spanish $X = 34.09\%$ of the time, $SD = 22.47$. BSN students reported English language use at $X = 65.78\%$ of the time, $SD = 22.17$ when interacting with others compared to Spanish at $X = 36.22\%$ of the time, $SD = 23.51$. Reading was the highest contributor with (X) = 8.77, $SD = 1.60$ for both groups, (X) = 8.66, $SD = 1.62$ for non-BSN students, and (X) = 9.04, $SD = 1.56$ for BSN students when learning English. Thirty-three percent of students reported visual problems (use of eyeglasses). No other sensory deficiencies were reported.

Table 1
Demographic Profile (N=87)

		<i>Non-BSN</i>	<i>BSN</i>	<i>Total</i>	<i>p value</i>
Gender	Female	75.8% (47)	84% (21)	78.2% (68)	.30*
	Male	24.2% (15)	16% (4)	21.8% (19)	
Age		28.61 ($SD = 7.51$)	23.50 ($SD = 3.79$)	27.19 ($SD = 7.05$)	.00**
<i>Type of Nursing Program</i>					
Non-BSN Program	Associates in Nursing Degree	83.9% (52)		59.8% (52)	
	LVN to AND	16.1% (10)		11.5% (10)	
BSN Programs	Bachelor Nursing Degree (BSN)		84% (21)	24.1% (21)	
	RN to BSN		16% (4)	4.6% (4)	
<i>Pre-Nursing Education</i>					
Highest Level of Education Prior to Nursing School	Less than High School		4% (1)	1.1% (1)	
	High School	3.2% (2)	8% (2)	4.6% (4)	
	Professional Training	4.8% (3)		3.4% (3)	
	Some College	25.8% (16)	32% (8)	27.6% (24)	
	College Degree	56.5% (35)	44% (11)	52.9% (46)	
	Some Graduate School	1.6% (1)		1.1% (1)	
	Masters		4% (1)	1.1% (1)	
	Other	8.1% (5)	8% (2)	8% (7)	
Native Language	Spanish	25.8% (16)	16% (4)	23% (20)	.33*
	English	74.2% (46)	84% (21)	77% (67)	
Dominant Language	Spanish	38.7% (24)	40% (10)	39.1% (34)	.91*
	English	61.3% (38)	60% (15)	60.9% (53)	
Primary Cultural Identification	American	21% (13)	16% (4)	19.5% (17)	
	Hispanic	19.4% (12)	24% (6)	20.7% (18)	
	Mexican American	35.5% (22)	36% (9)	35.6% (31)	
	Mexican	24.2% (15)	24% (6)	24.1% (21)	
Age of English Language Acquisition		6.02 ($SD = 4.94$)	5.24 ($SD = 2.68$)	5.79 ($SD = 4.41$)	.02**
Age of English Language Proficiency		8.89 ($SD = 1.31$)	9.20 ($SD = .87$)	8.98 ($SD = 1.20$)	.06**

Language Use	English	65.02% (SD = 22.39)	65.78% (SD = 22.17)	65.24% (SD = 22.20)	.94**
	Spanish	34.09% (SD = 22.47)	36.22% (SD = 23.51)	34.65% (SD = 22.66)	.76**
Highest Contributor to Learn English	Reading	8.66 (SD = 1.62)	9.04 (SD = 1.56)	8.77 (SD = 1.60)	.57**

*chi-square; ** t-test

Self-assessed Language Proficiency

A multiple regression analysis was conducted with LEAP-Q dimensions (experience, proficiency, preference, and acculturation) with both groups of nursing students. The model significantly predicted single measure of self-assessed proficiency ($R = .601$, $R^2 = .361$, $F(4, 82) = 11.594$, $p < .001$). English proficiency ($B = -.101$, $\beta = -.460$, $p < .001$) provided a significant individual contribution to the model whereas, preference ($B = .013$, $p = .086$), experience ($\beta = -.001$, $p = .385$), and acculturation ($B = .212$, $p = .443$) did not independently add significantly to the model.

Table 2

Test of the Effects of Self-Assessed Language Proficiency and Language Proficiency Dimensions

Predictor Variable	B	SE B	Beta	t	Sig (2-tailed)	95% CI Lower	Upper
Constant	9.274	.667		13.900	< .001	7.946	10.601
Proficiency (fluency)	-.101	.028	-.460	-3.540	< .001	-.157	-.044
Preference	.013	.007	.231	1.739	.086	-.002	.027
Experience	-.001	.001	-.104	-.873	.385	-.003	.001
Acculturation	.212	.275	.070	.771	.443	-.335	.759

$N=87$; Model: $R = .601$, $R^2 = .361$, $F(4, 82) = 11.594$, $p < .001$

Academic Success and the LEAP-Q

Regressing self-reported GPA (academic success, GPA on 4.0 scale) on the four predictor dimensions of English proficiency for the final sample of 87 (non-BSN and BSN nursing students) yielded a non-significant model ($R = .224$, $R^2 = .050$, $F(4, 82) = 1.086$, $p = .369$). None of the four dimensions provided a significant contribution to the model of academic success, experience ($B = .000$, $p = .999$), proficiency ($B = .011$, $p = .417$), preference ($B = -3.60$, $p = .114$), and acculturation ($B = .142$, $p = .331$).

Table 3

Test of the Language Proficiency Dimensions and Academic Success

Predictor Variable	B	SE B	Beta	t	Sig.	Mean	Std. Dev.
English	3.177	.261		12.158*	<.001		
Experience	.000	.000	-.113	-.816	.999	219.68	128.83
Proficiency (fluency)	.011	.011	.123	.979	.417	26.94	3.60
Preference	-3.60	.002	.000	-.002	.114	65.24	22.20
Acculturation	.142	.089	.179	1.598	.331	.19	.39

$N=87$; Model: $R = .224$, $R^2 = .050$, $F(4, 82) = 1.086$, $p = .369$

Academic Success and the ELAS

A simple linear regression equation was used to predict academic success using language acculturation with both groups, non-BSN, and BSN nursing students. A non-significant regression equation was found ($R = .051$, $R^2 = .003$, $F(1, 85) = .225$, $p = .636$). Parallel to the LEAP-Q, language acculturation did not have a predictive effect on academic success ($B = .004$, $p = .636$).

Table 4

Test of the English Language Acculturation Scale and Academic Success

	B	SE	t	p
Constant	3.36	.157	21.44	.000
ELAs	.004	.009	.475	.636

$N=87$; $R = .051$, $R^2 = .003$, $F(1, 85) = .225$, $p = .636$

Convergent Validity Between the LEAP-Q and the ELAS

The convergent validity was calculated between the LEAP-Q-English Proficiency sub-scale, and the ELAS using Pearson's correlation coefficient. The correlation analysis was conducted on the total score of English proficiency LEAP-Q and ELAS, which show a significant relationship ($r = .427$, $p < .001$). Convergent validity between the two measures was supported, and the reliability of the two measures was equally strong in this study.

Additional Findings

According to Cummins' model, basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP) are two threshold levels of language proficiency. The sum of six LEAP-Q items were tabulated to reflect CALP-English and CALP-Spanish. CALP is associated with academic success (Cummins, 2017). For this study, scores of 25 and higher on the LEAP-Q represented CALP. The mean score of CALP of all study participants (non-BSN and BSN students) was $X = 41.80$, $SD = 11.66$ for the English language and $X = 47.52$, $SD = 108.45$ for the Spanish language. The CALP for the non-BSN student was $X = 41.86$, $SD = 11.12$ for English and $X = 35.18$, $SD = 11.47$ for Spanish. For the BSN group, CALP was $X = 41.66$, $SD = 13.18$ and $X = 37.64$, $SD = 11.65$ for Spanish.

A MANOVA analysis was used to examine English and Spanish fluency, and self-reported GPA as dependent variables, and non-BSN and BSN nursing programs as independent variables. Descriptive analysis demonstrated that nursing students attending a non-BSN program ($X = 7.50$, $SD = 4.70$) had a higher fluency in Spanish than those in a BSN program ($X = 5.52$, $SD = 2.84$). Nursing students attending a BSN program ($X = 3.59$, $SD = .27$) had a higher self-reported GPA than those in a non-BSN program ($X = 3.38$, $SD = .30$). There was a significant association between the independent variable ($p = .040$). Assumptions of normality, linearity, and equality of covariance were met. The sample was small to medium, and the group size was slightly different. Pillai's trace revealed a significant effect of college versus university programs, $V = .19$, $F(3,80) = 6.09$, $p < 0.001$. Spanish fluency ($p = .01$) was significant among the students who attended a non-BSN versus a BSN program. Students attending a non-BSN program had greater Spanish fluency, but no significant differences were noted between English fluency and self-reported GPA.

Beneficial Learning Situation and Modalities

Three themes were identified from bilingual nursing students' responses that were perceived as helpful to their academic success: support, communication, and resources. Students reported using a

variety of resources, including print and online. Three sub-themes emerged and were categorized as multiple intelligences (Cavas & Cavas, 2020). In addition, a subtheme for support-communication was included.

Support

Bilingual students identified friends and family support as beneficial to their educational success. Friends and family helped not only with communication but also strengthened their confidence. In addition, participants stated that faculty had a major impact on their academic success by providing them with positive feedback during laboratory skill practice. Student S1 exemplified this support by stating,

"Friends to help me understand what words mean and how most of the words are like words in Spanish."

Student G4 stated that faculty had a major impact on their academic success. Key characteristics included:

"Caring instructors, positive feedback, laboratory areas to practice skills, and to make mistakes and not in the clinical setting."

Communication

Communication proficiency is an essential component when interacting with others, particularly in nursing, where most communication is verbal. Bilingualism was a valued component. Participants felt having bilingual abilities helped them communicate better with Spanish-speaking patients. It provided them with the opportunity to support patient care by translating to the nursing staff. Exemplars are as follows:

"I think here in the U.S. having some sort of Spanish can be really important. There are a lot of people who do not understand English and being in the medical field it's quite important to fully understand and communicate with patients (StudentK2)."

"I think being bilingual helped me in nursing school. Knowing two languages is a huge advantage in any field, especially living so close to the border. I am able to provide care for both Spanish and English speakers [sic] (StudentI2)."

Bilingual students felt having both languages gave them a better understanding of medical terminology. This also helped strengthen their confidence.

Educational Resources

Nursing students reported access to multiple resources that helped them to be successful. Participants felt language acculturation and cognitive learning were achieved using multiple sensory learning modalities. These were organized according to Gardner's multiple intelligence theory, which proposes that individual possesses a different form of intelligence, such as verbal-linguistic, body-kinesthetic, and visual-spatial (Cavas & Cavas, 2020). In addition, support-communication was included as a sub-theme. The subthemes associated with resources are displayed in Table 5.

Table 5
Resources Subthemes of Bilingual Nursing Students

	Exemplars
Support and Communication	
Visual-Spatial	“reading has been the most effective tool to be successful [sic] in nursing program [sic] (studentK3)” “Reading before class and doing practice questions are extremely helpful... (studentQ4)” “Watching YouTube videos (studentP4).” “Availability of multiple resources such as the web, social media, YouTube (studentE1).”
Body-Kinesthetic	“Lab areas to practice skills and to make mistakes in the lab and not in the clinical setting (studentG4).”
Verbal-Linguistic	“One of the things would be being on the borderland. Many of the instructors speak Spanish, which makes you able to have a better communication with them. Also, many of the students speak the language too (studentC3).” “Be able communicate with clients, family and fellow staff members (studentF1).” “...Well, having friends that are from foreign countries in which they don’t speak Spanish, by this I am forced to speak in English and practice it more...(studentQ4)” “...discussions and reviews after lectures (studentA4).” “...Listening and taking notes in class (studentJ3).”
Support-Communication	“Many things have helped me be successful. First of all, the support of my family and friends (studentU2).” “My family support, my friends support (especially my nursing students’ friend that pressures me in not giving up) ...(studentY2)” “knowing two languages has helped me in the clinical setting due to the bilingual population (studentO2)” Knowing the meaning of the Latin words. Knowing how to translate medical terms. Being able to describe subjects in both languages (studentQ2).”

Barriers to Academic Success

Four themes were identified as most descriptive of hindrances or barriers to their academic success: finances, time management (full-time employment, family responsibilities), language barriers, and negative self-perception.

Finances. Participants expressed concern about their economic status and shared how this affected their educational experience. Specifically, many stated they had to work while going to school, which interfered with their academic success. Some exemplars of the finance’s themes are:

“The ability to pay for schooling while unemployed has made me resort to school loans and scholarships. This added stress that I believe we all suffer (StudentQ4).”

“The only thing that has hindered my success in nursing school is my economic status. I have the need to work in order to sustain myself and that means having less time for school (StudentK1).”

Time Management. This theme was one of their primary concerns. It was most experienced in efforts to balance family with their educational responsibilities. Participants expressed, “Lack of time management skills, getting distracted easily when studying... (StudentI1)”

“There is a lot that the school asks of you in a very short period of time, with clinical lecture, studying, online tests, multiple chapters, and several books. It is very stressful, (StudentN3)”

Communication. While communication was identified as helpful, the participants also identified this as a barrier. Aspects of communication that limit students are communication skills, reading, writing skills, and comprehension of concepts. Participants felt their communication skills could be better, and it would help them interact with others. Lack of understanding of the English language is one main aspect students recognized as a limitation.

“My communication skills. I felt like my communication skills could flow better. I often have to think a lot about what I’m going to say before I say it. My vocabulary isn’t as broad as my English native speaker classmates (StudentT3).”

“The language barrier is the first obstacle I always come across while studying or understanding instructions (StudentZ2).”

Self-perception. Bilingual nursing students identified various self-perceived traits as barriers to their academic success. These ranged from lack of self-esteem, being shy, to the lack of confidence necessary to accomplish school requirements. Students discussed this concept in the following manner,

“The discrimination from others, just because I have an accent. They assume I’m not intelligent (StudentH1).”

“Lack of confidence (StudentF1).”

Discussion

The study findings provide new knowledge on the benefits of bilingual language usage, English and Spanish, among EAL nursing students. These indicate that bilingual students in non-BSN and BSN programs appear to perform well in two languages and may be able to maintain a successful GPA across the two languages and cultures. It seems that bilingual nursing students along the border embrace bilingualism since the use of both languages allowed them to practice their language skills with friends, family, patients, and other health care providers. This is reflected in the mean scores of all participants with 41.80 for the CALP English score and 47.52 for the CALP Spanish score. The non-BSN CALP score was 41.86 for English and 35.18 for Spanish. Similarly, the BSN students’ CALP score was 41.66 for English and 37.64 for Spanish. Students from both non-BSN and BSN programs in this study were equipped to meet the academic demands of collegiate nursing education programs while also being able to interact appropriately in both English and Spanish.

Bilingual students experience more language-related needs in the classroom than monolingual students (Bialystok, 2017). EAL nursing students, both programs non-BSN and BSN, felt that educational resources were vital components to their success. The use of various resources was reported by students which helped with their academic success. Successful students utilized books, videos, study groups, lectures, and reading resources. Dube et al. (2018) conducted a quantitative study with the purpose to describe the perception of enrolled student nurses on factors that influenced students’ academic performance. The authors reported that 80% of students felt that the use of technological gadgets and the internet helped with academic performance. In addition, the authors reported that the use of electronic resources increased the students’ classroom interest and participation. Fooladi et al. (2022) conducted a mixed-methodology study to identify the factors that influence academic and clinical performance of undergraduate nursing students. Students felt that an interactive curriculum helped them to be successful. Among the resources used included peer-assistance, case-based studies, and small group learning. Providing EAL nursing students with different learning modalities can help ensure their academic success.

Program resources and support appear to be crucial components of nursing education for non-BSN and BSN EAL nursing students, specifically faculty support. The National Council of State Boards of Nursing or NCSBN (2020) explored the different program components that support nursing student success. The guidelines recommended by the NCSBN are similar to the qualitative findings in this study and included comprehensive student support services, opportunities for experience with diverse populations, availability of multiple types of support resources, and a strong structure within the nursing program. Kirui & McGee (2021) supported these findings. The authors conducted an integrative literature review to identify resources that help the retention of underrepresented nursing students. Several of the strategies that

helped enhance the academic success among this population included mentoring programs, financial support, student success programs, and academic and psychosocial support. Dube & Mlotshwa (2018) analyzed the impact nurse educator-student relationship played on academic success. Ninety-two percent of the participants indicated that a good and supportive nurse educator-student relationship fosters better academic performance. Supportive strategies increased EAL nursing students’ academic success. These helped students to build the communication skills and professional relationship skills that can be applied later as professional nurses.

Standardized assessment of bilingual nursing students’ English language skills is recommended (Fooladi et al., 2011; Kaushanskaya et al., 2020). The convergent validity of the LEAP-Q and ELAS provided a step forward into the standardization of data among EAL nursing students. LEAP-Q in conjunction with other instruments, such as the ELAS, can be instrumental in identifying language proficiency in EAL students (Kaushanskaya et al., 2020). These instruments can offer nursing programs across the country the opportunity to assess students’ English cognitive academic language proficiency and address weaknesses to help EAL students succeed academically. Having multiple options to measure language proficiency allows programs to select the one that best fits their specific time constraints and resources.

Limitations

A significant limitation of this research study was the recruitment of “only” academically successful students, thereby not considering unsuccessful students. Students who were not successful in one or more courses exit from the program, precluding them from study inclusion. In this study, academically successful nursing students self-reported GPAs of 3.0 and above on a 0 to 4.0 scale. This scale is most commonly used in colleges and universities in the Southwestern US. This suggests that successful EAL nursing students, non-BSN and BSN, are equipped with the cognitive academic language proficiency skills to face the English-only educational environment. Because this study only included students who were in school and looked at GPA as the measure of success, it is important to address students who were not admitted to nursing programs due to lower GPA or who were unsuccessful during their nursing education. The recruitment of these students may provide more information on the usefulness of language assessment and the value of knowing the BICS and CALPS scores in the advising and admission process. However, this type of recruitment would be labor and time-intensive and students who were not successful might still refuse to respond.

Conclusion

Workforce diversity, specifically nursing diversity, is important to meet future healthcare needs in the US. Since minority populations are increasing, culturally sensitive health care providers must be available to meet their needs. English cognitive academic language proficiency did not influence diverse nursing students’ academic success (GPA). Still, bilingualism is a trait that profoundly affects students’ ability to impact the care of both English and Spanish-speaking patients on the US-Mexico border.

The findings of this study highlight the benefits of bilingualism among non-BSN and BSN nursing students living along the US-Mexico border. Currently, there is a dearth of knowledge on the impact bilingualism has on the care of a multicultural and linguistically diverse population.

Furthermore, this study provides a new perspective for educators on the importance of language acquisition, proficiency, and comprehension in educating bilingual nursing students in an English-only curriculum. Having a better understanding of students' cognitive academic language abilities provides nursing educators with the necessary tools to increase their students' chances of academic success. Understanding the needs of Hispanic bilingual nursing students contributes to a climate of culturally responsive care where communication failures can be eliminated to provide safe and improved patient care (Day & Beard, 2019). Nurse educators may want to measure CALP and consider the potential impact of lower scores on nursing student success. Students who have lower CALP scores might benefit from programs geared to improving skills associated with cognitive performance in nursing school. Further research is needed to understand how bilingual cognitive abilities are acquired during nursing education. This will provide much-needed support to nursing educators and allow students to learn in an environment that ensures every student, regardless of their native language, has the chance to be successful.

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