

Examining Educational Attainment Outcomes: A Focus on Latina/o Community College Students

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Abstract

Objective: This study examined how a set of theoretically derived factors predicted the educational attainment outcomes of Latina/o community college students. The guiding research question was, “What precollege and background characteristics, college experiences, and environmental pull factors uniquely predict persistence, certificate or associate degree completion, and transfer or bachelor’s degree completion for a national sample of Latina/o community college students?” **Method:** Three logistic regression analyses were conducted using a nationally represented sample from the Beginning Postsecondary Students Longitudinal Study (BPS: 04/09). **Results:** Latina/o community college student educational outcomes were found to be related to demographic or precollege variables including primary language spoken in the home, citizenship status, socioeconomic status, degree expectations; college experiences including academic integration, first-year college grade point average (GPA), enrollment intensity, co-enrollment; and environmental pull factors including the receipt of a federal student loan and Pell Grant. **Conclusion:** Findings underscore the importance of financial aid in promoting success outcomes and alleviate affordability concerns for Latina/o community college students. Findings also reinforce the notion of considering educational intentions when developing advising services and programs that foster or match those ambitions. Doing so will improve both student outcomes and institutional effectiveness.

Keywords

Latina/o students, community colleges, success, persistence, transfer, degree completion

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Latina/os¹ make up the largest and fastest growing minority group in the United States and, by 2060, are projected to represent close to 29% of the entire U.S. population (Colby & Ortman, 2015). Latina/o representation in higher education has steadily increased since 1990 and currently represents 34% of the total postsecondary enrollment in U.S. colleges and universities (Musu-Gillette et al., 2016). In addition, as Latina/o youth move through the K-12 system, their representation in the U.S. workforce will increase, as should an emphasis on improving their postsecondary educational attainment outcomes (Núñez et al., 2013). By 2020, researchers predict that 65% of jobs will require postsecondary education (Carnevale et al., 2013); thus, finding solutions to improving educational outcomes of Latina/os becomes even more essential for maintaining a strong and competitive global economy (Murdock et al., 2015; Oseguera et al., 2009).

Educational policy shifts during the Obama administration, along with the nation's college completion agenda (Lester, 2014), have placed community colleges in the spotlight for providing access to postsecondary education. Given that Latina/os are more likely to enroll in community colleges than any other racial or ethnic group (Adelman, 2005; Martinez & Fernández, 2004), it is increasingly important to study the factors that contribute to their educational attainment outcomes at these institutions. As engines of social mobility, community colleges serve as a less expensive and alternative pathway to degree completion for Latina/os. For example, more than a third who first enrolled in 2-year public institutions have been shown to go on to complete a bachelor's degree (Cataldi et al., 2011). The potential for community colleges as a gateway to higher education for Latina/os should be embraced as an opportunity for community colleges, as Phillippe and Sullivan (2005) proposed, "to develop the human capital that makes this country a powerful global economic force" (p. 21).

Authors have previously argued that very little empirical research existed on Latina/o community college students (Flores et al., 2006; Lujan et al., 2003), but there has been an increase over the last decade on this topic. However, the increase in literature has yielded studies that are limited in their methodological approaches, samples, or results as it relates to Latina/os in community college settings. Only a few studies have examined outcomes such as certificate and associate degree completion for Latina/o students exclusively (e.g., Alfonso, 2006a; Gross et al., 2014; Hagedorn et al., 2007). Of these studies, Gross and colleagues (2014) were the only researchers to utilize a theoretically derived set of variables in their model. Use of theoretical models in the selection of factors that examine different racial groups (i.e., Latina/os) and their outcomes allows researchers to easily retest models, which can lead to extending current frameworks or generating new models (Museus, 2014). Furthermore, most of the community college research that has included Latina/o students utilize national data sets that are outdated and comprising participants who entered college in the 1990s or earlier (e.g., Adelman, 2005; Alfonso, 2006a, 2006b; Cabrera et al., 2005; Gonzalez & Hilmer, 2006; Melguizo, 2009; O'Connor, 2009; Sandy et al., 2006). Other studies have small sample sizes of Latina/os (e.g., Alfonso, 2006a; LeSure-Lester, 2003; Long & Kurlaender, 2009; Porchea et al., 2010) or have examined Latina/o community college student outcomes at a single institution or district (see

Chang, 2005; Hagedorn et al., 2007; Nora, 1990; Ornelas & Solórzano, 2004), limiting the generalizability of their findings.

The current study sought to fill gaps in the research on Latina/o community college students in three ways: (a) by utilizing a national sample of Latina/o community college students, (b) by using a theoretically driven set of variables to examine individual factors that affect Latina/o community college outcomes, and (c) by separately predicting a variety of success outcomes—including certificate and associate degree completion—that have not been extensively studied. The purpose of this study was to identify factors that related to one or more measures of educational attainment outcomes, specifically for Latina/o students who began their postsecondary journey at a community college. The following research question guided the study:

What precollege and background characteristics, college experiences, and environmental factors uniquely predict persistence, certificate or associate degree completion, and transfer or bachelor's degree completion for a national sample of Latina/o community college students?

Defining and Measuring Community College Outcomes

When defining success outcomes for community college students, most policymakers and researchers tend to focus on bachelor's degree completion rather than on intermediate outcomes such as certificate and associate degree completion or completion of gateway courses (Goldrick-Rab, 2010; Lester, 2014). Crisp and Nora (2010) measured success outcome following just 2 and 3 years of initial enrollment. Their study also combined multiple outcomes, such as associate degree completion, transfer, and bachelor's degree completion, to create one dichotomous outcome variable. The current study builds on their work in two distinct ways. First, success is measured by collapsing dependent variables into three separate outcomes to identify specific factors that are related to each outcome individually. Second, the current study measured each outcome variable after 6 years of enrollment, an important distinction given that success increases when rates are calculated after 6 years of enrollment for Hispanics (Mullin, 2011). Measuring success across a longer time frame is a useful strategy to account for how many Latina/o students experience college.

Although community colleges are evaluated on certificate and associate degree completion and transfer outcomes (Calcagno et al., 2008; Cohen et al., 2013), researchers define or measure "success" and persistence in a variety of ways, including combining these outcomes into one (e.g., Alfonso, 2006a; Crisp & Nora, 2010). Moreover, to gain a clearer picture of community college student success, some researchers have included multiple enrollment or pathway outcomes (Porchea et al., 2010). Modeling these outcomes separately would allow researchers to more properly account for the variety of educational pathways students take toward reaching their educational goals (Jones-White et al., 2010). This approach allows the researcher to identify which specific outcomes are influenced by certain independent variables from the hypothesized model. For example, age and gender have been shown to be both a positive predictor

of persistence and certificate/associate degree completion (e.g., Alfonso, 2006a; Bremer et al., 2013) and a negative predictor of transfer (e.g., Eddy et al., 2006; Roksa & Calcagno, 2010). Furthermore, it has been shown that students enrolled in academic programs are more likely to transfer (e.g., Crisp & Núñez, 2014) and students enrolled in occupational programs of study are more likely to complete associate degrees (Bremer et al., 2013). These statistical differences in the directional relationships between predictor variables and persistence, certificate/associate degree completion, and transfer further justify the need for analyzing multiple success outcomes separately for Latina/o students.

Conceptual Framework

The conceptual framework guiding this study was developed from Nora's (2003) student/institution engagement theoretical model. Nora theorized that a combination of factors including (a) precollege/pull factors, (b) sense of purpose and institutional allegiance, (c) academic and social experiences, (d) cognitive and noncognitive outcomes, and (e) goal determination/institutional allegiance collectively contribute to a student's commitment and willingness to be engaged with the institution. This engagement, in turn, shapes their persistence decisions and degree attainment. I also draw from empirical findings, discussed in detail below, which have sought to identify factors related to educational outcomes such as persistence, certificate/associate degree completion, and transfer specific to community college students. Whereas Nora (2003) originally focused on 4-year students, Crisp and Nora (2010) and Crisp and Núñez (2014) extended their model to test the applicability to community college students. The current study extends their work, specifically for Latina/o community college students.

Literature Review

There is a substantial body of research on community college students as a whole and the factors associated with their success (e.g., Adelman, 2005; Calcagno et al., 2007; Cofer & Somers, 2001; Conway, 2009; Dadgar & Trimble, 2014; D'Amico et al., 2014; Dougherty & Kienzl, 2006; Dowd & Coury, 2006; Eddy et al., 2006; Napoli & Wortman, 1998; Porchea et al., 2010). Moreover, an extensive body of qualitative work details the experiences and challenges specific to Latina/o community college students (e.g., Acevedo-Gil et al., 2015; Alexander et al., 2007; Bensimon & Dowd, 2009; Castro & Cortez, 2017; Cejda & Rhodes, 2004; Garcia, 2010; Ornelas & Solórzano, 2004; Perrakis & Hagedorn, 2010; Rendón & Valadez, 1993; Suarez, 2003). However, within the last decade, only a few quantitative research studies have focused exclusively on Latina/o community college student educational attainment outcomes such as persistence, transfer, and associate degree completion (e.g., Crisp & Nora, 2010; Gross et al., 2014; Tovar, 2015). Recent quantitative studies on Latina/o community college students are primarily descriptive (e.g., Hagedorn & Lester, 2006; Hernandez et al., 2015; Núñez & Elizondo, 2013) or focused on examining bachelor's degree completion for both 2-year and 4-year students (e.g., Alon et al., 2010; Arbona

& Nora, 2007; Melguizo, 2009). More recent work has focused exclusively on Latino males in community colleges (e.g., Abrica & Martinez, 2016; Bukoski & Hatch, 2016; Ingram & Gonzalez-Matthews, 2013; Sáenz et al., 2013; 2015, 2018; Salinas & Hidrowoh, 2018; Vasquez Urias, 2012). What is missing is a more advanced quantitative approach to studying outcomes using a nationally represented data set to explore both Latina and Latino outcomes.

In the review of the literature that follows and through the conceptual lens of Nora's (2003) model, key findings are presented within the following categories: precollege factors, college experiences, and environmental pull factors. Each of the following subsections includes a discussion of the factors found to be related to community college students. They highlight, where appropriate, the factors found to be specifically related to Latina/o community college student educational outcomes, such as persistence, transfer, and credential completion (i.e., certificate, associate, and bachelor's degree).

Studies Predicting Educational Outcomes of Community College Students

Precollege factors. Several precollege and background characteristics have been identified as important factors influencing educational attainment outcomes of community college student outcomes in various and contradictory ways. Factors identified include age, gender, race/ethnicity, socioeconomic status (SES), academic preparation, first-generation status, delayed enrollment, and educational aspirations (Adelman, 2005; Bremer et al., 2013; Cofer & Somers, 2001; Conway, 2009; Crisp & Nora, 2010; Crisp & Núñez, 2014; Dougherty & Kienzl, 2006; Dowd & Coury, 2006; Eddy et al., 2006; Mamiseishvili & Deggs, 2013; Napoli & Wortman, 1998; Roksa, 2006; Settle, 2011; Wells, 2008). For example, older students were more likely to persist within the community college (Cofer & Somers, 2001; Settle, 2011) but less likely to transfer to a 4-year institution (Dougherty & Kienzl, 2006; Eagan & Jaeger, 2009; Roksa & Calcagno, 2010). This was also consistent with findings by Alfonso (2006a), who found that older Hispanic students were more likely than younger students to earn an associate degree. In regard to gender, some studies have shown that women were more likely to persist at community colleges (Bremer et al., 2013; Conway, 2009) and complete associate degrees (Calcagno et al., 2007; Roksa, 2006), but were less likely to transfer to 4-year institutions (Bailey & Weininger, 2002; Eddy et al., 2006). For Latina/o students, Gross and colleagues (2014) found that Latinas were more likely to complete associate degrees compared with their Latino counterparts. Arbona and Nora (2007) also found that Hispanic women who started at community colleges were 33% more likely to complete a bachelor's degree when compared with their Hispanic male counterparts. Another important predictor of Latina/o student success is the students' parental education level, which also serves as a proxy for whether or not a student is considered a first-generation college student. Researchers have found that parental education positively influences Latina/o community college student's persistence and transfer (Crisp & Nora, 2010; Nora, 1987; Nora & Rendón, 1990).

College experiences. Drawing mostly from Tinto's (1975) theory of student integration, scholars have conceptualized the notion of academic and social integration in various ways in studying student success. Some studies have affirmed the positive relationship of persistence for community college students on academic and social integration (Barnett, 2011; Bers & Smith, 1991; Napoli & Wortman, 1998). Nora et al. (1990) found academic integration, but not social integration, to be positively related to community college persistence. Other scholars found that a student's background and academic preparation were more influential than academic and social integration on academic and persistence outcomes for transfer students (D'Amico et al., 2014). On a similar note, Dougherty and Kienzl (2006) found that academic integration, measured as the frequency of informal contact with faculty outside of class, participating in school clubs, and the utilization of various student services on campus, was not significantly related to community college student transfer.

Despite the mixed findings and interpretations of academic and social integration, other college experiences that have positively shaped success outcomes for community college students include faculty–student interactions (Chang, 2005; Hagedorn et al., 2008), mentoring (Crisp, 2010), and student engagement (Sáenz et al., 2011; Sontam & Gabriel, 2012). These findings are consistent for Latina/os who have meaningful relationships and interactions with faculty and other institutional agents (Bensimon & Dowd, 2009; Cejda & Rhodes, 2004; Chang, 2005; Suarez, 2003; Tovar, 2015). Furthermore, social and cultural capital gained from interaction with friends, family, faculty, and student affairs professionals positively impacts Latina/o community college student success outcomes (Sáenz et al., 2018; Sandoval-Lucero et al., 2014; Zell, 2010). Other college experiences shown to positively influence success for community college students include college grade point average (GPA; Cofer & Somers, 2001; Crisp, 2013; Dowd & Coury, 2006; Eagan & Jaeger, 2009; Eddy et al., 2006; Mamiseishvili & Deggs, 2013; McKinney & Burrige, 2015), full-time enrollment (Porchea et al., 2010; Roksa, 2006), and postsecondary co-enrollment (Crisp, 2013; Wang & McCready, 2013; Wang & Wickersham, 2014). This is also consistent with literature specific to Latina/o community college students (e.g., Cejda & Rhodes, 2004; Crisp & Nora, 2010; Gross et al., 2014; Nora & Rendón, 1990). Conversely, the role of developmental education on community college student success is mixed with some work highlighting the positive (Bremer et al., 2013; Crisp & Nora, 2010) and negative (Crisp & Delgado, 2014) relationship to persistence and transfer.

Environmental pull factors. Environmental pull factors are defined by Nora (2003) as constructs that serve to “pull students” into staying in college. These factors can also serve to pull away students, by limiting opportunities to successfully integrate and forcing them to leave college. Within the literature, three primary environmental pull factors have been identified, which include financial aid, work obligations, and family commitments. For example, access to financial aid serves to pull students into college by providing them with more opportunities for campus engagement and commitment to their institution and educational goals (Bremer et al., 2013; Cofer & Somers, 2001; Mendoza et al., 2009; Nora, 1990). Alternatively, working while in college and family

obligations serve to pull students away from college (Bers & Smith, 1991; Cofer & Somers, 2001; Dougherty & Kienzl, 2006; Rendón & Valadez, 1993). Underlining this pulling in and pulling away effect, scholars have found mixed results when examining the relationship between specific types of financial aid such as grants, scholarships, and loans (e.g., Dowd & Coury, 2006; McKinney & Burrige, 2015; Metz, 2001).

Working while attending college represents a pull factor (Nora, 2003) that diverts Latina/o students away from the college experience. For instance, Crisp and Nora (2010) found that as students work hours increased, their odds of persisting, transferring, or completing college decreased. In addition, family responsibilities in both qualitative and quantitative studies examining Latina/o student success also indicate a negative pulling away influence (Alfonso, 2006a; Ornelas & Solórzano, 2004; Rendón & Valadez, 1993; Zell, 2010). Despite these negative findings regarding family obligations, other scholars have noted the positive influence (i.e., pulling in) that family support has on Latina/o students' transfer to 4-year institutions (Jabbar et al., 2019).

Method

Data and Sample

This study drew upon the Beginning Postsecondary Students Longitudinal Study (BPS: 04/09). The BPS: 04/09 surveyed a nationally representative sample of students who enrolled in postsecondary education for the first time beginning in the 2003–2004 academic year. Survey data include institutional, financial aid, admissions, student transfer, co-enrollment, persistence, and degree attainment records collected at three points in time. The full BPS sample consisted of approximately 16,700 students. Of these, approximately 6,400 were first-time community college attendees. After the data screening process, the analytic sample was limited to 800¹ first-time Hispanic/Latino students whose first entry into postsecondary education was at a 2-year or community college. Table 1 presents a summary of characteristics of the study sample.

Variables in the Study

Dependent variables. The dependent variables included in the study were three binary variables created based on the highest level of education or degree attained within 6 years after first enrolling at a community college. For the first outcome of persistence, the variable was created by including all students who were still enrolled at a community college and had not transferred to a 4-year institution. A dichotomous variable was created that compared these students with students who were no longer enrolled and had not completed any credential or degree after the 6-year survey period. For the second outcome, students who had completed at least a certificate or associate degree were also compared with students who were no longer enrolled and had not completed any credential. The third outcome, transfer or bachelor's degree completion, was also compared with students who were no longer enrolled and had not completed a credential.

Table 1. Descriptive Statistics.

Student characteristics	Total (800)	Not enrolled (420)	Still enrolled (100)	Certificate associates (170)	Transfer bachelor (110)
Precollege/demographics					
Gender					
Male	41%	42%	32%	39%	50%
Female	59%	58%	68%	61%	50%
Age					
19 or less	60%	53%	70%	60%	79%
20 or more	40%	47%	30%	40%	21%
Socioeconomic status					
Low	56%	58%	49%	57%	51%
Middle	28%	27%	31%	25%	34%
High	16%	15%	20%	18%	15%
First-generation status					
First generation	82%	83%	79%	87%	74%
Continuing	18%	17%	21%	13%	26%
Primary language					
Spanish/other	40%	34%	40%	49%	49%
English	60%	66%	60%	51%	51%
Citizenship status					
Non-U.S. citizen	16%	13%	15%	21%	18%
U.S. citizen	84%	87%	85%	79%	82%
Highest degree expected					
Associates or lower	17%	19%	12%	24%	4%
Bachelor's or higher	83%	81%	88%	76%	96%
College experiences					
Academic integration					
Low	38%	62%	32%	37%	26%
Medium	38%	27%	44%	38%	41%
High	25%	11%	24%	26%	34%
Enrollment intensity					
Part-time/mixed	64%	63%	85%	58%	58%
Always full-time	36%	37%	15%	42%	42%
Developmental education					
Yes	32%	30%	44%	30%	27%
No	68%	70%	56%	70%	73%
College GPA (<i>M</i>)	2.80	2.80	2.60	3.00	2.90
Co-enrollment					
Yes	8%	6%	8%	7%	19%
No	92%	94%	92%	93%	81%

(continued)

Table 1. (continued)

Student characteristics	Total (800)	Not enrolled (420)	Still enrolled (100)	Certificate associates (170)	Transfer bachelor (110)
Environmental pull factors					
Marital status					
Single	84%	81%	84%	84%	95%
Married/separated	16%	19%	16%	16%	5%
Dependent/child					
Yes	22%	26%	20%	22%	10%
No	78%	74%	80%	78%	90%
Employment type					
Not working	27%	25%	31%	29%	27%
19 hours or less	11%	10%	8%	9%	20%
20 hours or more	62%	65%	61%	62%	52%
Distance from home					
9 miles or less	43%	43%	39%	46%	43%
10 miles or longer	57%	57%	61%	54%	57%
Pell Grant recipient					
Yes	58%	53%	60%	62%	71%
No	41%	47%	40%	38%	29%
Loan borrower					
Yes	37%	30%	31%	43%	63%
No	63%	70%	69%	57%	37%

Source. BPS: 04/09.

Note. All raw data are rounded to the nearest 10 per Institute of Education Sciences guidelines. GPA = grade point average; BPS = Beginning Postsecondary Students Longitudinal Study.

Independent variables. Three blocks of variables were hypothesized to predict the outcomes from the BPS: 04/06 data files. The first block of independent variables included *precollege and demographic characteristics*. The student's age was a binary variable determined by whether or not the student was traditional aged (19 or younger) or not (20 or older) to compare these two distinct groups who experience college differently. The age variable was also constructed this way as a proxy for delayed enrollment into postsecondary education given how this variable has been found to be related to Latina/o community college student success (Crisp & Nora, 2010). SES was measured based on the student's family income and included a three-category dummy variable (i.e., low, middle, and high) with low being the reference category. The income cutoffs are representative of quartiles and were constructed this way to account for the positive skewness of family income. First-generation status was measured as a binary variable determined by Crisp and Núñez's (2014) conceptualization of whether or not at least one parent earned a 4-year degree.

The second block included a set of *college experience* variables. The academic integration variable is a BPS index variable derived from measures of the frequency of participation in study groups, contact with faculty, and meeting with an academic advisor. This composite variable contained a score between 0 and 200 and was reconstructed into a three-category variable to combine the frequency of each of the academic integration measures into a low, medium, and high frequency. I chose to construct the variable this way given how the survey item focused on measuring frequency (i.e., low is considered not often, medium is sometimes, and high is considered often) rather than quality of each of the interactions. Enrollment intensity was classified in terms of continuous full-time or mixed and part-time enrollment over the 6-year period of the study following previous research approaches (Crisp & Nora, 2010; Crisp & Núñez, 2014). The student's first-year GPA was measured on a 0 to 4.0 scale. Enrollment in at least one developmental or remedial course in the student's first year was constructed as a binary variable, as was the variable of co-enrollment, or whether or not the student ever co-enrolled at another institution within 6 years of initially enrolling in a community college. Several *environmental pull factors* were then added to the final block. This group of variables included parental and marital status, employment type, distance from home, and whether or not the student ever received the Pell Grant and borrowed a loan (see the appendix for a more detailed description of variable descriptions and coding).

Data Analysis

Three separate binary logistic regression analyses were performed using IBM SPSS 21 to predict the odds of persistence, certificate or associate degree completion, and transfer or bachelor's degree completion within 6 years after initial enrollment in postsecondary education at a 2-year institution. Binary logistic regression was chosen over ordinary least squares (OLS) analysis because the outcomes of interest were dichotomous (Vogt, 2007). In addition, a small number of cases with missing data were handled using multiple imputation procedures using LISREL 8.80 following the guidance of Peugh and Enders (2004) and Rubin (1987). Variation inflation factors (VIFs) were also examined for each independent variable to test for multicollinearity, but no issues were found among variables determined by a VIF of 3.0 or higher (Bickel, 2007). Fourteen cases were identified as outliers using Mahalanobis distance based on the chi-square critical value of 42.312 at $p < .001$, $df = 18$, and were subsequently removed from the final analysis.

Using a theoretical framework to guide the selection and grouping of independent variables, a hierarchical stepwise process (J. S. Long, 1997; Warner, 2012) was used to estimate the predictive nature of a set of variables underlying the three blocks in the theoretical framework (*demographic and precollege variables*, *college experience variables*, and *environmental pull factor variables*). For each outcome of interest, the base model and each subsequent model were compared by computing the difference in the log-likelihoods and chi-square statistics (J. S. Long, 1997; Warner, 2012). The smaller log-likelihood value for each model compared with the null

model is indicative of a better fitting model (Warner, 2012). In addition, odds ratios for statistically significant predictor variables ($p \leq .05$) were used to interpret parameter estimates of logit coefficients and corresponding standard errors, following guidance from Peng et al. (2002).

Results

Some important descriptive findings (Table 1) of the sample of Latina/o students who began postsecondary education at a community college in the 2003–2004 academic year are worth noting. When disaggregated by educational outcomes, descriptive results reveal that 52% of Latina/os who initially enrolled in 2-year institutions were no longer enrolled 6 years later; only 13% were still enrolled and had persisted; 21% completed a certificate or associate degree; and 14% had transferred to a 4-year institution or completed a bachelor's degree. The majority were female (59%), first generation (82%), and came from low-income backgrounds (56%). The total sample also had a larger representation of younger students, aged 19 or less (60%). Interestingly, half of the sample of Latina/o students who transferred to a 4-year institution or earned a bachelor's degree were male. The largest representation of the sample who had children (26%) came from students who were no longer enrolled, and the smallest (10%) representation who had children were students who transferred or attained a bachelor's degree. Most of the students in each outcome group had worked 20 hours or more per week, but employment was more evenly distributed in terms of not working and working only 19 hours or less among students who transferred or completed a bachelor's degree. Most of the students in each outcome had received a Pell Grant, but the highest group (71%) were students who transferred or obtained a bachelor's degree.

Persistence

Table 2 displays the parameter estimates, significance values, standard errors, odds ratios, and fit statistics for each of the final logistic regression models. The odds of persistence (or still being enrolled) were compared with students who were no longer enrolled. Results for the outcome of persistence indicated a fit of the overall hypothesized model, which was found to be significant, $\chi^2(21, n = 520) = 56.070, p < .001$, and yielded correct predictions for 81% of the sample. Each successive block of variables added to the equation significantly reduced the -2 log-likelihood from its original base model to the final model. A review of odds ratios indicated that the likelihood of still being enrolled and persisting 6 years after initial enrollment at a community college was uniquely influenced by full-time enrollment, academic integration, and receipt of a Pell Grant. Controlling for all other variables in the model, the odds of persisting were 0.244 lower for students enrolled full-time. In addition, odds of persisting were 1.72 times larger for students with a medium level of academic integration compared with students with a low level of academic integration. Interestingly, a high level of academic integration had a similar positive impact on persistence but was not statistically significant. Finally, the odds of persisting were 1.966 larger for

Table 2. Predictors of Educational Outcomes Among Latina/o Community College Students.

Variable name	Persistence/still enrolled		Certificate/associate degree completion		Transfer to a 4-year institution/bachelor's degree completion	
	β coefficient (SE)	OR ^a	β coefficient (SE)	OR ^a	β coefficient (SE)	OR ^a
Precollege/demographic factors						
Female	0.394 (0.261)	—	0.080 (0.203)	—	-0.104 (0.253)	—
20 or older	-0.486 (0.334)	—	-0.178 (0.247)	—	-0.655 (0.346)	—
Continuing generation	0.157 (0.314)	—	-0.253 (0.281)	—	0.349 (0.301)	—
U.S. citizen	-0.113 (0.386)	—	-0.631* (0.289)	0.532	-0.277 (0.379)	—
English primary language spoken in the home	-0.301 (0.281)	—	-0.451* (0.211)	0.637	-0.683** (0.278)	0.505
Middle income	0.184 (0.285)	—	0.148 (0.236)	—	0.503 (0.286)	—
High income	0.647 (0.382)	—	0.745* (0.321)	2.107	0.506 (0.433)	—
Expects bachelor's degree or higher	0.443 (0.363)	—	-0.416 (0.240)	—	1.566** (0.560)	4.786
College experiences						
First-year GPA	-0.002 (0.001)	—	0.003** (0.001)	1.003	0.001 (0.002)	—
Co-enrollment	0.118 (0.474)	—	-0.094 (0.388)	—	0.971** (0.361)	2.640
Full-time enrollment	-1.411*** (0.327)	0.244	-0.047 (0.217)	—	-0.302 (0.268)	—
Developmental education	0.410 (0.250)	—	0.049 (0.214)	—	-0.289 (0.282)	—
Medium academic integration	0.543* (0.280)	1.721	0.303 (0.227)	—	0.409 (0.300)	—
High academic integration	0.329 (0.327)	—	0.261 (0.252)	—	0.463 (0.325)	—
Environmental pull factors						
Married	0.328 (0.419)	—	-0.217 (0.320)	—	-0.999 (0.545)	—
Has dependent/child	-0.096 (0.418)	—	-0.179 (0.308)	—	-0.027 (0.469)	—
Distance from home	0.135 (0.246)	—	-0.178 (0.194)	—	-0.291 (0.253)	—
Part-time employment	-0.702 (0.473)	—	-0.144 (0.371)	—	0.539 (0.383)	—
Full-time employment	-0.367 (0.285)	—	-0.091 (0.228)	—	-0.297 (0.298)	—
Loan borrower	0.305 (0.286)	—	0.539* (0.221)	1.714	1.362** (0.276)	3.906
Pell Grant recipient	0.676* (0.304)	1.966	0.530* (0.251)	1.698	0.405 (0.317)	—
-2 log-likelihood	450.051***		657.351***		429.580***	
Nagelkerke R ²	.165		.109		.310	

Source: BPS: 04/09.

Note. OR = odds ratio; GPA = grade point average; BPS = Beginning Postsecondary Students Longitudinal Study.

* $p < .05$. ** $p < .01$. *** $p < .001$.^aORs only reported for statistically significant coefficients.

*Reference Category

students who had ever received a Pell Grant within 6 years of enrolling in community college.

Certificate or Associate Degree Completion

The odds of certificate or associate degree completion were compared with students who were no longer enrolled. Results indicated a fit of the overall hypothesized model, which was found to be significant, $\chi^2(21, n = 590) = 46.416, p < .001$, and yielded correct predictions for 71% of the sample. Consistent with the first analysis, each successive block of variables added to the equation significantly reduced the -2 log-likelihood from its original base model to the final model. A review of odds ratios indicated that the likelihood of earning a certificate or associate degree 6 years after initial enrollment at a community college was uniquely influenced by age, the primary language spoken in the home, citizenship status, SES, GPA, and being a loan borrower and Pell Grant recipient. Being a U.S. citizen and indicating that English was the primary language spoken in the home was associated with lower odds of certificate or associate degree completion. However, the odds of earning a certificate or associate degree for Latina/o students with a high SES background were 2.107 larger compared with those who came from a low SES background. In addition, for every one-unit increase in first-year GPA, the odds of completing a certificate or associate degree increased by a factor of 1.003. Finally, environmental pull factors that were positively related to completing a certificate or associate degree were being a loan borrower and a Pell Grant recipient. Specifically, the odds of earning a certificate or associate degree were found to be 1.71 times as large for loan borrowers and 1.70 times as large for Pell Grant recipients, even after controlling for all other variables in the model.

Transfer or Bachelor's Degree Completion

The results of the outcome of transfer to a 4-year institution or bachelor's degree completion indicated a fit of the overall hypothesized model, which was found to be significant, $\chi^2(21, n = 530) = 117.759, p < .000$, and yielded correct predictions for 81% of the sample. The odds of transfer or bachelor's degree completion were compared with students who were no longer enrolled. A review of odds ratios indicated that transfer or bachelor's degree completion was influenced by primary language spoken in the home, degree expectations, co-enrollment, and borrowing a loan. Students who indicated that English was the primary language spoken in the home had lower odds of transfer or completing a bachelor's degree. Not surprising, Latina/o students who expected to complete a bachelor's degree had 4.786 higher odds of completing a degree compared with those who expected to earn an associate degree or lower. Students who co-enrolled at another institution and those who borrowed a loan also had higher odds of transfer or bachelor's degree completion. More specifically, the odds of transferring or completing a bachelor's degree were 2.64 times larger for students who had ever co-enrolled at another institution and 3.906 higher for students who had borrowed a loan.

Limitations

Several limitations of this study should be noted. First, because I analyzed secondary data, I limited the analysis only to those variables included in the BPS data set. Precollege variables such as high school GPA, highest level of math, and delayed entry into postsecondary education could not be included due to large amounts of missing data that could not be assumed to be missing at random (Enders, 2008). Second, I utilized the composite index variable of academic integration in the BPS survey. This variable combines several responses to survey items to create an index of those items rather than including those measures as separate variables. If the latter option had been taken, results may have identified a specific survey item within academic integration to be associated with the outcomes. Third, some variables in Nora's (2003) theoretical model, as well as other variables from the literature, were not included in the BPS data and were excluded from the models. For instance, psychosocial variables that have been previously shown to influence Latina/o student outcomes such as a students' sense of belonging, motivation, self-esteem, mentoring, and perceptions of the campus climate were not included in the current study. Including these variables in the model could have yielded different results in predicting the outcomes of interest but is certainly worthy of consideration in future studies.

Discussion

The purpose of this study was to identify factors related to Latino community college educational attainment outcomes. This study utilized a theoretical framework (Nora, 2003) and research findings grounded in the literature on community college students both in general, and specifically on Latina/o community college students. The following section highlights key regression findings that are distinct for, and contribute to, the educational attainment of Latina/o community college students. Implications for policy and practice and considerations for future research on Latina/o community college students are also discussed below.

An important observation from the logistic regression analysis findings must be noted. That is, not one specific precollege or demographic factor, college experience, or environmental pull factor influenced all three outcomes of persistence, transfer, and credential completion. Factors that predicted the outcome of persistence and still being enrolled after 6 years of entering a community college included full-time enrollment (compared with part-time or mix), reporting a medium level of academic integration (compared with reporting no level of academic integration), and being a Pell Grant recipient (compared with not receiving the Pell Grant). Factors that predicted certificate or associate degree completion included being a U.S. citizen, indicating that English was the primary language spoken in the home, coming from high-income families (compared with low-income), first-year GPA, borrowing a loan, and being a Pell Grant recipient. Factors that predicted transfer to a 4-year institution or bachelor's degree completion included students who indicated that English was the primary language spoken in the home, who expected to complete a bachelor's degree or higher,

who co-enrolled at another institution, and who were loan borrowers. It is important to note that all these factors were positive predictors of the respective outcome discussed above with the exception of full-time enrollment, U.S. citizenship status, and primarily speaking English at home.

Findings support previous evidence that financial aid programs such as the Pell Grant and federal student loans help to promote success outcomes and alleviate affordability concerns for Latina/o community college students (Crisp & Nora, 2010; Gross et al., 2014; Nora, 1990; Rendón et al., 2012; Salinas & Hidrowoh, 2018). Although this finding was not surprising, it underscores the need for community colleges to annually inform Latina/o students of the requirements to apply and maintain eligibility for financial aid. It also reinforces the need to provide additional access to financial aid and financial literacy programs, which researchers have argued is significant to increasing the success of Latino male students (Salinas & Hidrowoh, 2018). In addition, results yielded little support for academic integration as a predictor of success outcomes. This is not surprising, given that Crisp and Núñez (2014) found this experience to be significant in influencing transfer for White students but not for Latina/o or Black students. It is important to note that both the Crisp and Núñez study and the current study included a similar measure of academic integration taken from the BPS survey. The BPS survey asked how often survey respondents did the following: *participated in study groups, had social contact with faculty, met with an academic advisor, or talked with faculty about academic matters outside of class*. It could be that a measurement of frequency of such activities (instead of quality of that experience) may not be an adequate approach to measuring the concept of *integration*, particularly for Latina/o students.

From an asset-based perspective, evidence from the current work suggests that community colleges are more successful at serving non-U.S. citizens and students who grew up speaking Spanish or another language. For example, Latina/o students who enrolled part-time or mixed, who grew up speaking Spanish (or another language) in the home, and who were non-U.S. citizens were more likely to succeed (e.g., persist, obtain a credential). In line with this finding, scholars have documented how Latina/os utilize various forms of language to navigate spaces occupied by the dominant culture (Anzaldúa, 1987). It could be that the institutional culture and campus climate of the community college is more accepting of students who have these qualities, which could help explain why they are more likely to succeed in these spaces.

Implications for Research

More evidence (both qualitatively and quantitatively) is needed to capture how language and citizenship status uniquely contributes to the educational outcomes of Latina/o students. For example, scholars (Anzaldúa, 1987; Rendón et al., 2014; Yosso, 2005) posit that Latina/o students are able to utilize various sources of capital found within themselves, their communities, and families that may not be valued in higher education. Focus should be given to understanding why these students are more likely

to succeed in community colleges than their counterparts (those who are U.S. Citizens and grew up speaking English in the home) as evidenced by the current study. Further unpacking the experiences of Latina/o populations who do not have U.S. citizenship status (e.g., Deferred Action for Childhood Arrivals [DACA] and immigrant students) and who may be bilingual can elucidate the importance of social and cultural capital and other forms of knowledge or *conocimientos y ventajas* (Acevedo-Gil, 2017; Rendón et al., 2014) that many of these students utilize to succeed. It is important to note that work in this area has grown within the last few years but focused exclusively on Latino male student success (e.g., Abrica & Martinez, 2016; Pérez, 2017; Sáenz et al., 2018; Salinas & Hidrowoh, 2018). Finally, identifying, considering, and incorporating more forms of sociocultural assets in future research on Latina/o students can help us begin to transform the narrative of Latina/o student's postsecondary experiences.

Given how little influence academic integration had on their educational attainment outcomes, qualitative research should focus on finding a deeper understanding of how Latina/o and other community college students make sense of these kinds of experiences. Researchers note the proclivity of these concepts targeted at 4-year residential students and, as a result, have attempted to redefine what the traditional notion of academic and social integration means for 2-year students, linking these concepts as *socioacademic integrative moments* (Deil-Amen, 2011). Findings from this study also call attention to how researchers define and measure certain constructs (e.g., first-generation status, academic integration) and success outcomes (combining outcomes or extending the length of time in measuring outcomes, i.e., 3 vs. 6 years) for Latina/o community college students. Findings underscore how different measures of predictors and outcomes yield different results. Measures of these constructs and outcomes have emphasized traditional student characteristics and enrollment patterns that may not align with community college student populations. These measures need to be reconsidered with nontraditional student's educational goals in mind. Examining why different factors and experiences contribute to various outcomes in different ways for Latina/os is another important consideration for future research.

Implications for Policy and Practice

Community college practitioners should take into consideration how enrollment intentions and educational goals may influence the ways Latina/o students (and perhaps nontraditional student populations) respond to certain success programs and services. These initiatives have historically been targeted to assist traditional college students. Institutions need to intentionally design their student services to better inform Latina/o students on how the choices they make relate to their degree and other educational aspirations, and how these decisions impact their financial aid funding opportunities. Community college faculty and administrators can be more effective in serving Latina/o students by developing academic programs that better align enrollment behaviors with educational goals and intentions. In the

current study, co-enrollment was found to be a positive predictor of transfer and bachelor's degree completion. As such, community college counselors, advisors, and faculty need to have meaningful and ongoing conversations with Latina/o students to help them understand the clearest path to their educational goals. Advising and financial aid services should be focused on increasing student awareness of how certain academic and enrollment decisions may impact them in the short term (e.g., financial aid eligibility) and long term (e.g., educational attainment goals). These approaches will ultimately improve both student outcomes and institutional effectiveness.

Appendix. Description of Variables and Measures.

Variable name	Description and coding
Demographic and precollege variables	
Gender	Binary variable coded 0 as male 1 as female
Age	Binary variable representing students' age in 2003–2004; coded 0 for 19 or younger and 1 for 20 or older
Socioeconomic status	Three-category dummy variable representing students' family income (*low: <32,000, middle: 32,000–60,000, high: ≥60,000)
First-generation status	Binary variable coded 0 when neither parent earned a bachelor's degree and 1 for continuing generation college student for parent with bachelor's degree or higher
English primary language	Binary variable coded 0 for no, 1 for yes
Citizenship status	Binary variable coded 0 for no, 1 for yes
Educational expectations	Binary variable representing students' highest degree expectation in 2003–2004 coded 0 for less than a bachelor's degree, 1 for bachelor's degree or higher
College experiences	
Academic integration	Derived from BPS index variable, which is a composite score of how often respondent participated in study groups, had social contact with faculty, met with an academic advisor, or talked with faculty about academic matters outside of class; three-category dummy variable representing *low (0–25), medium (25–50), and high (75–200) levels of academic integration
Co-enrollment	Binary variable coded 0 for did not co-enroll and 1 for co-enrolled in another institution
Enrollment intensity	Binary variable coded 0 for enrolled college part-time or a mix of part- and full-time through 2009 and 1 for enrolled exclusively full-time
Developmental education	Binary variable coded 0 for not enrolled in at least one course in first year and 1 for enrolled in one or more courses in first year
First-year college GPA	Continuous variable (range = 0–4.00)

(continued)

Appendix. (continued)

Variable name	Description and coding
Environmental pull factors	
Marital status	Binary variable coded 0 for single, 1 for married
Parental status	Binary variable coded 0 for has no children, 1 for has children
Employment	Three-category dummy variable representing the amount of time students worked (excluding work-study) during the first year of college (*did not work, part-time [1–19 hr], worked full-time [20+ hours])
Distance from home	Binary variable representing distance in miles between the first institution attended and student's permanent address coded 0 (9 or less) and 1 (10 or more)
Pell Grant recipient	Binary variable coded 0 for no Pell, 1 for received Pell
Borrowed loan	Binary variable coded 0 for no loan, 1 for borrowed loan
Success outcomes	
Persistence/still enrolled	Binary variable coded 0 for no longer enrolled, 1 for still enrolled but did not complete any certificate or degree and did not transfer to a 4-year institution within 6 years of initial enrollment
Certificate/associate degree completion	Binary variable coded 0 for no longer enrolled, 1 for highest educational attainment within 6 years of initial enrollment was a certificate or associate's degree
Transfer/bachelor's degree completion	Binary variable coded 0 for no longer enrolled, 1 for highest educational attainment within 6 years of initial enrollment was transfer to a 4-year institution or completion of a bachelor's degree

Note. BPS = Beginning Postsecondary Students Longitudinal Study; GPA = grade point average.

*Reference Category.


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Note

1. *Latina/o* is the author's preferred term and will be used interchangeably with the term *Hispanic* throughout the text, particularly when referring to an author's reference in a

particular study or statistical reference from a report. These terms are used to describe male and female persons of Mexican, Cuban, Puerto Rican, and Latin American descent including persons from Central and South America. Latina will be used when referring exclusively to females. Latino will be used when referring exclusively to males.

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