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7. WHY THE STATUS QUO ISN'T GOOD ENOUGH – EXAMINING STUDENT SUCCESS FOR DIVERSE POPULATIONS IN THE UNITED STATES

INTRODUCTION

Attending college and earning a degree remain key to improving one's life chances and social mobility. In fact, in the early 21st century we have entered an era in which attending higher education and obtaining a degree are now in many countries the minimum threshold for entry into the middle class (Carnevale et al., 2010; Rothwell, 2012). Thus it is not surprising that demand for tertiary education continues to rise. Between 1990 and 2006, total world enrolment more than doubled from 68.7 million to 139.4 million. Eastern Asia witnessed the largest growth over this period with enrolments increasing from 10.6 million in 1990 to 36.7 million in 2006, an astounding growth rate of 346% (OECD, 2008).

And yet, even with universal access to higher education for students seeking admittance to the U.S. system and elsewhere, there has not been a concurrent increase in educational attainment (Roksa, 2011) nor a decrease in societal inequality (Dwyer et al., 2013). In fact, in recent decades and exacerbated after the great recession in 2007, social inequality has been increasing in the U.S. and other major economies such as Germany, France, and the UK (Grusky et al., 2011; OECD, 2014).

Despite this, higher education institutions are often held up as sites that are equitable and in which stratification differences are ameliorated rather than perpetuated (Astin & Oseguera, 2004). However, scholars and policy makers argue that despite increases in access to higher education by underrepresented groups, the *type* of access remains highly stratified, with high socioeconomic status students gaining disproportionate access to the most selective institutions (Astin & Oseguera, 2004; Kozol, 2005). And these qualitative differences in access have increased in recent decades (Posselt et al., 2012). Given the gaps in preparation and continuing gaps in retention and degree completion, it has become important to understand whether higher education institutions are contributing to societal inequality through their policies and current practices. Specifically, it is pivotal to examine whether students from families with higher socioeconomic status (SES) have an advantage over their peers that may result in higher success and degree completion rates.

Given these overarching trends and a dearth of studies that focus on the impact of socioeconomic factors on student success (Chen & Des Jardins, 2010; Goldrick-Rab

R. M. O. Pritchard et al. (Eds.), Diversity and Excellence in Higher Education, 109–131.

et al., 2009), this chapter examines six-year degree completion by income groups. In particular, the model seeks to examine what student and institutional characteristics influence the likelihood of graduating from a 4-year institution in the U.S. At the student level, in addition to family income, wealth, and other social and cultural capital measures, this study incorporates socio-demographic characteristics, pre-college and college experiences, sources of financial support, and level of academic preparation. At the institutional level, the model seeks to analyse how institutional context, particularly structural-demographic characteristics, campus climate, and organizational behaviour affect students' chances of obtaining a degree.

LITERATURE REVIEW

Over the past decades, student success in postsecondary education, particularly persistence and degree completion, has been of interest to scholars from various disciplinary fields. To study these outcomes, higher education researchers have often resorted to interactionist theory and Tinto's (1993) model of student departure. However, other conceptual frameworks have been applied successfully to explain persistence decisions that can lead to degree attainment, for instance the student attrition model (Bean, 1980) and the student/institution engagement model (Nora, 2004).

Drawing mostly on human capital theory (Becker, 1980) and price response theory (Heller, 1997; Leslie & Brinkman, 1987), economists have focused on financial aspects of student college-going behaviour. However, scholarly attention has centred mostly on aspects of student access to postsecondary education and institutional choice, less on persistence and degree completion (Chen, 2008; St. John et al., 2000). Sociologists have also contributed immensely to our understanding of student persistence and college departure, for instance through status attainment theory (Blau & Duncan, 1967) and Bourdieu's (1986) social and cultural capital theory. More recently, organizational theorists started to investigate in more detail how the college environment can impact on student behaviour and various outcome measures. To examine potentially influential factors, scholars have focused on aspects of institutional behaviour (Berger & Milem, 2000; Bolman & Deal, 2008), student/peer climate (Hurtado & Carter, 1997; Oseguera & Rhee, 2009), and, most recently, resource-dependency of institutions (Pfeffer & Salancik, 2003).

Despite these various approaches across academic disciplines and the advance in our understanding of factors that influence student success in higher education, there is much we still need to comprehend. As Chen (2008) and St. John, Cabrera, Nora, and Asker (2000) note, the bulk of research has focused on individual persistence decisions and student departure. The specific factors and processes that can impact on *degree completion*, however, have received considerably less attention. To improve our understanding and overcome limitations in the literature, this study draws from the *heterogeneous research approach* to study degree attainment for students across income/SES groups (Chen, 2008; Franke, 2014). This approach builds on earlier

studies examining student behaviour differentiated by socioeconomic groups and assumes that student success is best understood when using multiple theoretical perspectives (Perna, 2006).

Taking account of Chen's (2008) and Franke's (2014) work, the present chapter draws upon several models in sociology, economics, organisational theory and persistence studies in higher education. From sociology, it draws from status attainment theory and incorporates elements to capture social and cultural capital effects (Bourdieu, 1986; McDonough, 1997). To study economic effects, it invokes human capital theory (Becker, 1980); to conceptualise institutional influences, we draw from organizational impact theory (Berger & Milem, 2000). In accordance with the heterogeneous research approach, hypothesised influences are integrated into the general conceptual framework, which also builds on theoretical models and empirical evidence on student success (Nora, 2004; Nora & Cabrera, 1996; Tinto, 1993).

CONCEPTUAL MODEL

For the organization of the conceptual model, the chapter draws from Titus's (2006) and Franke's (2014) multilevel approach and conceptualises student-level and institutional-level influences on six-year degree attainment (see Figure 1).

Student-level characteristics and experiences hypothesised to impact upon the individual's probability of degree completion are displayed in the top section of Figure 1, whereas institutional-level influences are shown in the bottom part. Drawing from conceptualizations in Tinto (1993) and Nora (2004), student-level influences are organised temporally to better reflect the trajectory of students from secondary into postsecondary education. The model incorporates three main phases: pre-college phase, transition from high school to higher education, and college attendance phase. Pre-college characteristics and experiences, and influences during college have been conceptualised in most theoretical/empirical models on persistence and student departure (Bean, 1980; Nora, 2004; Tinto, 1993). The transition phase, in contrast, has not been explicitly theorised; educational commitments and goals have been used to 'link' pre-college and college constructs. Using a process-oriented perspective and drawing from the conceptualisation of intertemporal linkages in the literature (Franke, 2014; Paulson & St. John, 2002), the transition phase is included to better model influences and decisions during this crucial (re)orientation-phase for individuals.

Each of the phases contains multiple variable blocks, representing characteristics, influences, and experiences specific to the individual phase that are hypothesised to affect degree attainment. In addition, each phase incorporates pull factors, hypothesised to negatively impact degree completion, in extension of Bean's (1980) and Nora's (2004) work. Furthermore, each phase contains economic/financial factors in a separate variable block. Since the institutional context only influences the *average* likelihood of degree completion at an HEI, there is no *direct* influence

on the individual's chances of graduating: hence the separation of individual and institutional blocks.

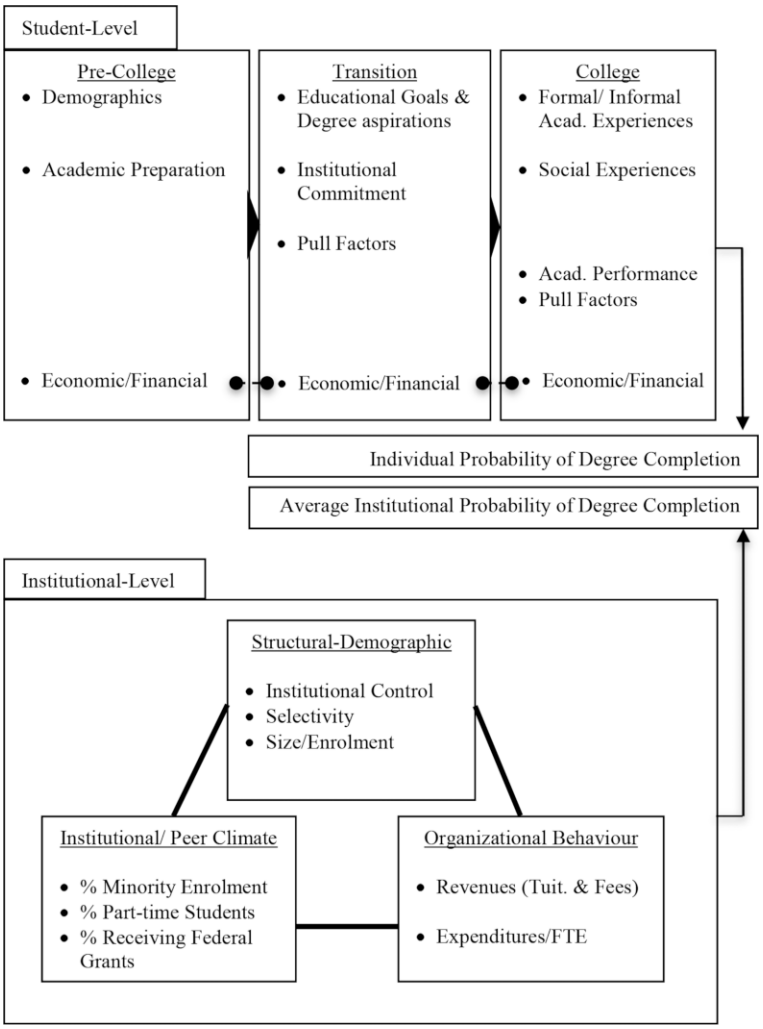

Figure 1. Conceptual model

The second main section (bottom part) of the conceptual model shows institutional-level influences on student degree completion. Drawing from organizational impact theory (Berger & Milem, 2000) and conceptual models in the literature (Oseguera & Rhee, 2009; Titus, 2006), incorporated measures are hypothesised to impact the average institutional probability of degree attainment in three sectors. In contrast to

the student level, sectors are not ordered temporally, as measures and characteristics represent different influential aspects of the normative context that are not causally or temporally linked.

Drawing from previous work, the model seeks to account for contextual effects, such as institutional control (public or private), selectivity, and size (measured through total enrolment). These characteristics are incorporated into the structural-demographic sector. Building upon Berger and Milem's (2000) organizational impact model and the literature on peer group effects and peer climate (Astin, 1993), it focuses on two additional sectors: institutional context & climate, and organizational behaviour. Measures in the institutional context and climate block seek to capture the effects on student degree attainment resulting from shared patterns of organizational life and individuals' perceptions of these patterns. For this, we include measures of part-time students, share of minority students, and proxies for institutional income/SES, such as proportion of students receiving federal grants. Measures for institutional revenue (tuition and fees) and expenditure (core expenditure per full-time student) are incorporated to test the influence of organizational behaviour.

METHODOLOGY

This study examines student-level and institutional-level influences on six-year degree attainment at 4-year colleges and universities in the U.S. In particular, the model examines how socioeconomic status and related measures affect students' likelihood of obtaining a baccalaureate degree. To better account for the nested data structure, this study employs a multilevel modelling approach.

The main research questions guiding this study are:

- What background characteristics, pre-college and college experiences influence six-year degree completion for dependent, full-time students at 4-year institutions in the U.S.?
- To what extent does socioeconomic status affect the potential for obtaining a degree, after controlling for student- and institutional-level influences?
- Accounting for individual-level characteristics, which institutional-level factors influence students' likelihood of degree attainment?

Data Source, Sample, and Dependent Variable

For this study, three primary data sources are used. Student level data are drawn from the latest version of the Beginning Postsecondary Students survey (BPS: 04/09), a national dataset collected by the National Center for Education Statistics (NCES). The BPS: 04/09 is a longitudinal, nationally representative database containing detailed persistence and degree attainment data and information on a variety of individual-level aspects such as students' background, educational goals, and academic and social experiences in college. Institutional level data are drawn from

the Integrated Postsecondary Education Data System and the Delta Cost Project, also NCES datasets.

The full BPS: 04/09 dataset comprises 16,680 students with broad educational and occupational pathways, for instance first-time beginners in postsecondary education starting at 2-year or 4-year institutions, studying part-time or full-time. The sample for this study is restricted to full-time, dependent students who enrolled in Bachelor's granting degree programs at 4-year institutions in 2003–04. Due to significant differences in financial aid awards, analyses were further limited to U.S. citizens and permanent residents; student athletes have been excluded. The final analytical sample in this study encompasses N = 6,561 students attending N = 651 four-year colleges and universities in the U.S.

The dependent variable is degree attainment status six years after initial enrolment and coded (1) for students who received a four-year degree at the initial institution of enrolment, and (0) for students who did not.

Analytic Approach

To estimate effects, this study uses Hierarchical Generalised Linear Modelling (HGLM) to examine factors impacting upon degree completion at the student and institutional level and better account for the nested data structure (Raudenbush et al., 2004). For the analyses, adjustments for complex survey designs are incorporated through the Taylor series linearization procedure in MPlus 7 (Levy & Lemeshow, 2008).

Prior research examining persistence and degree completion has frequently ignored the nested structure of students within institutions (Chen, 2008; Hossler et al., 2009). Only in recent years and through the proliferation of advanced statistical techniques, such as Hierarchical Linear Modelling, have scholars begun to account for student-level and institutional-level influences on these crucial student outcomes (Oseguera & Rhee, 2009; Titus, 2006).

Hierarchical Linear Modelling (HLM), or Multilevel Modelling, is an appropriate statistical technique to analyse clustered data. The approach provides a statistical model that allows examination of the distinct effects of individual/student-level and institutional-level variables. For this, HLM separates variance occurring at the different levels in the analysis to produce more reliable estimations of predictors and standard errors. Given the binary outcome variable in this study, Hierarchical Generalised Linear Modelling is used. HGLM, also known as generalised linear mixed models, is a special case of HLM that allows examination of a binary dependent variable, using a Bernoulli sampling distribution.

At the student level, variable blocks included in the model represent characteristics and experiences at the three main phases of the empirical model: pre-college and background characteristics, measurements on the transition from secondary to postsecondary education, and college experiences. The latter also incorporate various financial aid measures. The variables included in the institutional-level describe how

the context at 4-year colleges and universities affects the student's average likelihood of completing a Bachelor's degree within six years. These variables include structural-demographic, institutional context/climate, and organisational behaviour measures, and are sequentially entered into the analysis. For ease of interpretation, results will be reported as delta-P statistics (d-P) (Cruce, 2009; Petersen, 1985).

FINDINGS

Descriptive Statistics

The overall six-year degree completion rate for dependent, full-time students enrolled in a Bachelor's degree program at a 4-year institution in 2003–04 was 59.8%. Thus less than two thirds of the students in the U.S. obtain a baccalaureate degree within six years at their initial institution of enrolment. This aggregate statistic masks an important underlying trend. When assessing degree attainment rates across income groups (see Table 1), the data show that only 46.0% of the students coming from low-income backgrounds obtain a degree within this timeframe. This compares with 55.6% for lower-middle-income students, 62.1% for upper-middle-income students, and 70.2% for their high-income peers.

The data also show that more women attend 4-year institutions as full-time, dependent students. Women are more strongly represented among low-income and lower-middle income students with 57.8% and 59.5%, respectively. Gender distribution among upper-middle and high-income students is somewhat more balanced, with 55.4% and 53.2%, respectively.

Table 1. Selected descriptive statistics – full-time, dependent students enrolled at 4-year institutions in the United States (Percent)

	All Students	*Income Groups*			
		Low	*Lower Middle*	*Upper Middle*	*High*
Variable	(N=6,561)	(N=1,342)	(N=1,575)	(N=1,665)	(N=1,979)
Six-year degree completion (DV)	59.8	46.0	55.6	62.1	70.2
Gender: Female	56.2	57.8	59.5	55.4	53.2
White	70.3	41.2	68.5	79.5	83.2
African American	8.6	20.5	9.4	5.3	2.7
Latino/a or Hispanic	10.1	22.6	10.6	6.0	5.0
Asian	5.8	10.5	5.8	3.9	4.3
Other race/ethnicity	5.2	5.1	5.7	5.3	4.7
English is primary language	90.0	74.5	89.7	95.2	96.1

With regard to race/ethnicity, more than three-fifths (70.3%) of the population are White, compared to 8.6% African American, 10.1% Latino/a or Hispanic, 5.8% Asian, and 5.2% students identifying as other race/ethnicity. African American, Latino/a, and Asian students are more concentrated in the low and lower-middle income groups. Generally, representation declines for these racial/ethnic groups as income increases; from 20.5% to 2.7% for African Americans, 22.6% to 5.0% for Latino/as and Hispanics, and 10.5% to 4.3% for Asian students across the four income groups.

Student-Level Influences

It was hypothesised that various measures and characteristics during the pre-college, transition, and college attendance phase would predict the outcome variable. In the final model, fourteen student-level (level-1) variables are statistically significant in addition to four financial aid-related measures; seven pre-college, two transition, and five college experience measures. All results are reported in Table 2 and will be discussed in the following section.

Pre-college phase. Among students' background characteristics, age (whether students are 19 years or older) shows a significant negative association with degree completion. Students older than 18 are 4.93% ($p < .01$) less likely to obtain a degree when compared to their younger peers. Thus, individuals delaying entry into higher education or deciding to attend college or university after pursuing other post-high school options have a higher risk of not completing their degree within six years.

Gender is also found to be a significant predictor of degree attainment, with women being 5.3% ($p < .01$) more likely to graduate than men. This confirms general findings in the literature about the success of women in postsecondary education (Pascarella & Terenzini, 2005) and shows that women not only access higher education in greater numbers in the U.S.; they also have higher chances of obtaining a baccalaureate degree.

Interestingly, with regard to race/ethnicity none of the included groups was found to differ significantly when compared to their white peers. Once pre-college, transition, and college attendance characteristics and experiences are taken into account, a student's racial/ethnic background does not seem to influence the likelihood of degree attainment within six years.

Also parental education was not found to affect the likelihood of obtaining a degree, a result that is somewhat surprising. However, as this study sought to test the independent effects of family income and parental education – in contrast to an aggregated measure for socioeconomic status (Sewell et al., 1969) – results for this cohort suggest that the former (income) may influence student degree attainment to a much larger degree than the latter (education, see below).

It has been hypothesised that parental family status exerts an influence on student success in higher education. Results reported in Table 2 show that, compared to

Table 2. HGLM model results predicting six-year bachelor's degree completion

	Final model (N = 6,430)				
	C	*S.E.*	*p*		*d-P*
Student-level variables (Level 1)					
Pre-college					
Demographic					
Age: 19+ years	–0.204	0.068	0.003	**	–4.93
Gender: Female	0.220	0.076	0.004	**	5.30
African American (White)	–0.160	0.164	0.330		
Latino/a or Hispanic (White)	–0.120	0.152	0.427		
Asian (White)	–0.188	0.170	0.270		
Other race/ethnicity (White)	–0.168	0.151	0.265		
English is primary language	–0.204	0.158	0.197		
Parental educ.: High school or less (BA)	–0.038	0.103	0.711		
Parental educ.: AA degree (BA)	–0.165	0.099	0.094		
Parental educ.: MA or higher (BA)	–0.030	0.094	0.748		
Parents: Single parent (Married)	–0.544	0.239	0.023	*	–13.40
Parents: Div./separated/wid. (Married)	–0.135	0.091	0.137		
Academic preparation					
Admission test scores	0.032	0.029	0.257		
High school GPA	0.194	0.045	0.000	***	4.56
Private high school attended	0.080	0.091	0.380		
Economic/financial factors					
Low income (<$32k) (High)	–0.489	0.153	0.001	**	–11.70
Low-mid income ($32–$59k) (High)	–0.288	0.116	0.013	*	–6.79
Up-mid income ($60–$91k) (High)	–0.172	0.095	0.069		
Parents own investment >$10k	0.174	0.074	0.019	*	4.15
Transition					
Educ. goals & institutional commitment					
Master's degree aspiration (BA)	0.148	0.085	0.083		
Doctorate aspiration (BA)	0.132	0.105	0.209		
Prof. degree aspiration (BA)	0.067	0.126	0.593		
Chose institution b/c of reputation	0.194	0.076	0.011	*	4.69
Chose institution b/c of location	0.108	0.082	0.185		
Plan to transfer	–1.089	0.099	0.000	***	–26.57

(Continued)

Table 2. (Continued)

	Final model (N = 6,430)				
	C	*S.E.*	*p*		*d-P*
Pull factors					
Chose institution for pers./family reasons	–0.008	0.072	0.912		
Parents expected to get a job	0.015	0.102	0.883		
Economic/financial factors					
Chose inst. for financial reason	0.082	0.076	0.282		
College					
Academic and social experiences					
Live on campus	0.680	0.093	0.000	***	16.54
Academic integration index	0.001	0.010	0.918		
Social integration index	0.023	0.008	0.003	**	0.55
1–10 hrs volunteering (no volunt.)	–0.018	0.079	0.820		
11–20 hrs volunteering (no volunt.)	–0.129	0.149	0.385		
20+ hrs volunteering (no volunt.)	–0.090	0.145	0.533		
Major declared	0.063	0.081	0.440		
GPA in first year	0.091	0.006	0.000	***	2.17
Pull factors					
1–10 hrs working (not working)	–0.070	0.113	0.533		
11–20 hrs working (not working)	–0.133	0.113	0.239		
20+ hrs working (not working)	–0.458	0.132	0.001	**	–11.19
Distance from home	–0.098	0.028	0.000	***	–2.38
Economic/financial factors					
Federal need-based grants	0.053	0.034	0.118		
State need-based grants	0.000	0.037	0.995		
Institutional need-based grants	0.033	0.012	0.006	**	0.79
Institutional merit grants	0.026	0.012	0.033	*	0.62
Federal subsidised loans	0.014	0.025	0.556		
Federal unsubsidised loans	–0.070	0.031	0.025	*	–1.69
Unmet financial need	0.022	0.008	0.004	**	0.53
Institutional-level variables (Level 2)					
Structural-demographic					
Control: Private	–0.145	0.112	0.195		
High selectivity (Mod. selectivity)	0.135	0.104	0.196		

(Continued)

Table 2. (Continued)

	Final model (N = 6,430)				
	C	*S.E.*	*p*		*d-P*
Low selectivity (Mod. selectivity)	–0.309	0.132	0.019	*	–7.63
Other selectivity (Mod. selectivity)	–0.052	0.185	0.780		
Size/enrolment	0.066	0.050	0.185		
Institutional context and climate					
Pct. minority enrolment	0.007	0.003	0.025	*	0.17
Pct. of part-time enrolment	–0.009	0.004	0.023	*	–0.22
Pct. receiving federal grants	–0.015	0.005	0.003	**	–0.36
Organisational behaviour					
Tuition & fees as pct. of core revenue	–0.003	0.003	0.399		
Core expenditures per FTE	–0.020	0.143	0.890		
Variance component	0.157	0.051	0.002	**	
Loglikelihood	–3349.9	17.91			
Explained variance at Level-2[+]	0.822				

** p < .05, ** p < .01, *** p < .001*

[+] Based on calculation using unconditional model variance component; 0.881, p < .001

Notes: Reference groups are displayed in parentheses.
Analysis of BPS:04/09. Sample includes N=6,561 students attending N=651 institutions.
Student and institutional-level data weighted by disaggregated WTA000 weight.

married parents, students coming from single parent households are noticeably less likely to finish college successfully. Examining effects in the final model, these students are 13.4% ($p < .05$) less likely to obtain a degree within six years. However, students whose parents are either divorced, separated, or where one parent has passed away, are no more or less likely to graduate, when compared to their peers with married parents.

Pre-college academic preparation has been found influential on student persistence and degree completion in much of the literature (Astin, 1993; Pascarella & Terenzini, 2005), thus was included in this study. Results confirm that high school GPA is a significant and positive predictor of degree completion.

Final estimates show that for every one-unit increase in high school GPA, students are 4.56% ($p < .001$) more likely to graduate. This generally shows the importance of the elementary and secondary school system and confirms that prior academic achievement and adequate preparation at the high school level are highly predictive of success in postsecondary education. Results further show, however, that admissions test scores – such as ACT or SAT[1] – and private/public control of the

high school attended are less predictive of degree completion, once other student and institutional level characteristics have been incorporated.

Family income, a central measure in this study, has been found influential on student persistence and degree completion in the literature; significant effects also occur here. Results show that, after controlling for all student- and institutional-level variables, low-income and lower-middle income students are significantly less likely to obtain a degree than their high-income peers. More specifically, individuals from the lowest income strata are 11.7% ($p < .01$) less likely to graduate – this is the second largest effect among background characteristics. Lower-middle income students are also found to have significantly lower chances of obtaining a degree (6.79%, $p < .05$), when compared to their high-income peers. No statistically significant effect is found for upper-middle income students, although a negative association is also found.

A less examined relationship in the literature on persistence and degree completion is the impact of family wealth. Wealth in this study is incorporated through a variable indicating whether students' parents owned investment greater than $10,000. Interestingly, this measure shows significant, positive results in the estimation. In the final model, data show that students whose parents owned such investments are 4.15% ($p < .05$) more likely to obtain a degree within six years. This confirms the hypothesised independent impact of family wealth on degree attainment that has also been reported in recent studies (Jez, 2010; Pfeffer, 2011).

Transition. During this phase, multiple variables were entered into the analysis to capture students' educational goals, institutional commitment, and economic/financial influences.

Educational aspirations and goals have been found influential on student outcomes such as persistence and degree completion (Walpole, 2007). Given the importance of these motivational aspects, four aspiration indicators were included in the model with the reference group being aspiration towards a Bachelor's degree. When examining results, however, none of the included measures remain significant, indicating that once all student, institutional and financial aid measures have been incorporated, degree aspirations may play a less important role in degree attainment.

To capture students' institutional commitment (or lack thereof) and assess the impact of potential pull factors based on previous findings in the literature (Nora, 2004; Nora et al., 2005; Tinto, 1993), five measures were tested in the model. Variables included measures for the process of school choice that are hypothesised to influence persistence and degree completion (students choose institution because of reputation, location, or personal/family reasons) and pull factors (initial plan to transfer and parents' expectation of getting a job while in college). Of the variables entered in this block, two measures showed significant results. Data in Table 2 show that students who choose a particular college because of its reputation are 4.69% ($p < .05$) more likely to obtain a degree from this institution within six years.

Results for initial transfer plans, particularly the magnitude of the effect, are astounding and generally confirm the negative influence on degree attainment that has been previously found in the literature (DeAngelo et al., 2011; Oseguera & Rhee, 2009). Data show that students who entered a college or university already with the intention of transferring are 26.57% ($p < .001$) less likely to graduate within six years. Using t-estimates to assess the strength of the effect (not reported here), this is the second most influential predictor overall, and largest negative predictor of six-year degree attainment. This underscores the importance of the institutional selection and college choice process for students, and may have far-reaching consequences for campus administrators and policy makers seeking to improve persistence and degree completion from a campus perspective. Although the measure used in this study does not provide any information on the reason for students' transfer intentions or alternative plans (transfer to another 4-year institution, transfer to a 2-year or other institution, or departure from higher education entirely), the finding in this study underscores the importance of measuring students' initial goals and commitments.

Lastly, based on St. John, Cabrera, Nora, and Askers' (1996) work, the model sought to establish whether students chose the institution they attended for financial reasons. However, results show no significant effect for this measure.

College experience. Based on the conceptual framework, three variable blocks were simultaneously inserted at this phase – measures seeking to capture students' academic and social experiences, pull factors, and financial aid measures.

Students' academic and social experiences during college affect college impact, persistence, and degree completion: they are key elements upon which we draw for the present study. Based on early conceptualizations (Bean, 1980; Tinto, 1993), we incorporated six measures for the social and academic integration dimension. In particular, an effort was made to estimate the effects from students' living arrangements, formal academic interactions, social integration and volunteering, choice of major and academic performance in the first year.

Consistently, students' living arrangements have been found influential on student success (Adelman, 2006; Astin, 1993; Tinto, 1993). Examining the effect on six-year degree completion in this study, results show that living on campus is also one of the strongest predictors of success in this analysis. Students who live on campus, opposed to off-campus housing, are 16.54% ($p < .001$) more likely to graduate with a Bachelor's degree. This finding highlights the important role that living on-campus can play in integrating students into collegiate life. It also indicates that institutions primarily attended by commuting students, and unable to provide on-campus housing opportunities, should consider alternative ways to improve student integration and, subsequently, persistence and degree completion.

Based on Tinto's (1993) work, aspects of students' academic and social integration were examined through two composite measures in the dataset. Results show that, in accordance with previous findings (Braxton & Lee, 2005), the degree to which students are integrated *academically* does not influence six-year degree

attainment. However, *social* integration – a measure capturing multiple dimensions of students' social interaction on campus – is found to positively predict completion of a Bachelor's degree. Results in the final model show that for every 1/10th increase in the social integration index, students are 0.55% ($p < .01$) more likely to graduate within six years. This finding is consistent with the literature (Braxton & Lee, 2005; Pascarella & Terenzini, 2005) and underscores the importance of considering factors such as peer interaction, informal faculty interaction, and validation. It also shows that institutions, in addition to providing on-campus living for their students, can increase degree completion rates, for instance through institutionally provided social activities and other strategies that strengthen informal interaction with fellow students.

Student volunteering, also hypothesised to positively influence the outcome measure (Astin, 1993), failed to produce significant results. With regard to students' chosen academic discipline, this study examined the effect of a dichotomous measure indicating whether students had declared a major in their first year. However, this measure was also found to be non-significant in influencing degree completion.

Academic performance, often expressed through students' grade point average, is another key measure in student persistence and degree attainment. Results in Table 2 underscore the importance of this positive predictor of degree attainment and show that, in the final model, for every one-tenth increase in college GPA, students are 2.17% ($p < .001$) more likely to graduate. Thus, for a full digit increase in GPA (measured on a 4-point scale), students are 21.70% more likely to obtain a Bachelor's degree within six years.

Using t-statistics (not reported), college GPA in the first year is the strongest predictor of six-year degree completion. This finding substantiates the importance of academic performance during the freshman year – a time when students get acquainted with their new environment – for long-term college success. Assessing one's own potential to succeed and, subsequently, weighing the likelihood of obtaining a Bachelor's degree at the chosen institution appears to be the single most influential determinant of overall degree attainment. Thus, supporting students in this evaluation process may provide an avenue for institutions to increase persistence and completion rates.

The model sought to test the effect of working on the labour market while enrolled in college (reference group 'not working') and the distance the institution is located away from a student's home. Consistent with findings in the literature (Cuccaro-Alamin & Choy, 1998; Titus, 2006), results show that students spending (or having to spend) more than 20 hours working while enrolled full-time in college are significantly less likely to graduate. Data show that individuals working so many hours are 11.19% ($p < .01$) less likely to obtain a Bachelor's degree, compared to students who were not gainfully employed. Although fewer work hours also show a negative association in the estimated parameters, results were not statistically significant. Also distance from home is found influential on six-year degree attainment. Results show that for every percent increase in the distance between the

college attended and a student's home, individuals are 2.38% ($p < .001$) less likely to obtain a degree.

Table 2 lists the estimated influence of various forms of financial aid on six-year degree attainment. Results show, institutional need-based aid and merit aid increase the likelihood of degree completion, whereas unsubsidised, federal Stafford loans[2] lower chances of obtaining a degree. In particular, for every $1,000 increase in institutional grants, a student's chance of degree attainment increases by 0.79% ($p < .01$) for need-based and 0.62%, $p < .05$) for merit aid. Interestingly, grant aid from federal and state sources is not found to significantly affect six-year degree completion. However, results ought to be interpreted with caution as previous research has shown that estimations of financial aid effects may suffer from endogeneity and selection bias, thereby underestimating effects, particularly for low-income students (Cellini, 2008; Dowd, 2008).

Beyond grant aid, the model also tested the effects of loans on degree completion. Data in Table 2 show, federal subsidised loans are not found to significantly affect the outcome measure. However, unsubsidised loans appear to negatively impact chances to graduate by 1.69% ($p < .05$) for every additional $1,000 borrowed during the first year. Given the dramatically rising cost of attending college and subsequent increasing amounts that individuals borrow to finance their education, this is an interesting finding. Particularly the effect size for loans, compared to either not significant or noticeably smaller positive effects for other forms of financial aid, shows that unsubsidised loans may be detrimental to overall student success.

Institutional-Level Influences

In addition to student characteristics and experiences, the model also tested institutional influences, grouped in three variable blocks. Based on previous research, three structural-demographic measures were tested in the first variable block: institutional control (public or private), selectivity, and size of the college, measured in overall enrolment. Results in Table 2 show that attending a private institution does not influence the average likelihood of degree attainment in six years. Although positive effects for private institutions have been documented in the literature on four-year degree attainment, the results provide support for more recent findings showing less impact on six-year completion rates (Oseguera & Rhee, 2009; Titus, 2004, 2006).

Institutional selectivity, in contrast, is found to significantly influence student degree attainment. Estimates show, individuals attending high selectivity institutions – initially hypothesised to support degree attainment – are not significantly more likely to graduate when compared to students attending moderately selective institutions. However, students at low selectivity colleges and universities are 7.63% ($p < .05$) less likely to graduate within six years. Generally, this confirms scholarly work that finds selectivity (in general) influential on students' likelihood of degree completion (Oseguera & Rhee, 2009; Titus, 2004). Results reported in this study,

however, paint a more nuanced picture of institutional influence. When compared to moderately selective institutions, high selectivity colleges and universities do not increase chances of graduating, but low selectivity institutions significantly lower students' chances of degree attainment.

To capture effects of institutional context and peer climate, the model incorporates three measures in the second variable block. Results show, the share of minority students attending a particular institution exerts the only positive impact on the average likelihood of degree attainment. For every one percent increase in the share of minority students on campus, average chances of degree completion increase by 0.17% ($p < .05$). This finding confirms the positive influence that a more diverse learning environment can have on student success (Laden et al., 2000; Rhee, 2008). In light of the continued discussion of the benefits that diversity can have on student learning and outcomes (Hurtado et al., 2003; Hurtado et al., 1997) and renewed discussion of affirmative action policies in higher education (Allen, 2005), this provides further evidence of the overall benefits of more inclusive college and university environments.

Results further show that both the share of students that are enrolled part-time and the share of students receiving federal need-based grants on campus negatively impact student degree attainment. Results remain significant in the final model, showing that for every percent increase in the share of part-time students on campus, the average likelihood of degree completion decreases by 0.22% ($p < .05$). The effect for the share of students receiving federal grants on campus is even larger, as with every one percent increase in the share of recipients the average probability of obtaining a Bachelor's degree decreases by 0.36% ($p < .01$). Although not necessarily surprising conceptually, these results are interesting. After controlling at the student level for financial and socioeconomic measures such as family income, wealth, education and financial aid, aggregated social and cultural capital (or lack thereof) from the student body appears to create a contextualised negative effect on the average likelihood of degree completion. In other words, attending an institution with more low-income and part-time students significantly lowers chances to graduate above and beyond individual-level influences. It could be argued that these effects might be influenced by the financial strength of an institution. However, negative effects remain significant even after revenue and expenditure measures are incorporated in the final model. Although the model employed here is limited to two measures found influential in previous research and no significant results were found for either revenue or expenditure measures, contextual effects for structural-demographic and institutional context remain significant.

DISCUSSION

This study examines student-level and institutional influences on six-year degree attainment. In addition to pre-college, transition, and college experience measures, the paper particularly focuses on the effect of family income and related socioeconomic

factors on a student's potential to obtain a degree at his or her initial institution of enrolment. At the institutional-level, the impact of structural-demographic characteristics, institutional context and climate measures, and organizational behaviour are studied.

One of the salient findings of this study is the support for notions of social reproduction theory and the impact of social and cultural capital (Blau & Duncan, 1967; Bourdieu, 1986; Sewell et al., 1969). When compared to their high-income peers, students from the lowest two income backgrounds are 11.7% and 6.79%, respectively, less likely to graduate within six years with a Bachelor's degree. This difference in the probability of degree attainment is even more compelling, as the estimation accounts for such important influences as student high school background, academic performance, educational aspirations, and college experience.

At the same time, family wealth positively influences degree completion, independent of income. Although the measure used in this study does not represent entire family wealth (which is often difficult to assess), results show that students whose parents own investments larger than $10,000 are 4.15% more likely to graduate within six years – even after controlling for family income. This finding certainly necessitates further inquiry. However, it confirms recent results in the literature where wealth appears to exert an independent influence on student success, beyond traditional measures of income.

Scholars who found similar negative effects for low-income students on degree completion and related outcome measures provide various explanations, and frequently cite lower academic preparation as a contributing factor. For economists, lower preparation can result in higher psychological costs, which refer to the strain and frustration from having to sit through lectures and reading hard-to-comprehend materials: they are hypothesised to contribute to student attrition. However, this study explicitly controls for multiple measures of academic preparation at the high school level, and includes academic performance in the first year of college. Although these measures cannot assess students' true level of strain and frustration, or their full academic capabilities, they allow us to compare effects on degree completion for students with similar characteristics. Results show that even after controlling for all student-level and institutional-level characteristics – including academic measures – low- and lower-middle income students are significantly less likely to obtain a baccalaureate degree.

An alternative explanation draws upon Bourdieu's concept of habitus and its crucial role for higher education access and success. For low-income students, he hypothesised that their habitus is less likely to include the knowledge and skills necessary to navigate the college environment successfully. Also these students may experience a disconnect between their own low-SES habitus and the perceived middle to high-SES habitus of the college environment. This disconnect can increase the difficulty for such students in adjusting to the college or university attended and, subsequently, lower their chances of persisting and graduating. This notion is supported by the effects for income and wealth found in this study.

Beyond individual characteristics and experiences, the results at the institutional-level provide additional support for social reproduction theory and tangible effects of social and cultural capital for individuals attending various types of colleges and universities. Both the share of part-time students and the share of students receiving federal need-based grants significantly reduce chances of graduating within six years by 0.22% and 0.36%, respectively. Particularly the negative effect for the share of students receiving federal grant aid – a proxy for the average income of students on campus – is very intriguing. In addition to the detrimental effects for low- and lower-middle income students reported in the previous section, the importance of finances and socioeconomic factors also arises at the institutional level. As colleges and universities have been characterised as primary socializing organizations for adults in society, attending an institution with more low-income students who may lack the habitus to succeed in higher education appears to have a contextual, detrimental effect on student development and their chances of obtaining a baccalaureate degree. Thus, coming from a low-income background and attending a college with more low-income and part-time students significantly reduces one's chances of graduating – above and beyond the already lower chances based on individual characteristics. This further highlights the pivotal impact of socioeconomic factors, both at the student and institutional level.

Beyond these findings, various measures have been found significant at the student level. Mostly confirming previous research, results in this study show that women are more likely (5.3%) to graduate with a Bachelor's degree than men. With regard to race/ethnicity, none of the variables display significance in the final model. Thus, once pre-college, transition, and college experience measures are accounted for, a student's racial/ethnic background does not influence the likelyhood of degree completion. Also confirming findings in the literature, older students have a lower chance of degree attainment (–4.93%). Students from single parents also face significant obstacles, as their likelihood of completing a baccalaureate degree reduced by 13.4%.

Traditionally, academic performance has been one of the strongest predictors of student persistence and degree completion. This study also finds highly significant measures for academic preparation in high school and academic performance in college. In fact, first-year college GPA is the strongest predictor of six-year degree attainment. For every one-tenth increase in a student's GPA, his or her chances of completing a degree increase by 2.17%. Not surprisingly, once college GPA is entered into the analysis, the effect of prior academic performance, measured through high school GPA, is reduced. However, high school GPA remains significant throughout the estimation and results show that students' chances of obtaining a degree increase by 4.56% for every unit-increase in high school academic performance.

Interestingly, none of the degree aspiration measures showed significant results in the present study. However, in regard to institutional commitment, results show that students who entered with the intention of transferring very likely did so, as

their chances of graduating were reduced by more than one fourth (26.57%). Also confirming previous findings in the literature, present results show that living on campus noticeably increases chances of graduating (16.54%), whereas gainful employment of more than 20 hours a week while enrolled for full-time study is highly detrimental to students' success (–11.19%). Building on early research on student retention, the present study also finds that social integration into college can increase chances of completing a degree within six years by 0.55%. However, the distance an institution is located from a student's home lowers chances of graduating. Although students may choose to transfer to another four-year institution and graduate within the same time period simply to be closer to home, this study finds that for every one-percent increase in distance, students are 2.38% less likely to obtain a degree. More research is needed to explore possible causes and explanations, as this result could be indicative, for instance, of higher student mobility in the positive case or students having more difficulties integrating into college life when moving farther away.

With regard to the institutional level, it was hypothesised that structural-demographic characteristics would have a strong influence on six-year degree attainment, because some of the variables have emerged as significant in previous studies. However, results reported in this study only partially confirm hypothesised relationships. Institutional control (private) is not found influential on student degree completion, although positive effects of attending a private institution have been documented in the literature. This provides support, however, for recent findings showing that attending a private college or university may be beneficial for degree completion within four years, but may not affect the likelihood of graduating within six years. Thus, students attending a public institution are not more or less likely to graduate with a baccalaureate degree within six years when compared to their peers attending a private college or university.

Institutional selectivity, in contrast, appears to significantly affect student degree attainment. Generally, this confirms previous findings, yet paints a more nuanced picture. The findings in this study show that students attending highly selective institutions are no more or less likely to graduate within six years, when compared to their peers enrolled in moderately selective institutions. Attending a low selectivity college or university, in contrast, is detrimental to one's chances of obtaining a Bachelor's degree within six years (–7.63%). This finding may have implications for policy and campus administrators. It shows that simply becoming more selective in the admission process for already moderately selective institutions does not produce more graduates, as these colleges and universities are not significantly different in their impact on degree attainment compared to their highly selective counterparts. However, providing additional resources and tackling the obstacles for students enrolled in low selectivity and open admission institutions – who mostly are low-income, minority, or first-generation students – may prove effective in raising overall degree attainment rates.

With measures of institutional context and climate, this study sought to capture contextual influences that are less tangible, yet are hypothesised to be highly influential on student persistence and degree completion. Interestingly, the measure for student diversity on campus (share of minority students) is found to impact positively on six-year degree attainment. Results show that for every one percent increase in student diversity, chances of graduating increase by 0.17%. This finding generally aligns with previous research affirming that cohort diversity and supportive campus climates influence student persistence. However, when incorporated as institutional characteristics, the majority of previous work found either no effects or negative effects for this measure. Only recently, Arellano (2011) reported a similar positive effect on six-year Latino/a degree attainment in a national study. The positive effects of student diversity on degree attainment found in the present chapter provide further proof of the benefits of diverse learning environments for student success, elaborated elsewhere in the literature.

CONCLUSION

Educational attainment is important both at the individual and societal level. For the individual, obtaining a baccalaureate degree increasingly becomes a necessity for personal advancement and upward mobility. Among other things, Bachelor's degree holders have access to a much broader job market and enjoy significantly higher lifetime earnings. At the same time, educational attainment is a pivotal element for economic advancement; and both advanced and developing economies rely on colleges and universities to inculcate the knowledge that workers need to remain competitive in a globalised world.

Though higher education institutions are often held up as sites that ameliorate stratification and class differences, results in this study provide further evidence that current policies and institutional practices contribute to existing inequities. Not only are students from the lower income spectrum found to be significantly less likely to obtain a Bachelor's degree than their high-income peers, regardless of institution attended. Their chances to graduate are further reduced through attending less selective institutions or those that enrol proportionately larger numbers of part-time students and individuals receiving federal financial aid.

Given the complexities, there cannot be a one-size-fits-all approach to remedy existing disparities in education access and success. However, this study shows that administrators, faculty, and policy makers, for instance can provide multiple avenues to reduce persistent gaps in educational attainment; they can do this through measures that increase social integration on campus, reduce the need for gainful employment while studying, provide adequate financial aid, or increase intellectual stimulus through diversity on campus. Thus, actively engaging with current realities and developing strategies that fit both the institutional need and student body served may help overcome the status quo in an era of ever increasing demand for post-secondary education.

NOTES

[1] The SAT and ACT are standardised tests widely used in college admissions in the United States.

[2] A Stafford loan is a student loan issued by the federal government and offered to eligible students enrolled in accredited American institutions. A basic form to distinguish Stafford loans is according to their subsidy status, subsidised and unsubsidised, with the latter incurring higher costs to the individual borrower.

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