

Learning Accelerator Research Paper

The Intersectionality of Race/Ethnicity and Socioeconomic Status on Social and Emotional Skills

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Reducing Gaps in First-Year Outcomes between Hispanic First Generation College Students and Their Peers: The Role of Accelerated Learning and Financial Aid

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Abstract

Hispanic students are the most likely out of all racial/ethnic groups to be first generation college students (FGCS). Hispanic FGCS have been shown to be the least likely to persist out of all racial/ethnic backgrounds. However, there is little literature on this population. To address this, the present study investigated the association of accelerated learning in high school (e.g., AP courses, dual enrollment) and financial aid on academic outcomes for Hispanic FGCS and Hispanic non-FGCS at a four-year postsecondary institution ($n = 2,499$). Hispanic FGCS fared worse in first-year GPA and first-to-second year retention than Hispanic non-FGCS. After controlling for academic, non-academic, and demographic variables, results suggested that accelerated learning reduced achievement gaps in first-year GPA and financial aid reduced achievement gaps in retention rates for Hispanic FGCS. These results suggest that environmental supports (i.e., accelerated learning, financial aid) may be able to improve GPA and retention for Hispanic FGCS.

Keywords: Hispanic, Latino, first generation college students, accelerated learning, financial aid, dual enrollment

Reducing Gaps in First-Year Outcomes between Hispanic First Generation College Students and Their Peers: The Role of Accelerated Learning and Financial Aid

The American labor market is becoming increasingly specialized to favor those with at least a bachelor's degree. By the year 2020, 65% of jobs in the United States will require at least some form of postsecondary education, 28 percentage points higher than 1973 (Carnevale, Smith, & Strohl, 2013). Demonstrating the increasing importance of obtaining such a degree, individuals with a bachelor's degree now earn \$2.3 million over their lifetime, 74% more than those with a high school diploma (Carnevale, Rose, & Cheah, 2011). In an attempt to keep pace with these economic shifts, total undergraduate enrollment in American colleges is expected to be 50% greater in the year 2025 than it was in the year 2000 (Kena et al., 2016). Two groups whose identities often intersect, first generation college students (FGCS) and racial/ethnic minorities (Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007), continue to enroll in college with mixed success as both groups experience lower than average college graduation rates (Ishitani, 2006; Musu-Gillette et al., 2016). This places them not only at risk for a greater likelihood of defaulting on student loans (Baum, Ma, Pender, & Bell, 2015), but also for being left behind in the changing labor market.

Because racial/ethnic minority adults are underrepresented in bachelor's degree attainment (Ryan & Bauman, 2016), their children are more likely to be FGCS (Balemian & Feng, 2013). Out of all racial/ethnic groups, Hispanic college students are the most likely to be FGCS (Balemian & Feng, 2013). Thus, Hispanic FGCS are most likely to face the intersection of two underserved identities in their pursuit of a college education and economic equality: being a FGCS and a racial/ethnic minority. In this article, we present the results from a study that examined whether participating in accelerated learning programs (i.e., those that allow high school students to earn college credits prior to graduation, such as dual enrollment or advanced placement [AP] courses; Barnett & Stamm, 2010) and receiving financial aid are related to first-year cumulative GPA and first-to-second year retention for Hispanic FGCS, compared to Hispanic non-FGCS. These programs have previously been shown to contribute to improved college outcomes (e.g., An, 2013; Goldrick-Rab, Kelchen, Harris, & Benson, 2016), but have not been documented in the literature when specifically considering Hispanic FGCS. We are unaware of any other institution-wide study of this scale (n = 2,499) that has focused specifically on Hispanic FGCS or compared their academic outcomes to those of Hispanic non-FGCS.

Hispanic First Generation College Students

In general, FGCS are more likely to come from lower income households, speak a language other than English at home, be less prepared academically, and have lower social capital than their non-FGCS peers (Bui, 2002; Jenkins, Miyazaki, & Janosik, 2009; McCarron & Inkelas, 2006; Nunez & Cuccaro-Alamin, 1998; Saenz et al., 2007; Warburton, Bugarin, & Nunez, 2001). Out of all racial/ethnic groups, individuals of Hispanic descent are the most proportionally over-represented amongst FGCS as 47.8% of Hispanic college students fall into

this category (Skomsvold, 2014). Being a FGCS of any racial/ethnic origin lowers the odds of graduating from college in 5 years by 32% (Ishitani, 2006), while being a Hispanic FGCS, in particular, has been linked to the poorest academic outcomes in several studies (Lohfink & Paulsen, 2005; McCarron & Inkelas, 2006). For instance, Hispanic FGCS were the least likely to attain their bachelor's degree within 8 years of high school graduation (at a rate of 18.8%), according to one longitudinal study (McCarron & Inkelas, 2006), and had the lowest first-to-second year persistence rates in another (Lohfink & Paulsen, 2005). However, within Hispanic college students, Kouyoumdjian, Guzman, Garcia, and Talavera-Bustillos (2017) found no significant difference between the GPAs of Hispanic FGCS and Hispanic non-FGCS. Financially, they did find that Hispanic FGCS had lower family incomes than Hispanic non-FGCS.

In line with these findings, Lohfink and Paulsen (2005) suggested that Hispanic FGCS' struggles are due to the intersection of various oppressed identities such as race and social class. In addition to their previously noted persistence finding, they found that FGCS with higher annual family incomes perform better than FGCS with lower annual family incomes. As such, they state that "being Hispanic and being first-generation is an example of how race and ethnicity intersect with parental education to negatively impact persistence" (p. 418) and that "lower-income first-generation students are not only disadvantaged by their parents' lack of experience with and information about college, but also by other social and economic characteristics that constrain their educational opportunities" (p. 418). Qualitative studies with Hispanic FGCS have arrived at similar conclusions, as these students report financial issues, a lack of exposure to college, and academic unpreparedness as key concerns (Boden, 2011; Gloria & Castellanos, 2012; Mahaffy & Pantoja, 2013; Zurita, 2004). As such, one way to address the financial obstacles and lack of college exposure is through various supports, services, and special programs such as financial aid and accelerated learning, respectively. Both dual enrollment programs and financial aid programs have been shown to positively influence academic outcomes, such as GPA and graduation (e.g., An, 2013; Goldrick-Rab et al., 2016; Speroni, 2011).

Accelerated Learning

Accelerated learning programs provide high school students with the opportunity to earn college credit (American Youth Policy Forum, 2013). Originally designed for high achieving students, accelerated learning programs have been extended to all college-bound students with the goal of aiding underserved populations. Accelerated learning programs are theorized to improve student outcomes by (1) exposing high school students to the increased academic demands of postsecondary education (e.g., increased course rigor and difficulty), (2) exposing high school students to the increased non-academic demands of postsecondary education (e.g., the increased autonomy and independence offered by college instructors who may provide less homework and quizzes to keep students on track [An, 2013]), and by (3) reducing time to degree completion as students are able to begin college having already earned college credits (American Youth Policy Forum, 2013). Accelerated learning programs include both dual enrollment

programs and advanced coursework including exam-based courses, amongst others (see American Youth Policy Forum [2013] for more programs). Advanced coursework refers to Advanced Placement (AP) or International Baccalaureate (IB) exam-based courses where students can earn both high school and college credits simultaneously. Dual enrollment programs are those where high school students earn college credits by taking courses offered by postsecondary institutions on a college campus.

Participation in accelerated learning has been associated with better outcomes on a number of college success measures. For example, Speroni (2011) found that taking either AP or dual enrollment courses was strongly associated with college enrollment and degree attainment, with similar bachelor's degree attainment rate estimations for each program. Likewise, an investigation of a national sample of over 1 million students found that AP and dual enrollment students generally have enhanced college outcomes (e.g., higher 4- and 6-year graduation rates) compared to their peers who did not participate in these programs (Wyatt, Patterson, & Di Giacomo, 2015). Another form of accelerated learning, the College-Level Examination Program (CLEP), which allows students to take an exam to receive college credit for learning that has occurred outside of the classroom, is also associated with improved academic outcomes (Barry, 2013).

In terms of the benefits of participating in accelerated learning programs for underserved populations, An (2013) found that dual enrollment participation was associated with increased first-year GPAs for FGCS, while Speroni (2011) found that Black and Hispanic students who participated in accelerated learning programs had greater academic outcomes than Black and Hispanic students who did not participate in these programs. However, we found no previous studies that solely addressed Hispanic FGCS in the extant literature. Given that first generation college students' academic performance plays an important role in their ability to graduate from college (Yue & Fu, 2017), accelerated learning opportunities might better prepare Hispanic FGCS' academically by increasing subject knowledge, improving non-academic behaviors, and increasing familiarity with college thereby increasing their chances of success.

Financial Aid

Research has consistently shown that students who receive financial aid, especially those from low-income backgrounds, benefit in terms of degree completion (Pascarella & Terenzini, 2005). Financial aid is theorized to enhance student graduation by relieving financial constraints (such as the need to work many hours) and therefore freeing the student to learn how to navigate the college system (Goldrick-Rab et al., 2016). Goldrick-Rab et al. (2016) also suggested that financial aid might benefit students by increasing their social class status or financial self-worth, which, in turn, helps them to feel that they belong on campus.

Several recent analyses of financial aid reveal an association with an increase in bachelor's degree completion rates, possibly due to increased continuous student enrollment (Castleman & Long, 2013; Crockett, Heffron, & Schneider, 2011; Goldrick-Rab et al., 2016; Wohlgemuth et al., 2007). In Florida, a \$1,300 increase in grant-aid led to a 22% increase in six-year bachelor's degree completion rates (Castleman & Long, 2013) while, in Wisconsin, a

\$3,500 increase in grant-aid increased four-year degree completion rates by 29% (Goldrick-Rab et al., 2016). Importantly, Goldrick-Rab et al.'s (2016) study in Wisconsin was “the nation’s first experimental analysis of need-based financial grant aid” (p. 1764) as it used a lottery-system to assign aid to low-income students. Goldrick-Rab et al. (2016) concluded that “grant aid contributes to the attenuation of inequality in college graduation” (p. 1801). Because financial aid has been associated with a reduction in Hispanic college student attrition (Gross, 2011; Gross, Torres, & Zerquera, 2013) and an improvement in first-to-second year retention of FGCS (Lohfink & Paulsen, 2005), we hypothesize that financial aid will benefit Hispanic FGCS by mitigating some economic concerns.

Purpose

Although participation in accelerated learning programs has been associated with higher first-year GPAs for FGCS (e.g., An, 2013) and financial aid has been associated with an increase in persistence of FGCS (Lohfink & Paulsen, 2005) and Hispanic college students (Gross, 2011; Gross et al., 2013), we did not find any previous analysis that specifically focused on examining these relationships for Hispanic FGCS. Thus, this study adds to a limited body of research about the role of accelerated learning and financial aid on FGCS outcomes while also providing a unique contribution to the literature by evaluating whether these programs are associated with better first-year outcomes for Hispanic FGCS, specifically. Our research questions are:

1. How do Hispanic FGCS and Hispanic non-FGCS compare in their first-year outcomes (i.e., first-year cumulative GPA and first-to-second year retention)?
2. Do the relationships between financial aid status and first-year outcomes differ by FGCS status among Hispanic students?
3. Do the relationships between accelerated learning participation and first-year outcomes differ by FGCS status among Hispanic students?

When evaluating these questions, we statistically controlled for measures of prior achievement, academic behaviors, and other student demographic characteristics in the models, since these predictors have been shown to predict first-year college GPA and first-to-second year retention (e.g., Robbins, Allen, Casillas, Peterson, & Le, 2006). After controlling for these factors, we hypothesized that both financial aid and accelerated learning participation would help to reduce the gaps in first-year outcomes between Hispanic FGCS and their Hispanic non-FGCS peers.

Methods

Study Sample

The study sample was comprised of 2,655 incoming first-time students from the 2012 freshman cohort of a predominantly Hispanic-serving postsecondary institution located in the southern U.S. The sample included students who had taken, prior to enrolling in college, the ACT or the SAT admission tests and the ACT Engage assessment designed to measure academic behaviors; this represented 86% of the incoming 2012 freshman cohort. The number of non-Hispanic students included in the sample was too small to use as a comparison group, and therefore were excluded from this study. This exclusion resulted in a final sample size of 2,499

Hispanic students. The country of origin for Hispanic race/ethnicity was not available in the data set.

Outcome Variables

There were two outcome variables that we sought to predict:

First-year cumulative GPA. This outcome was defined on the typical 0.0 to 4.0 scale and treated as a continuous variable. For those students who were no longer enrolled in the Spring semester, their Fall semester GPA was carried forward.

First-to-second year retention. This outcome was defined by whether a student remained enrolled between the first and second year of college (i.e., from Fall semester to Fall semester).

Predictor Variables

The variables used to predict outcomes were:

FGCS status. Consistent with the *Higher Education Act* definition, we defined FGCS as students whose parent(s) or guardian(s) had not completed a bachelor's degree (Higher Education Act of 1965, 1998 Higher Education Act Amendments, 1998).

Accelerated learning. Accelerated learning participation was determined by whether or not the student enrolled in the university with incoming college credits earned while in high school. Sixty-six percent of the incoming students enrolled with prior college credits. Unfortunately, detailed records to determine the type of accelerated learning program from which incoming credits originated were not available for this study. Additionally, among students not transferring in any credit hours, we were unable to identify whether any of these students participated in accelerated learning programs (e.g., a student who took an AP course, but did not take or pass the exam). Therefore, our participation definition is based on those who were successful and able to transfer credit hours to this institution.

The university has a formal dual enrollment program, including agreements with several area high schools and districts, where students can take dual credit courses on its own campus. It was estimated that about 10% of the incoming students had participated in the university's dual enrollment program. Incoming credits for the other students came from dual enrollment programs offered by other postsecondary institutions and exam-based credits (i.e., AP and CLEP).

Financial aid. The institution indicated whether the student had received need-based financial aid. The specific financial aid type was not provided.

Prior academic achievement. Prior academic achievement was measured by the ACT Composite score, high school GPA (HSGPA), and frequency with which homework was not completed in high school. A student's most recent standardized test score was used in the analyses. SAT scores were concorded to ACT scores. HSGPA was defined on the typical 0.0 to 4.0 scale and was treated as a continuous variable. HSGPA was provided by the university. In cases where it was not provided, the student's self-reported HSGPA was used. Research has found self-reported HSGPA to be an accurate representation of transcript GPAs (e.g., E. Sanchez & Buddin, 2016). The use of ACT Composite scores and HSGPAs together have been shown to

have greater accuracy than either predictor alone at predicting first-year college GPA (E. I. Sanchez, 2013) and long-term college success outcomes (Radunzel & Noble, 2013).

Frequency with which homework was not completed was collected from ACT Engage, where respondents answered the question “During high school, how often do you come to school without your homework done?” on a Likert-type scale. Possible responses were “never”, “rarely”, “sometimes”, “frequently”, and “daily”. For our analyses, individuals who responded with “never” or “rarely” were grouped into one category (coded as 0), while individuals who responded with “sometimes”, “frequently”, or “daily” were grouped into the other category (coded as 1).

ACT Engage scores. ACT Engage is a low-stakes assessment that measures student behaviors and psychosocial characteristics that are essential components of school success (ACT, 2015). For its college version, ACT Engage consists of 108 questions on a 6-point Likert scale. It is comprised of 10 subscales (see Appendix A) that fall into three general categories: (1) motivation, (2) social engagement, and (3) self-regulation. It has been shown to have a high internal consistency reliability (Cronbach’s alpha range = .81 to .88; ACT, 2016). It has also been shown to be a valid predictor of GPA, retention, and success in specific courses in a sample of 14,464 first-year students at 48 institutions (Robbins et al., 2006). For the present study, the university administered ACT Engage to its students before they enrolled in college (i.e., between March and June of 2012).

Student demographics. Other student demographic characteristics included gender, annual family income, and language fluency. These characteristics were provided by the institution (except for language fluency), but were supplemented with self-reported data from students’ ACT Engage or ACT records when institutional information was not available.

Language fluency was collected via ACT Engage, where respondents answered the question “What language do you know best?” on a multiple choice scale. Possible responses were “English”, “a language other than English”, and “English and another language about the same”. For our analysis, individuals who responded with “a language other than English” were grouped into one category (coded as 0), while individuals who responded with “English” and “English and another language about the same” were grouped into the other category (coded as 1).

As reflected in Table 1, 78% of students were classified as Hispanic FGCS. Ninety-five percent of Hispanic FGCS received financial aid, while 79% of Hispanic non-FGCS received financial aid. Sixty-nine percent of Hispanic FGCS participated in accelerated learning while 67% of Hispanic non-FGCS participated in accelerated learning. The two groups were similar in age and HSGPA. Hispanic non-FGCS scored on average one point higher on the ACT Test. Two variables, annual family income and FGCS status, contained some missing values (9% and 2%, respectively). Individuals with missing values for these variables were dropped in any subsequent analyses that included these variables.

Table 1

Descriptive Statistics of Study Sample of Hispanic College Students

Variable		Full Sample (<i>n</i> =2,499)	Non-First Generation (<i>n</i> =531)	First Generation (<i>n</i> =1,927)
Age in Years		18.5 (0.6)	18.5 (0.6)	18.5 (0.5)
Gender	Male	44%	47%	42%
	Female	56%	53%	58%
Annual Family Income	Under \$40,000	62%	36%	69%
	\$40,000 or More	30%	55%	23%
	Missing	9%	9%	7%
Financial Aid Status	Received financial aid	91%	79%	95%
	Did not receive financial aid	9%	21%	5%
First Generation	First generation	77%	0%	100%
College Student Status	Non-first generation	21%	100%	0%
	Missing	2%	0%	0%
Accelerated Learning	Participated	68%	67%	69%
	Did not participate	32%	33%	31%
Language Fluency (Best Language)	English or English and another about the same	95%	92%	96%
	Language other than English	5%	8%	4%
Academic Achievement	ACT Composite Score	19.7 (3.0)	20.5 (3.5)	19.5 (2.8)
	HSGPA	3.44 (0.40)	3.47 (0.41)	3.43 (0.39)
Academic Performance	Fall GPA	2.72 (1.03)	2.92 (0.99)	2.66 (1.04)
	Cumulative First-Year GPA	2.60 (1.00)	2.85 (0.93)	2.53 (1.00)
First-to-Second Year Retention	Retained	76%	79%	75%
	Not Retained	24%	21%	25%

Statistical Analysis and Modeling

The statistical analysis was conducted in two stages. First, we tested for simple associations between each predictor variable and each outcome using analysis of variance (ANOVA) for first-year cumulative GPA and Chi Square tests for retention. Second, we developed a predictive model for each outcome. Linear regression was used for first-year cumulative GPA and logistic regression was used for the retention outcomes. A backward elimination selection approach was used, where all variables were initially included in the model. Then, one by one, the least significant variable was dropped from the model, until only those variables that were statistically significant at the 0.05 level remained in the model.

To answer the study questions, FGCS status and the interaction terms between FGCS status and the two primary predictor variables (i.e., accelerated learning and financial aid) were evaluated and retained in the final reported models. A significance level of 0.05 was used here, as well. This allowed us to examine the differences in outcomes by FGCS status while controlling for other relevant variables. HSGPA and ACT Composite scores were also kept in the model regardless of whether or not they were significant to account for students' incoming achievement levels that have been shown to be predictive of college outcomes (e.g., Noble & Sawyer, 2002). As a post hoc check, we examined the significance of the interactions between FGCS status and all other categorical variables, but none were found to be statistically significant. Of note, each model was based on a slightly different sample size due to individuals being dropped due to missing data; the sample sizes are indicated in each model's corresponding table.

Results

First-Year Cumulative GPA

Table 2 shows the mean first-year GPAs by student characteristics. In bivariate analyses, characteristics associated with a significantly higher cumulative first-year GPA were: being female ($F = 39.1, p < .0001$), coming from a family with a moderate or high annual income ($F = 34.6, p < .0001$), being a non-FGCS ($F = 45.5, p < .0001$), having participated in accelerated learning ($F = 128.0, p < .0001$), speaking another language better than English ($F = 19.5, p < .0001$), and rarely or never coming to school without having homework completed ($F = 43.0, p < .0001$). There was not a significant difference in mean first-year GPAs between students who received financial aid and those who did not ($F = .4, p = .5076$).

Table 2

Mean First-Year Cumulative College GPA by Student Characteristics

Variable		Mean First-Year GPA	ANOVA Results
Gender	Male	2.46 (1.05)	F = 39.1 df = 1, 2,497 $p < .0001$
	Female	2.71 (0.94)	
Annual Family Income	Under \$40,000	2.52 (1.01)	F = 34.6 df = 1, 2,283 $p < .0001$
	\$40,000 or more	2.78 (0.92)	
Financial Aid Status	Received financial aid	2.61 (0.99)	F = .4 df = 1, 2,497 $p = .5076$
	Did not receive financial aid	2.56 (1.03)	
	First generation	2.53 (1.00)	F = 45.5

First Generation College Student Status	Non-first generation	2.85 (0.93)	df = 1, 2,456 $p < .0001$
Accelerated Learning	Participated	2.75 (0.92)	F = 128.0
	Did not participate	2.28 (1.07)	df = 1, 2,497 $p < .0001$
Language Fluency (Best Language)	English or English and another about the same	2.58 (1.00)	F = 19.5 df = 1, 2,498 $p < .0001$
	Language other than English	2.98 (0.76)	
Frequency with which Homework Not Completed in High School	Never or rarely	2.70 (0.98)	F = 43.0
	Sometimes, frequently, or daily	2.42 (1.01)	df = 1, 2,497 $p < .0001$

First-to-Second Year Retention

Table 3 shows first-to-second year retention rates by student characteristics. In bivariate analyses, characteristics associated with being significantly more likely to return to the institution in the fall of year 2 were: being female ($\chi^2 = 21.6, p < .0001$), receiving financial aid ($\chi^2 = 18.8, p < .0001$), being a non-FGCS ($\chi^2 = 4.0, p = .0451$), having participated in accelerated learning ($\chi^2 = 81.9, p < .0001$), speaking another language better than English ($\chi^2 = 12.7, p = .0004$), and rarely or never coming to school without having homework completed ($\chi^2 = 17.3, p < .0001$). There was not a significant difference in first-to-second year retention rates between students who came from families with annual incomes under \$40,000 and students who came from families with annual incomes of \$40,000 or more ($\chi^2 = 0.1, p = .7322$).

Table 3

First-to-Second Year Retention Rates by Student Characteristics

Variable		Retention Rate	Chi-Square
Gender	Male	72%	$\chi^2 = 21.6$
	Female	80%	df = 1 $p < .0001$
Annual Family Income	Under \$40,000	76%	$\chi^2 = 0.1$
	\$40,000 or more	77%	df = 1 $p = .7322$

Financial Aid Status	Received financial aid	77%	$\chi^2 = 18.8$
	Did not receive financial aid	64%	df = 1 $p < .0001$
First Generation College Student Status	First generation	75%	$\chi^2 = 4.0$
	Non-first generation	79%	df = 1 $p = .0451$
Accelerated Learning	Participated	81%	$\chi^2 = 81.9$
	Did not participate	65%	df = 1 $p < .0001$
Language Fluency (Best Language)	English or English and another about the same	75%	$\chi^2 = 12.7$
	Language other than English	89%	df = 1 $p = .0004$
Frequency with which Homework Not Completed in High School	Never or rarely	79%	$\chi^2 = 17.3$
	Sometimes, frequently, or daily	71%	df = 1 $p < .0001$

Models

First-Year Cumulative GPA. After including the interactions and controlling for HSGPA and ACT Composite score, student characteristics associated with higher cumulative first-year GPA included being female, coming from a moderate or high income family, being a non-FGCS, speaking another language better than English, rarely or never coming to school without having homework completed, having higher academic discipline scores, and having lower social activity involvement scores (Table 4). Approximately 20% of the variance in first-year cumulative GPA was explained by the predictors in the model ($\mathcal{R}^2 = .2036$). We found a significant interaction between FGCS status and accelerated learning participation ($p = .023$) (Figure 1). Among Hispanic FGCS, on average those who had participated in accelerated learning had substantially higher GPAs than those who had not (2.64 vs. 2.37), while this difference was much smaller among Hispanic non-FGCS (2.75 vs. 2.70). As can be seen in Figure 1, holding all other predictors constant at their sample means, the difference in average first-year GPAs between Hispanic FGCS and Hispanic non-FGCS was 3 times larger among students with no previous accelerated learning participation than for those who had participated in such programs (0.33 vs. 0.11).

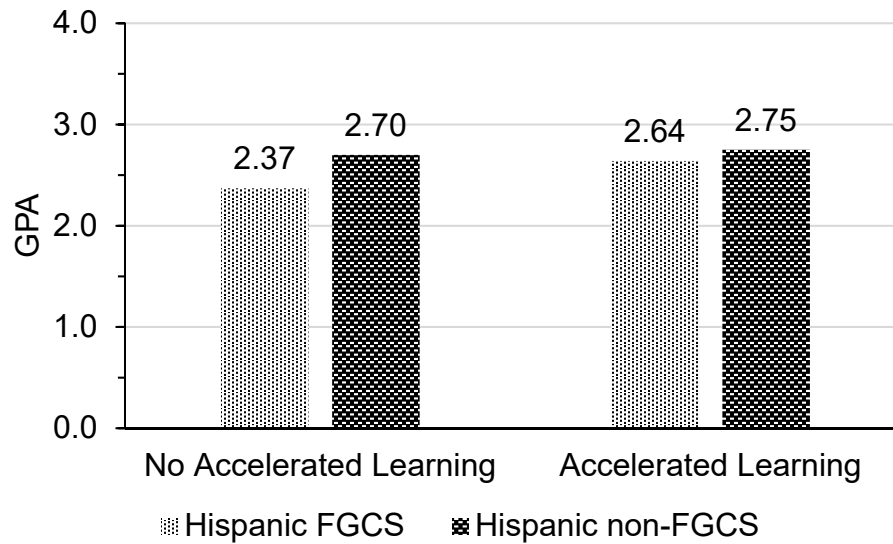
Table 4

Multiple-Predictor Regression Model for Cumulative First-Year College GPA

Predictor	Standardized Estimate	Standard Error	<i>p</i> -value
Gender (Male)	-0.061	0.020	0.002
Income Category (Low)	-0.093	0.021	<.0001
First Generation	-0.234	0.060	<.0001
Language Fluency (English or English and another about the same)	-0.078	0.019	<.0001
Financial Aid Received	-0.006	0.030	0.853
Incomplete Homework	-0.044	0.021	0.032
Academic Discipline	0.144	0.022	<.0001
Social Activity	-0.102	0.020	<.0001
ACT Composite Score	0.129	0.020	<.0001
HSGPA	0.224	0.021	<.0001
Accelerated Learning	0.020	0.042	0.625
First Generation by Financial Aid Interaction	0.113	0.063	0.073
First Generation by Accelerated Learning Interaction	0.113	0.050	0.023

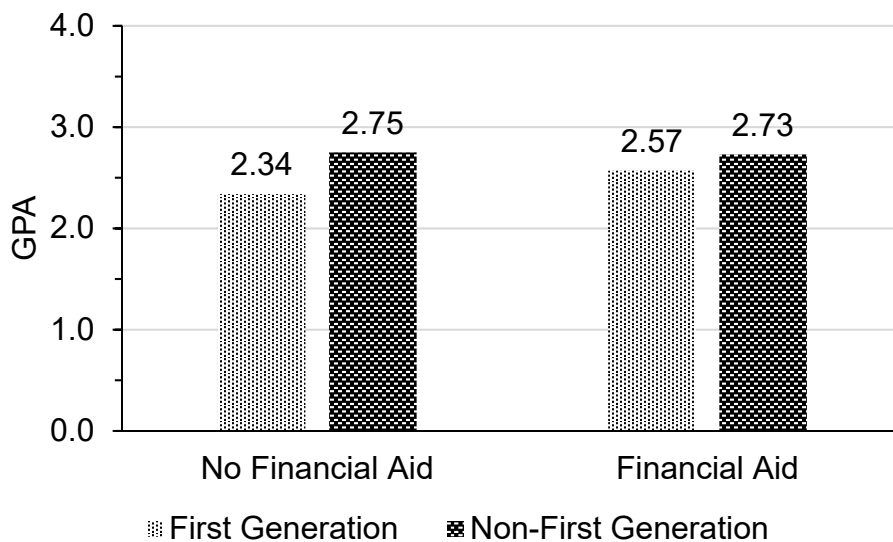
Note. $n = 2,265$; $\mathcal{R}^2 = .2036$.

Figure 1. Modeled First-Year Cumulative College GPA by Hispanic First Generation College Student Status and Accelerated Learning, Holding All Other Predictors Constant at Their Sample Means



Additionally, we found that the interaction between FGCS status and financial aid approached statistical significance ($p = .073$) (Figure 2). Amongst Hispanic FGCS, those who had received financial aid had marginally higher GPAs on average than those who did not (2.57 vs. 2.34), while this difference was virtually non-existent among Hispanic non-FGCS (2.73 vs. 2.75). As can be seen in Figure 2, the difference in the average first-year GPA between Hispanic FGCS and Hispanic non-FGCS was 2.6 times larger among students who had not received financial aid than those who had received financial aid (0.41 vs. 0.16).

Figure 2. Modeled First-Year Cumulative College GPA by Hispanic First Generation College Student Status and Financial Aid, Holding All Other Predictors Constant at Their Sample Means



First-to-second year retention. After including the interactions and controlling for HSGPA and ACT Composite scores, student characteristics associated with higher first-to-second year retention rates included being a non-FGCS, speaking another language better than English, having higher commitment scores, having higher academic discipline scores, having lower social activity involvement scores, and participating in accelerated learning (Table 5). Approximately 8% of the variance in first-to-second year retention was explained by the predictors in the model ($\mathcal{R}^2 = .0791$). There was a significant interaction between FGCS status and financial aid ($p = .012$) (Figure 3), but not between FGCS status and participation in accelerated learning programs ($p = 0.947$). Among Hispanic FGCS, holding all other predictors constant at their sample means, those who received financial aid had a substantially higher first-to-second year retention rate than those who did not (78% vs. 60%), while among Hispanic non-FGCS there was no difference in retention rates between those who received and did not receive financial aid (81% vs. 81%). As can be seen in Figure 3, there is a larger difference in the retention rates between Hispanic FGCS and Hispanic non-FGCS who received no financial aid (adjusted odds ratio = 2.78 based on exponentiation of the unstandardized parameter estimate), but this difference was reduced among Hispanic FGCS and Hispanic non-FGCS who received financial aid (adjusted odds ratio = 1.16).

Table 5

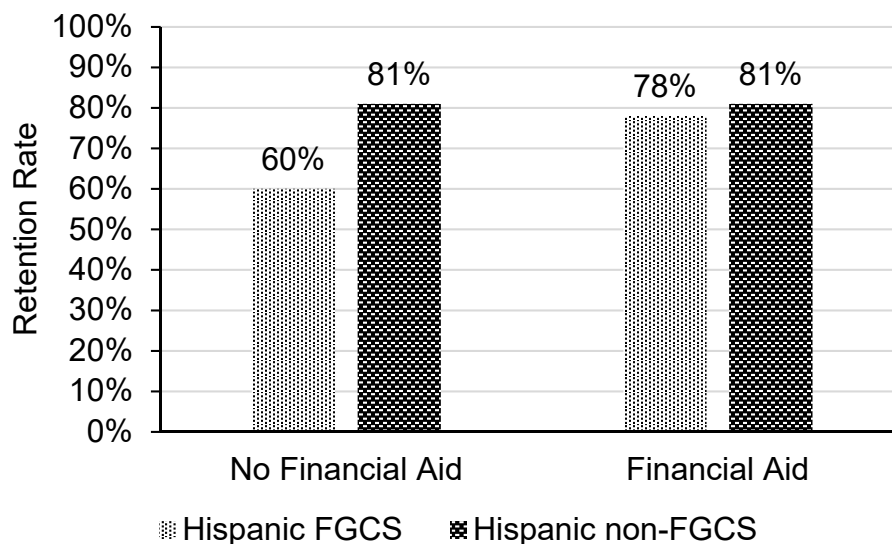
Multiple-Predictor Regression Model for First-to-Second Year Retention

Predictor	Standardized Estimate	Standard Error	<i>p-value</i>
First Generation	-0.233	0.075	0.002
Language Fluency (English or English and another about the same)	-0.119	0.038	0.002
Financial Aid Received	0.002	0.041	0.956
Commitment	0.071	0.031	0.022
Academic Discipline	0.149	0.033	<.0001
Social Activity	-0.113	0.030	0.000
ACT Composite Score	-0.003	0.029	0.906
HSGPA	0.121	0.028	<.0001
Accelerated Learning	0.176	0.059	0.003

First Generation by Financial Aid Interaction	0.211	0.082	0.011
First Generation by Accelerated Learning Interaction	-0.005	0.070	0.947

Note. $n = 2,458$; $\mathcal{R}^2 = .0791$.

Figure 3. Modeled First-to-Second Year Retention Rates by Hispanic First Generation College Student Status and Financial Aid, Holding All Other Predictors Constant at Their Sample Means



Discussion

In this study we compared first-year cumulative GPA and first-to-second year retention between Hispanic FGCS and Hispanic non-FGCS at a single Hispanic-serving institution. To our knowledge, no other institution-level study of this type or scale ($n = 2,499$) focusing specifically on Hispanic FGCS has been reported in the literature. Consistent with other studies of FGCS in general (e.g., Ishitani, 2006), with theory of intersecting underserved identities (Lohfink & Paulsen, 2005), and as hypothesized, we found that Hispanic FGCS fared worse than Hispanic non-FGCS on all of the first-year outcomes analyzed in this study. Specifically, our results showed that compared to their Hispanic peers, Hispanic FGCS had significantly lower first-year cumulative GPAs on average (2.53 vs. 2.85) and significantly lower first-to-second year retention rates (75% vs. 79%). Our finding that Hispanic FGCS had significantly lower GPAs than Hispanic non-FGCS was different from that of Kouyoumdjian et al. (2017), who found no significant difference in their analysis, though our sample was institution-wide for the incoming class ($n = 114$ vs. $n = 2,499$). However, similar with their findings, our results indicated that

Hispanic FGCS were more likely to come from a family with lower annual incomes than Hispanic non-FGCS. We also found that a higher percentage of Hispanic FGCS received financial aid (95% vs. 79%), consistent with national statistics (e.g., Skomsvold, 2014).

In addition to bivariate analyses, we developed multiple-predictor regression models to determine whether financial aid and accelerated learning interacted with FGCS status on first-year outcomes to help reduce the gaps between Hispanic FGCS and Hispanic non-FGCS. Somewhat different than hypothesized, we found a significant interaction between FGCS status and accelerated learning (but not financial aid, which was marginally significant) on first-year GPA after controlling for demographic, non-academic (i.e., ACT Engage scores), and academic variables (i.e., ACT Composite score and HSGPA). These findings indicate that Hispanic FGCS who participated in accelerated learning had significantly higher GPAs on average than those who did not (2.64 vs. 2.37), reducing the achievement gap with their Hispanic non-FGCS peers by a factor of 3 (see Figure 1). An (2013) also found that a form of accelerated learning (i.e., dual enrollment) was associated with increased first-year GPAs for FGCS, though his analysis did not focus on race/ethnicity.

Additionally, we found a significant interaction between FGCS status and financial aid (but not accelerated learning) on first-to-second year retention, after controlling for the same demographic, non-academic, and academic variables. These latter findings suggested that Hispanic FGCS who received financial aid were more likely to return to the same institution for their second year of college than those who did not receive financial aid (78% vs. 60%). The gaps in success rates between Hispanic FGCS and their Hispanic non-FGCS peers was substantially reduced or virtually eliminated (see Figure 3). These findings are similar to those of both Gross (2011) and Gross et al. (2013), who found that financial aid reduced the attrition rate of Hispanic college students, and Lohfink and Paulsen (2005), who found that financial aid improved first-to-second year retention for FGCS.

Most significantly, the aforementioned interactions indicate that successful participation in accelerated learning programs appears to play an important role in improving the first-year GPAs of Hispanic FGCS, while financial aid appears to provide the economic stability needed for these students to continue with their second year of enrollment. These findings are consistent with theory which suggests that accelerated learning prepares students both academically and non-academically for the rigors of college coursework (American Youth Policy Forum, 2013; An, 2013; Bailey, Hughes, & Karp, 2002; Barnett & Stamm, 2010), and theory which suggests that financial aid benefits students by relieving financial constraints thereby allowing them to focus on college completion (Goldrick-Rab et al., 2016).

Implications

Findings from this study have implications for policy makers, administrators, educators, and counselors. First, given the finding that accelerated learning was associated with higher first-year GPAs for Hispanic FGCS, policy makers and administrators should work to ensure that worthwhile accelerated learning programs exist within the U.S., as the rigor and quality of such programs has often been a concern that gets expressed in the literature (Allen, 2010; Krueger,

2006). Likewise, educators and counselors can encourage Hispanic FGCS to participate in accelerated learning as a way to prepare themselves for college coursework while simultaneously earning college credit. This would allow Hispanic FGCS to get accustomed to and grow in confidence in their ability to succeed in college while having the support of their high school environment.

Second, given the finding that Hispanic FGCS students who received financial aid were more likely to continue on to their second year of college education, policy makers and administrators should work to ensure that financial aid availability continues to match or outpace increases in the price of tuition (Heller, 2013). Furthermore, educators and counselors can help Hispanic FGCS become aware of fiscally-responsible funding options for college so that they are not overwhelmed by work and academic obligations during college. Maintaining sufficient access to financial aid, controlling increasing tuition prices, and providing early financial education may help improve Hispanic FGCS' persistence in higher education.

Limitations

Five limitations existed in this study. First, accelerated learning was determined by the number of college credits students were able to transfer to this institution upon enrolling in college. Unfortunately, we were not able to determine the type of accelerated learning program that originated these credits nor could we identify students who participated in these programs among those without any incoming transfer credits. Future studies that can examine more detailed accelerated learning information (e.g., program type) would allow us to compare the relative efficacy of these programs for Hispanic students.

Second, for our definition of first-to-second year retention, it was unknown whether those who did not remain enrolled at the institution of study transferred to another university or dropped out of school. Given our inability to differentiate between transfer and dropout, we were not able to report on students' chances of persisting in any college and how persistence rates differ by FGCS status. How results for persistence at any institution might differ from the results reported here is not known.

Third, our results do not indicate causality between accelerated learning, financial aid, and the academic outcomes of interest. Planning studies that utilize experimental designs such as that of Goldrick-Rab et al. (2016) could help advance our understanding of the impact of these programs on Hispanic FGCS. Fourth, though our study generates various data points about Hispanic FGCS and Hispanic non-FGCS, it is important to remember that our analyses were done only at one institution. A multi-institutional study that includes a diverse sample of institutions could be used to confirm and expand our findings.

Fifth, our analysis considered the race/ethnicity category "Hispanic" as a variable to quantify Hispanic FGCS. However, this variable alone does not indicate one's level of acculturation (e.g., someone whose ethnic background is Hispanic might not necessarily identify with the Hispanic or Latino culture). Future research should analyze the effects of FGCS status by acculturation. Further, subsequent research should examine how the "intersectionality" (Cabrera, 2011) of multiple identities (e.g., FGCS, Hispanic, low SES) is contextualized through

institutional practices in a way that continues to place individuals who share these identities at an educational disadvantage (relative to those who do not share these identities). Without a deeper understanding of these issues, it will be difficult to design efficacious *and* equitable programs and services.

Conclusion

In the current study we found that Hispanic FGCS tend to have lower cumulative first-year GPAs on average and lower first-to-second year retention rates than Hispanic non-FGCS. However, we found that having successfully participated in accelerated learning opportunities in high school was associated with a significant increase in Hispanic FGCS' cumulative first-year GPAs relative to those who did not participate in accelerated learning. We also found that receiving financial aid was associated with a significant increase in Hispanic FGCS' likelihood of re-enrolling in the same institution for their second year of college. These results suggest that these types of programs help to reduce the gaps in first-year outcomes between Hispanic FGCS and their Hispanic non-FGCS peers. Given that Hispanic college students are currently – and projected to remain – the most likely minority group to be FGCS (Balemian & Feng, 2013; Skomsvold, 2014), future research and practice that increases our knowledge about Hispanic FGCS and implements programs, services, and supports that benefit them would be valuable.

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Appendix A
ACT Engage Scale Definitions

Academic discipline: The amount of effort put into schoolwork and the degree to which the student is perceived as hardworking and conscientious.

Academic self-confidence: The extent to which the student believes he/she can perform well in school.

Commitment to college: The student's commitment to staying in college and getting a degree.

Communication skills: How attentive the student is to others' feelings and how flexible the student is in resolving conflict with others.

General determination: The extent to which the student strives to follow through on commitments and obligations.

Goal striving: The strength of the student's efforts to achieve objectives and end goals.

Social activity: How comfortable the student feels meeting and interacting with people.

Social connection: The student's feelings of connection and involvement with the college/school community.

Steadiness: The student's responses to strong feelings and how he/she manages those feelings.

Study skills: The extent to which the student believes he/she knows how to assess an academic problem, organize a solution, and successfully complete academic assignments.