Latinx Student Assets, College Readiness, and Access: Are We Making Progress?

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Abstract: While previous research has focused on the continuing educational disparities between the growing Latinx population and other racial/ethnic groups, this study focuses on the importance of the assets and enrichment opportunities that determine variability in Latinx student college access. Using the nationally representative 2009–2016 High School Longitudinal Study data, the authors employed multivariate analyses to study the effects of five asset bundles considered student endowments, including indicators of college readiness, on the number of college applications and the selectivity of the institution Latinx students decided to attend. The results indicate that differences in college readiness (high school GPA, AP credits) and material resources (Pell grants, student belief in parents' ability to afford selective colleges) are the main predictors of not only being strategic in the college application process but also result in more selective college enrollment where students' chances of college completion are higher. Asset bundles, however, do not completely explain social identity disparities based on gender and English language learner status. Further research is needed to advance asset-based models for Latinx students and the social mobility of students from low-income backgrounds and other social identities.

Keywords: Latinx college students; college access; college readiness; asset bundle theory; selective institutions

1. Introduction

Increasing the access and college readiness of students has become a central policy goal in the U.S., as the attainment of a postsecondary education is a catalyst for social mobility and necessary to meet the economic demand for an educated workforce [1]. However, American higher education also continues to be a vehicle of social stratification and inequality, and Latinx students (as well as other students of color) are not equally represented in higher education or in the nation's most selective colleges, despite the fact that they will compose over a third of the workforce by 2050 [2]. Currently, there are 56.5 million Latinx people in the U.S, which accounts for 17.6% of the total U.S population. In comparison, in 1980, Latinx people made up only 6.5% of the total U.S population [3]. This growth has made Latinx people the youngest and largest non-white ethnic/racial group in the United States [3].

Despite the overall growth of Latinx people, only 15% of Latinx people aged 25 or older have at least a bachelor's degree [3]. Latinx students face several barriers in the educational pipeline, often fueled and compounded by interconnected marginalized social identities. For example, Covarrubias (2011) found that 30% of all high income Chicanx students will earn a bachelor's degree while only 3% of low-income Chicanx students will do the same [4]. Overall, Latinx students maintain the lowest levels of college completion in comparison to other racial/ethnic groups [3,5]. However, when disaggregating results by differences within this population, it is evident that socio-economic status and college

readiness shapes the college trajectories of Latinx students significantly [6]. In order to improve the social mobility of Latinx people and fulfill the societal need for an educated workforce, research on Latinx college access is needed to improve college preparation practices in schools and colleges.

1.1. Purpose

The purpose of the study is to examine Latinx students' postsecondary trajectories, including college readiness and access to college, to determine student assets that minimize extant disparities in socio-economic status and other social identities. We hypothesize that many qualified and talented students still face considerable issues related to college access, and that assumptions regarding choice espoused by various models have not focused specifically on Latinx college-going behaviors. Previous research has shown that Latinx students, especially from low-income families, are significantly less likely than high school graduates from all other racial/ethnic groups to apply to more than one college, take the SAT by their senior year, or attend their first-choice college [6]. We review these areas, as well as asset indicators, to determine Latinx application rates and where they attend college to assess whether progress has occurred in more current cohorts, or if opportunities have been further constrained since research was conducted on previous cohorts.

Latinx students are severely underrepresented in selective institutions and are heavily concentrated in community colleges and less selective institutions, and yet, those who attend selective institutions are more likely to graduate from college [7,8]. High achieving low-income students who qualify for selective institutions also often pay less for their education than similarly qualified students who went to less selective institutions [9]. It may well be that low representation may have to do with college readiness, or other factors that determine how and whether Latinx students are gaining access at expected rates. Looking at application rates and college choice helps to paint a broader picture of the state of Latinx students in higher education, as college enrollment rates alone fail to explain Latinx college-going behavior.

1.2. Literature Review and Conceptual Framework

While other researchers have used several college choice models to study access [10–12], scholars have begun to show how some models do not adequately capture Latinx college-going behavior and the impact of social identities [6,13]. We chose to test an asset-based framework that recognizes students' social identities to guide our analyses. Johnson and Bozeman (2012) proposed an Asset Bundle Model that combines the scientific and technical human capital (STHC) model with social identity contingencies (SIC) theory [14]. Asset bundles are the "specific sets of abilities and resources students develop to help them succeed in educational and professional tasks" [14] (p. 3). According to the theory, as the students' asset bundles develop, their insecurities and disadvantages stemming from status differences based on social identity will diminish. Thus, "by acknowledging the ways in which social identities shape students' experiences and development of assets, the Asset Bundle Model has the potential to help advance minority students" and their transition to college [14] (p. 9). This is especially important in the context of this paper, where the critical bridge between high school and postsecondary education is examined. Although the authors contend that these assets are interrelated, we opted to test the independent effects of measures that represent each of the asset bundles. We also modified the framework to study Latinx students' socialization for college that influence college-going behaviors, which is described further in the next sections.

This literature review addresses previous research that support asset bundles that include *educational endowments, family expectations, college-going socialization, financial/material resources, and network development*. For example, *educational endowments* refer to the quality of students' educational experiences that result in fruitful outcomes. This includes the level of high school course work, performance (GPA), and standardized testing opportunities. All of these are forms of college readiness that are defined as the academic preparation a student needs to enroll and be successful in college credit-bearing classes [15]. College readiness indicators aim to quantify

academic preparedness, which is considered a key predictor for college completion [16]. Scholars have determined that variables like GPA [17], standardized test scores [18], AP classes [19], and the level of math completed [16] are strong predictors of whether a student will attend postsecondary education. The more students engage in opportunities for college preparation coursework, and perform well, the more likely it is that they will enroll in higher education.

Scholars have also examined the importance of influential *family expectation* measures in their models such as parental education and parental expectations [20,21], with more educated parents encouraging sons and daughters to pursue the best colleges [8]. Furthermore, familial college knowledge gained from a parent's bearing a college degree is instrumental in a student's college-going behavior. Namely, if the student's mother has a college degree, students are more likely to decide to pursue a postsecondary education given the college navigational capital they receive [22].

Given their focus on STEM fields, Johnson and Bozeman (2012) used science socialization as one of the assets in their framework. However, we focus on college-going behavior for Latinx students, and so we adapted this asset to fit the study's objective and look at Latinx student college-going socialization in lieu of science socialization. *College-going socialization* describes the development of a college-going identity by learning the norms and requirements necessary to navigate the college application and choice process. Although peer influence is an important factor in college access and choice [23], we focus on authorities whose job it is to assist or educate students about the process. Such individuals provide students with institutional knowledge to navigate pathways in schools [24].

Thus, in our model, college socialization is measured by whether or not students have met with high school counselors regarding college admission, as well as participating in college preparatory programs that are designed to inform and assist student access and choice. Research has found that college counselors influence the college trajectories of Latinx students, as they are a primary source of college admissions and financial aid information [25–28]. Meeting with college counselors can have positive effects like increasing the number of applications that Latinx students submit [27]. However, research has also found that many low-income Latinx students attend high schools that lack counselor resources or have high student to counselor ratios, at times exceeding 1000 students to 1 counselor [26,29]. High school counselors have been found to have lower expectations of low-income Latinx students, which results in biased information relayed to the student about their college prospects [26]. This can manifest through counselors steering Latinx students toward community colleges or less selective institutions [26].

College preparatory programs are a tool that can aid in positive college-going socialization for Latinx students as they can enrich students' educational endowments and provide accurate admissions and financial aid information [30,31]. They can increase family involvement in the college application process [32], increase the likelihood that students apply for financial aid, pursue certain majors like STEM, and attend more selective universities [33]. College preparatory programs help to build cultural and social capital for Latinx students, which facilitates their selection and transition to colleges and universities.

Financial/material resources are another asset bundle that refers to the amount of financial resources students acquire to attend higher education such as having received financial aid in the form of Pell grants and parental financial support for education. Research has demonstrated that low-income Latinx students do not have adequate access to the financial aid information necessary to understand how to pay for college [26,28,29]. The high prices of colleges and universities are likely to give low-income students and their families "sticker shock" as the stated cost of colleges often exceeds the annual income of low-income families [34]. The sticker shock that students and their families experience lead them to believe that a college education is unaffordable, especially one at an elite private institution [34]. This leads to a lack of financial aid awareness for students and families, which results in overestimating the costs of college, underestimating available financial aid resources, and misjudging their potential college opportunities [35]. This perception is detrimental because research has shown that high achieving low-income students who attend a highly selective institution

have a greater likelihood of graduating and often pay less than students who went to a less selective institution [7,9]. As mentioned previously, college preparatory programs can help demystify the financial aid process and help students access the best colleges they qualify for. An example of this can be found in the Princeton University Preparatory Program (PUPP), which encourages participants to apply to schools that fit their academic needs but also provide substantial financial aid packages with as few loans as possible [36].

Network development is also important because it is critical for students to be around peers who aspire to pursue a postsecondary education. Students oftentimes gain important information about college from others as a form of social capital [37]. Prior research has delved into how friends and family have an influence in Latinx students' college-going behavior. Latinx students are more likely to claim friends and family as their primary reason for enrolling in a particular institution [37,38]. As a form of social capital, family and peers are known to encourage students to take certain steps towards a college education such as taking standardized tests, advanced courses, and seeking college prep programs. Latinx students expressed that family and friends served as primary social contacts in providing information about the institution and applications process [37].

2. Method

2.1. Data Source and Sample

This study used federally-licensed survey data from the High School Longitudinal Study of 2009 (HSLS: 2009–2016). The HSLS is a nationally representative, longitudinal study of over 23,000 9th graders from 940 schools in 2009. This study had its first follow-up in 2012, and its second follow-up in 2016. In the HSLS, students were followed throughout their secondary and postsecondary years. The survey included students, their parents, math and science teachers, school administrators, and school counselors. We used measures that came from student surveys, parent surveys, and high school transcripts to construct the measures for the Asset Bundle Model. The sample included 2064 (weighted) Latinx students who graduated high school or received their high school completion such as the GED. We focused on Latinx students who graduated from high school or were college bound, 40.3% of which were from low-income families earning less than $35,000 a year.

2.2. Measures and Analyses

First, we analyzed the percent distribution of Latinx students across several college-going behaviors and student characteristics. Then, using multivariate linear regression, we predicted whether or not specific asset bundles affect college-going behaviors on two dependent variables: the number of college applications submitted, and the level of selectivity of the college in which they enrolled. The value of using multivariate linear regression in this case is to (1) assess the independent effect and strength of multiple measures of different asset bundles, and (2) assess the overall model (proportion of variance explained) or viability of the theoretical framework for predicting college choice and enrollment. The number of applications submitted is an important measure in obtaining greater chances of not only being admitted but also in obtaining a better financial aid package from institutions, according to non-profit college prep programs that help underrepresented groups get into the best colleges for which they are qualified [39].

Independent variables were selected based on prior literature assessing social identity characteristics (family income obtained from parents' surveys, gender, English language learner), and accounting for measures that align with the asset bundles of educational endowments, family expectations, socialization for college, financial/material resources, and network development. Most measures originate from student surveys, unless otherwise specified here and in Appendix A. Educational endowments included college readiness measures such as high school GPA in academic courses (from students' transcripts), whether or not the student took the SAT, number of AP course credits earned, taking Algebra II or higher level math; family expectations or cultural capital was

measured by mother's education and expectations for degree achievement reported in parents' surveys; college socialization was measured by student reports of meeting with a high school counselor about college admission, and participation in college prep programs on the survey (see Appendix A); material resources included having received financial aid in the form of Pell grants and parental financial support for attending specific types of colleges; network development included peer networks such as talking with friends about going to college, and number of friends taking the SAT. In addition, we assessed the geographic location of the high school, comparing suburban schools with rural, small town, and urban/city schools as a measure of college-going cultures that differ by high school location and potentially access to resources. See the Appendix A for exact measures of all variables, scale ranges, means and standard deviations.

2.3. Missing Data

Several variables in the analysis contained missing data as a result of unit non-response. In order to account for the missing data, a careful missing data analysis using the SPSS software was conducted. First, we ran Little's missing completely at random test (LMCR) and the results indicate that the data were not missing completely at random (MCAR). Next, we examined the missing value patterns in order to determine whether or not data were missing at random (MAR) or not missing at random (NMAR). This analysis determined the direction to follow for multiple imputation. After careful analysis of the missing value tables, we identified that the most common missing value pattern was one which indicated that no missing value patterns were present across all variables. Although the most common pattern was no missing values, there were patterns with missing values across several variables. Since these numbers were much lower, we determined that multiple imputation would be the most appropriate method for handling missing data. Finally, multiple imputation for missing data was accomplished using the SPSS software, which also calculated the most appropriate method for the multiple imputations, and we subsequently used pooled results for the findings.

2.4. Analyses

Descriptive statistics were run on all measures of the model to evaluate each variable and initiate appropriate recoded measures for establishing categories and collapsing response categories where necessary. See Appendix A Table A1 for final descriptions of each variable. Pearson correlations were run and multivariate hierarchical linear regressions were used to evaluate the independent contribution of each variable, accounting for all other measures in the model. This helped to determine how results may differ from previous research as well as identify new findings about this cohort of Latinx students, while also testing the Asset Bundle Model.

3. Results

First, it is important to note that 13.9% of the original HSLS Latinx HS graduate sample did not apply to any college by 2016. Table 1 shows the multivariate results for predicting the number of colleges that Latinx students applied to before enrolling in college. This dependent variable is a proxy for being strategic about one's college choice and is often an attempt to get the best financial packages from a variety of colleges that meet students' interests. The Asset Bundle Model accounted for 32% of the variance in the dependent variable. Pearson correlations indicate that the typical pattern is for low-income and English language learners to submit significantly fewer college applications than their peers. However, this relationship changes, in that these differences between Latinx students' social identities become nonsignificant when asset bundles are controlled in the multivariate model, especially educational endowments, socialization for college, and material resources. In contrast, there are initially no gender differences as indicated by the Pearson correlation, but as the educational endowments are introduced in the model, we find that Latinas are significantly less likely ($p \leq 0.01$) than Latinos with similar assets to apply to a high number of colleges. This is a suppressor effect, as Latinas tend to earn higher grades than men, but once GPA is held constant, we find that equally high

achieving Latinas apply to fewer colleges. It may well be that Latinas (relative to men) face additional barriers or lack of support for increasing their opportunities during the college application process. We find similar results for selective college attendance, elaborated further in the discussion section.

The results show that all educational endowment measures are significant predictors of applying to a larger number of colleges, with high school GPA in academic coursework and the number of AP credits being among the strongest predictors ($p \leq 0.001$). This indicates that the more college ready Latinx students are, the more likely they are to be strategic in applying to college. Family expectations also play an independent role in increasing the number of college applications, especially having a mother with at least some college education ($p \leq 0.05$). Parents' expectations for degree achievement are also important but do not have an independent contribution to the dependent variable when all other measures are controlled in the model. College socialization is key, as we find that Latinx students who met with college counselors to discuss college admissions were likely to apply to more colleges ($p \leq 0.001$). However, participation in college prep programs (surveyed in this study) showed a weaker initial effect and was not significant once all other assets were controlled in the model.

Table 1. Multiple regression predicting number of college applications (weighted $N = 2064$ Latinx students).

Independent Variables	r	Std. B	Standard Error	t-Value	*p*-Value
Social Identities					
SES-Family Income:					
<$35,000	−0.050 ***	0.100	0.115	0.868	0.385
$35,000–75,000	−0.001	−0.165	0.120	−1.375	0.169
$75K+ (referent)					
Gender (female)	0.024	−0.267 **	0.097	−2.755	0.006
English Language Learner	−0.085 ***	−0.205	0.205	−1.004	0.315
Educational Endowments					
HS GPA	0.437 ***	0.753 ***	0.085	8.875	0.000
Taken Algebra 2 or higher	0.282 ***	0.329 *	0.132	2.498	0.012
Taken SAT	0.200 ***	0.564 ***	0.107	5.263	0.000
Credits earned in AP Courses	0.397 ***	0.197 ***	0.026	7.509	0.000
Family Expectations					
Mother's Education	0.193 ***	0.288 *	0.129	2.242	0.028
Parents' Expectations	0.205 ***	0.029	0.118	0.241	0.813
Socialization for College					
Met with HS counselor in 2012–2013 on College Admission	0.298 ***	0.738 ***	0.110	6.686	0.000
Participated in College Prep Program	0.038 *	0.128	0.096	1.338	0.181
Material Resources					
Offered Pell Grant	0.298 ***	0.516 ***	0.123	4.193	0.000
Complete FAFSA	0.231 ***	0.148	0.116	1.281	0.200
Belief that parents can afford highly selective private college	0.250 ***	0.160 ***	0.219	7.118	0.000
Belief that parents can afford 4-year public in-state college	0.236 ***	0.201	0.121	1.666	0.101
Network Development					
Friends Taking SAT	0.241 ***	0.055	0.043	1.256	0.216
Student discussed attending college with friends	0.121 ***	0.195	0.178	1.098	0.274
High School Location					
Rural	−0.055 ***	−0.305 *	0.146	−2.092	0.036
Town	−0.058 ***	−0.196	0.115	−1.698	0.089
City	0.051 **	0.052	0.027	1.916	0.055
Suburb (referent)					
Adjusted R^2 = 0.32					

Note: Measures were weighted using the high school transcript weight (WHSTRANS) to adjust for nonresponse bias and reflect the original sample size. * $p \leq 0.05$; ** $p \leq 0.01$, *** $p \leq 0.001$. *Source*: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, 2009–2016.

Perhaps one of the most important findings is the extent to which Latinx students assess their material resources or affordability in making applications to college. Latinx students are more likely to apply to more colleges when they are eligible and receive Pell grants, or when they believe that parents

indicate they can afford highly selective private colleges ($p \leq 0.001$, respectively), but not significantly so when they think they can afford a four-year public in-state college ($p \leq 0.10$). It is important to note that this information was reported by students' impressions of parental willingness to finance particular types of colleges. It is not unusual when many college choices exist in urban areas compared to rural areas to find that Latinx students in rural schools ($p \leq 0.05$) were significantly less likely to apply to many colleges compared to peers in suburban schools (referent category), whereas Latinx in urban city schools were somewhat likely to apply to more colleges. These latter findings, however, were of marginal significance and are much more dependent on other assets students acquire. Peer networks were also initially important in applying to colleges but were not significant when all other assets were accounted for in the model. It may well be that peer networks have an indirect effect via these assets in college application.

Once Latinx students submit college applications, it is important to understand where they elect to attend. Table 2 shows the results from analyses predicting the level of selectivity of the college attended by all Latinx students (n = 1504, weighted) attending some type of postsecondary institution by the time of the follow-up survey in 2016 (excluding those attending less than two-year institutions). The Asset Bundle Model accounted for 47% of the variance in the dependent variable. Similar to the first analysis, low-income Latinx students were significantly less likely to attend a more selective college but the difference in income levels diminished once all other asset bundles were taken into account in the model. The results show that English language learners were significantly less likely to be attending a selective college than native English Latinx students ($p \leq 0.05$). In accordance with findings for application rates, Latina females were also less likely than males to be enrolled in selective colleges by 2016 after controlling for all assets ($p \leq 0.05$). In the case of attending selective colleges, asset differences (including college readiness indicators) do not completely explain these social identity disparities. This suggests that other potentially limiting social factors are at play.

Given the high level of selectivity of many institutions, it is not surprising to find that the strongest predictors in this model include students HS GPA and credits earned in AP classes ($p \leq 0.001$, respectively). Although over 900 colleges have gone SAT optional in recent years, having taken the SAT was still a significant predictor of Latinx students attending some of the nation's most selective colleges ($p \leq 0.05$) in 2016.

In terms of family expectations, students whose mothers have had at least some college tend to go to more selective colleges ($p \leq 0.01$). While meeting with a high school counselor was initially significant, it was less important once other Latinx student assets were taken into account. No other college socialization measures made a significant difference in attending a selective college.

All material resources were initially significant predictors of attending a selective college. However, receiving a Pell grant and belief in parents' ability to afford a four-year public in-state college were the most significant predictors of attending a selective institution ($p \leq 0.001$, respectively), as well as belief in parents' ability to afford a private highly selective college ($p \leq 0.01$).

Peer networks were also initially significant in determining whether a Latinx student enrolled in a more selective college. However, having most of their friends taking the SAT ($p \leq 0.001$) significantly determined attending a selective institution, indicating a peer norm. It is important to note, however, that most Latinx students applied to less selective institutions in the sample. In terms of high school location students coming from rural high schools were significantly less likely than those from suburban schools to be attending a selective college.

Table 2. Multiple regression predicting selectivity of college attended (weighted *N* = 1504 Latinx students).

Independent Variables	r	Std. B	Standard Error	t-Value	*p*-Value
Social Identities					
SES-Family Income:					
<$35,000	−0.028 ***	−0.042	0.047	−0.890	0.374
$35,000–75,000	−0.150	0.027	0.053	0.505	0.614
$75K+ (referent)					
Gender (female)	0.035	−0.090 *	0.037	−2.418	0.016
English Language Learner	−0.120 ***	−0.187 *	0.087	−2.156	0.031
Educational Endowments					
GPA	0.531 ***	0.397 ***	0.032	12.308	0.000
Taken Algebra 2	0.292 ***	0.049	0.059	0.841	0.400
Taken SAT	0.161 ***	0.070 *	0.041	1.955	0.051
Credits earned in AP Courses	0.519 ***	0.099 ***	0.009	10.658	0.000
Family Expectations					
Mother's Education	0.195 ***	0.135 **	0.049	2.774	0.006
Parents' Expectations	0.007	−0.007	0.005	−1.368	0.173
Socialization for College					
Student met with HS counselor in 2012–2013 on college admission	0.191 ***	0.083	0.043	1.914	0.056
Participated in College Prep Program	−0.014	−0.001	0.035	−0.022	0.982
Material Resources					
Offered Pell Grant	0.355 ***	0.189 ***	0.041	8.746	0.000
Complete FAFSA	0.185 ***	0.055	0.049	1.137	0.256
Belief that parents can afford highly selective private college	0.185 ***	0.228 **	0.081	2.806	0.007
Belief that parents can afford four-year public in-state college	0.286 ***	0.192 ***	0.042	4.522	0.000
Network Development					
Friends Taking SAT	0.330 ***	0.076 ***	0.017	4.571	0.000
Student discussed attending college with friends	0.171 ***	0.071	0.071	1.002	0.318
High School Location					
Rural	−0.011	−0.122 *	0.055	−2.245	0.025
Town	−0.043 *	−0.084	0.047	−1.797	0.072
City	0.055 *	0.003	0.014	0.192	0.847
Suburb (referent)					
Adjusted R² = 0.47					

Note: Measures were weighted using the high school transcript weight (WHSTRANS) to adjust for nonresponse bias and reflect the original sample size. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. *Source*: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, 2009–2016.

4. Discussion

This is the first empirical test of the Asset Bundle Model framework [14] that indicates a productive way of framing Latinx student assets (rather than deficits) that are predictive of access and college type enrollment, and, therefore, can be addressed. This study establishes that while it is important to maintain a laser focus on college readiness to enhance Latinx students' educational endowments for college access and success, other assets are critical to students' opportunities for access to the best colleges for which they are qualified. For example, we found that observed income differences in college access and choice among Latinx are largely accounted for by the asset bundles associated with educational endowments, financial/material resources that are acquired through federal aid as well as parental signals about resources for college, college socialization opportunities, family expectations and peer networks. However, other social identities reveal a different pattern. Holding assets constant, Latina students continue to reveal distinct disadvantages in numbers of applications to college and enrollment in selective colleges that cannot be explained by differences in college readiness, which is consistent with earlier studies [40,41]. Research has indicated that high achieving Latinas may feel pressure or responsibility to attend college closer to home and forgo selective college opportunities, reporting family tension and parental disapproval when they chose to move away to attend college [8]. Latino males with similar assets may not experience the same pressures. ELL status students are also less

likely than students with similar assets to enroll in a selective college. Subsequent work that explores intersecting identities, social contexts, and historical time period may lead to a deeper understanding of why disparities persist among Latinx students with otherwise strong assets. The study also updates findings from previous Latinx college access studies based on earlier cohorts, more limited models, and data on Latinx students [6,37,40]. The last two decades reflect the increasing enrollment of Latinx students in higher education and the creation of more Hispanic Serving Institutions (HSIs). This study establishes that the question of progress is more complex and there is a need to focus on access to a resource-stratified higher education system. It requires a deeper examination of persistent equity and opportunity disparities within this growing population.

With over 40% of the Latinx college-going sample from low-income backgrounds, and rising college costs that affect perceptions of affordability, it is not unusual to note the importance of students' material resources for determining college enrollment. Receiving a Pell Grant was among the most significant predictors of attending a selective college, which indicates that many Latinx students are largely dependent on federal aid for improving their college opportunities. Researchers have estimated that current Pell grant levels have not kept pace with college costs, and that there is still "complexity and confusion" regarding Pell eligibility and the application process that may affect "those who are on the fence about college for financial reasons" [42] (p. 10). Although many selective colleges have begun to offer complete aid packages for students from low-income families, many students and their parents may not be aware that they qualify academically and are financially eligible. Parental ability to afford selective, private colleges or a four-year public in-state college also influences where Latinx students decide to enroll. More research is needed to understand the choices of Latinx students that may be particularly sensitive to rising college costs. Latinx students from rural high schools have fewer choices (as indicated by application rates) and are less likely to enroll in selective colleges compared with those from urban or suburban high schools. Together, these findings confirm that material resources and access to resources in schools continue to play an important role in college-going behavior.

In terms of college socialization measures that were added to the theoretical model, we found that meeting about college admission with a counselor was important to being strategic about the number of college applications Latinx students submitted. However, it played no significant role for enrolling in a selective college after accounting for other asset bundles. This is presumably because actual decisions have much to do with offers of aid and family discussion that weigh in Latinx students' decisions. College prep programs in this study also did not have an independent effect over and above the other asset bundles. It may well be that these programs share variance with these assets or select for these characteristics in their enrollment. More specific studies are needed to understand their broad-based effects. Each program has its own evaluations but a more systematic research synthesis of these programs is necessary to advance college socialization for Latinx students from schools with low college-going rates. These programs are still necessary because few students have access to significant college counseling due to under-resourced high schools that lack college counselors/resources or have staggering student to counselor ratios [26,29].

Several key implications for practice emerge from this study. First, while many initiatives have focused on making students college ready from an academic standpoint, the asset bundles suggest several factors that also must be addressed. Given the findings, state and local policies must continue to upgrade the curriculum to offer more college prep courses, as well as AP credit courses. High school curriculum quality is wanting and limited resources persist in predominantly Hispanic high schools. Many more Latinx students can be encouraged to apply to several colleges, instead of only community colleges, to not only improve chances of admission but to also obtain better aid packages. Some four-year colleges already share a common application, but providing opportunities to apply to multiple colleges for free and with a single application will help Latinx students consider a broader range of colleges. Second, the results indicate that affordability is a driving factor in improving college opportunity. Continuing national efforts to simplify application for financial aid will ensure access to federal aid (Pell grant), which is critical in Latinx college choice and enrollment. Selective institutions

should also widely advertise the institutional aid available to low-income students since research indicates that they will actually pay less at a selective college and potentially eliminate the need to work off campus. Third, continuing to build college socialization experiences and networks in high schools involving counselors, teachers and peers, especially in rural and underserved areas is needed. Coupled with postsecondary institutional efforts to recruit prospective students, this will help develop a college-going culture and establish peer networks that create high attainment expectations as a norm accompanied by communities of support. Making the college prep coursework more widely available, coupled with targeted counseling for specific social identity groups, as well as exam preparation can improve students' opportunities. Solving the college access and equity dilemma for Latinx students is imperative to increase their social mobility, as their numbers continue to grow and they are destined to enter the U.S. workforce.

Limitations

This study explores only the direct effects of the Asset Bundle framework, using independent measures for each of the asset bundles in explaining Latinx college choice and access. We needed to first understand the viability of the model before testing interrelationships or positing indirect relationships. For example, it may well be that prep programs have primarily indirect effects, working through mediator variables and processes (counseling, coaching, preparation) to increase students' chances of application and admission to more resourced institutions. Future research may explore total, direct, and indirect effects, as well latent constructs with additional survey items. In terms of student identities, although the HSLS dataset is nationally representative of all high school students, Latinx identity groups are not disaggregated and we were unable to explore differences among different Latinx ethnicities. Similarly, the sample had very few undocumented students as far as we were able to identify with survey questions. Future studies can develop more work on particular target groups to ensure we understand heterogeneity in assets and outcomes for these Latinx students.

Appendix A

Table A1. Variables in the Model, Means and Standard Deviations.

Dependent Variable	Response Codes	Mean	Standard Deviation	Data Source
Number of College Applications	Continuous 1–29	3.07	2.74	Student Survey
Selectivity of Institution	1 = Less than two-year 2 = Two-year 3 = Inclusive Four-Year 4 = Selective Four-year	2.95	0.93	Student Survey
Independent Variables				
Socioeconomic Status: Family Income	1 = yes, 0 = No < 35K 1 = yes, 0 = No 35K–75K 75K+ (referent)	0.41 0.31 0.28	0.47 0.43 0.42	Parent Survey
Gender/Female	1 = Male (referent) 2 = Female	1.55	0.49	Student Survey
English Language Learner	1 = Yes, 0 = No	0.04	0.11	Student Survey

Table A1. *Cont.*

Dependent Variable	Response Codes	Mean	Standard Deviation	Data Source
GPA	Continuous < 1.0 to 4.0	2.71	0.68	HS Transcript
Taken Algebra II	1 = Algebra II or higher 0 = Less than Algebra II	2.34	0.29	Student Survey
Taken SAT	1 = Yes, 0 = No	0.43	0.49	Student Survey
Credits Earned in AP courses	Continuous 0–13	1.29	2.13	Student Survey
Mother's Level of Education	1 = Some college 0 = No college	0.41	0.49	Parent Survey
Parent's Expectations for degree achievement	1 = High School or less 2 = Some College 3 = College Graduate +	2.84	0.47	Parent Survey
Has met with a high school counselor about college admission	1 = Yes, 0 = No	0.76	0.42	Student Survey
Participated in a College Prep Program	Count variable: Participated in any of the following: (MESA, AVID, GEAR UP, Talent Search, Upward Bound)	1.48	1.01	Student Survey
Offered Pell Grant	1 = Yes, 0 = No	0.42	0.49	Student Survey
Completed FAFSA	1 = Yes, 0 = No	0.81	0.40	Student Survey
Belief that parents can afford highly selective four-year institution	1 = Yes, 0 = No	0.09	0.28	Student Survey
Belief that parents can afford four-year public institution	1 = Yes, 0 = No	0.60	0.49	Student Survey
Friends taking the SAT	1 = None 2 = less than half 3 = about half 4 = more than half 5 = all of them	3.49	1.35	Student Survey
Student discussed attending college with friends	1 = Yes, 0 = No	0.93	0.26	Student Survey
High School Location				Common Core Data/Private HS Survey
Rural	1 = yes, 0 = No	0.23	0.42	
Town	1 = yes, 0 = No	0.08	0.27	
Suburb (referent)	1 = yes, 0 = No	0.37	0.48	
City	1 = yes, 0 = No	0.32	0.47	

Source: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Survey, 2009–2016.

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