Immigrant and International College Students' Learning Gaps: Academic and Sociocultural Readiness for Career and Graduate/Professional Education

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Abstract

This mixed-methods study is based on transformative education and asset model, thus challenging conventional deficit view about immigrant and international student groups in American colleges and universities facing the challenges of improving equity and inclusion. Using bachelor's degree completion with full-time job employment or graduate/professional school enrollment as barometers of college success, this study explores undergraduate students' learning gaps in terms of academic and sociocultural readiness. Quantitative analysis of the Beginning Postsecondary Students (BPS) data reveals mixed patterns of college learning gaps: the first-generation immigrant students lagged behind the U.S.-born natives, whereas international students fared relatively well except for full-time job employment. In terms of college major, both immigrant and international groups were overrepresented in STEM fields but underrepresented in humanities and human service fields including education and law. Qualitative analysis of interview cases offers further insights into the immigrant and international students' challenges and strategies for improving inclusive equity.

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The increasing number of immigrant and international student groups raise the challenges of ensuring educational equity and inclusion in American colleges and universities. In spite of the current trends that education levels of immigrants and international students are on the rise (Krogstad & Radford, 2018) and that more than a third of international students pursue postgraduate education in 2017/2018 (Institute of International Education, IIE, 2018), they face increasing challenges due to recent immigration policy changes as well as sociocultural and language barriers (Portes & Rumbaut, 2006; Rumbaut, 2004). Recently, the Trump administration's anti-immigration policies in the midst of pandemic crisis, which have imposed more restrictions on employment opportunities among immigrants and foreigners (The White House, June 22, 2020) and also new restrictions on online learning opportunities among international students on American college campuses (The Department of Homeland Security, July 6, 2020, rescinded later), extend additional challenges.

Meanwhile, the characteristics of immigrant and international students on American college campuses often have been discussed from a deficit view (Fox, 1996; Ryan & Carroll, 2005). While this deficit model perspective has been reinforced by some local studies, it is not supported by national data (Glick & White, 2004; Murphy, 2007). Given that many immigrant students are from poor families and attended schools in their home countries where educational resources are limited, the level of their academic performance and educational attainment relative to their native counterparts in the U.S. (host country) is commendable. Indeed, immigrant and international students, having achieved so much with relatively fewer resources and more barriers, can provide a national "model of strength" or transformation worth studying and emulating (Erisman & Looney, 2007; Li & Beckett, 2006; Ryan & Carroll, 2005).

Theoretical perspectives and research questions

This study is theoretically grounded on the critical paradigm that aids in dismantling in essentialism and ethnocentrism and in which 'higher education is positioned as self-formation'; the host society, institutions, and various other actors related to students' lived experience play an ecological role in the transformative development of student 'agency' and success (Marginson, 2014; Montgomery & McDowell, 2009; Tran & Vu, 2017). In this transformative perspective, immigrant and international students are not viewed as stereotyped participants but as self-forming agents and cultural and linguistic assets to the globally interconnected higher education (Fox, 1996; Li & Beckett, 2006; Rizvi, 2009; Ryan & Carroll, 2005; Summers & Volet, 2008).

Whereas previous studies demonstrated that *high-impact college practices* such as first-year seminars, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity and global learning, service and community-based learning, internships, capstone courses and projects have a pronounced effect on the experiences of underserved students, particularly underrepresented racial minorities (Finley & McNair, 2013; Kuh, 2008), we know relatively little about college education opportunity gaps among immigrant and international students. Understanding the relationship between college environments and students' experience in ecological perspectives (Bronfenbrenner, 2005; Renn & Arnold, 2003) adds theoretical rigor in connecting the multi-layered factors to different student groups' inequitable college experiences and outcomes.

Immigrant students' assimilation and engagement depend largely on the sociocultural context that they encounter in the society, including their perceptions of discrimination and accommodation in schools (Portes & Rumbaut, 2006; Rumbaut, 2004). This can be more

problematic for first-generation college students who tend to have significantly lower college readiness, lower persistence and graduation rates, lower standardized test scores, lower levels of academic and sociocultural engagement, less favorable perception of the college environment, more sociocultural isolation, and less disclosure of stressful life events than continuing-generation college students (Barry et al., 2009; Choy, 2001; Pascarella et al., 2003; Pike & Kuh, 2005; Warburton et al., 2001). The risk can be relatively higher for first-generation college immigrant and international students who have to overcome 'double jeopardy' due to sociocultural and linguistic barriers.

On the other hand, there is highly uneven representation of immigrant and international students in different fields of study. The higher percentage of foreign students, resident aliens and naturalized citizens who spoke languages other than English as children entered STEM fields than did their U.S.-born and English-speaking counterparts (Chen, 2009). This tendency may be related to the avoidance of humanities and social science fields due to English language and sociocultural barriers and their perceptions of job discrimination in the society as well as their relatively stronger math proficiency (Lee, 2008; Sue & Okazaki, 1990). The imbalance of representation between STEM and non-STEM fields among immigrant and international students poses a question about the development of diverse talent pool.

Academic and social collegiate experiences are the primary predictors of college students' persistence and degree completion (Bowen et al., 2009; Pascarella, 1985; Strauss & Volkwein, 2004; Tinto, 1993). Nevertheless, relatively little evidence exists on factors impacting transition from undergraduate education to graduate/professional education. Extending prior research and theory on college access to graduate/professional school access, however, it is important to acknowledge differences between undergraduate and graduate/professional

education. As survival in graduate/professional schools requires more independence and self-initiatives from students, the importance of non-cognitive skills and attributes such as leadership and engagement can be even greater at the graduate level than at the undergraduate level. In order to understand a more complete picture of an applicant's readiness for success, studies identified core personal attributes that deans and faculty have identified as important for success in graduate-level study, including knowledge and creativity, resilience, communication skills, planning and organization, teamwork, and ethics and integrity (Enright & Gitomer, 1989; Reeve & Hakel, 2001; Walpole et al., 2001; Walters et al., 2006). Equal opportunities of high-quality undergraduate education practices such as interdisciplinary and experiential learning not only promote their own success but also strengthen democracy (American Academy of Arts and Sciences, 2013).

Thus, acknowledging that college degree completion with career or graduate education readiness among immigrant and international college students provides an important barometer for monitoring national progress in educational and social equity, this study aims to explore undergraduate students' readiness (gaps) in the areas of academic and sociocultural learning activities. It investigates the readiness gaps, if any, among different student populations and intends to address following overarching questions: (a) how adequate and equal are immigrant and international college students' learning experiences, relative to the U.S-born native counterparts, in terms of their academic and sociocultural readiness for bachelor's degree attainment and subsequent transition into career or graduate/professional education?; (b) how are the immigrant and international students' undergraduate education experiences and possible learning gaps related to the chances of degree completion and subsequent entry into career or graduate/professional education?; and (c) what are the key challenges, opportunities and

strategies for immigrant and international students to improve college success? The research is needed to fill in the gap in the literature on factors impacting college success, particularly among immigrant and international students. It also addresses the need for alternative theoretical paradigms and mixed methods with which to better understand not only academic but also sociocultural factors for career/graduate education readiness that is largely neglected in the literature (Lee et al., 2019).

Methods

To address the fore-mentioned objectives of the research grounded in transformative perspectives on college student development and success and to fill in the gaps regarding underrepresented immigrant and international students in the higher education literature, we designed a mixed-methods study that presents the findings of quantitative and qualitative analyses of complementary nature. This research design allows quantitative comparisons across nationally sampled groups of interest and qualitative accounts of students' lived experience with regard to career or graduate/professional education readiness and college educational engagement.

For the quantitative portion of this study, we used the Beginning Postsecondary Students (BPS) 2004-09 data as compiled by the National Center for Education Statistics (NCES), which provides information on students' transition from college to career (see Appendix for the list of variables used in this study). The target population is all students in the U.S. colleges and universities who started postsecondary education in 2003-04 academic year and ever attended 4-year colleges and universities through 2004-09 period (N = 8,642). The BPS data file contains a set of replicate weights and panel weight which should be used in order to address

disproportionate sampling and nonresponse adjustment. To obtain unbiased estimates of population parameters with accurate standard errors, we applied both replicate weights and sampling weight through the American Institutes for Research's AM software package that carries out balanced repeated replication (BRR) variance estimation method (see Radford et al., 2010).

First, we broke down the analytic sample into four groups: the U.S.-born native students (N = 6,648), the second-generation immigrants (N=1,024), the first-generation immigrants (N=842), and international students (N = 130). This classification is based on the citizenship status variable (U.S. citizen, permanent resident, or foreign/international) and the nationality of both student's and parents' birthplace variables (U.S.-born or foreign-born). Here the U.S.-born native group includes the cases when both students and parents were U.S.-born (i.e., third or later generation) citizens. The second-generation immigrants are the cases when only students, not parents, were U.S.-born citizens, whereas the first-generation immigrants are the cases when both students and parents were foreign-born but currently the U.S. citizens or permanent residents. International students are foreign-born non-resident aliens. The U.S.-born native group is used as the reference group for comparison with immigrant and international groups respectively (see Table 1).

Table 1 here

Second, we examined and compared the status of college completion and subsequent transition to career or graduate/professional education among domestic (the U.S.-born natives and immigrants) and international groups of students. The composite variable of 4-year college degree completion, along with career and graduate/professional education status as of 2009 (i.e., 6 years after the first college entry) is created: 1 = not attained bachelor's degree, 2 = attained

bachelor's degree but neither employed in a full-time job nor enrolled in a graduate/professional school, 3 = attained bachelor's degree and employed in a full-time job, 4 = attained bachelor's degree and enrolled in a graduate/professional school.

Third, we have conducted analysis of students' college learning factors including college major (STEM, business and social sciences, humanities, human service-related majors including education and law), and credit hours earned and GPA. We also examined academic and sociocultural engagement and other college learning experience factors (see Appendix). "Academic Engagement" variable is derived from the student survey of the following activities: had social contact with faculty, talked with faculty about academic matters outside of class, met with an academic advisor, or participated in study groups (reliability coefficient = .94 - .98). "Sociocultural Engagement" variable is derived from the following: attended fine arts activities, participated in school clubs, or participated in intramural or varsity sports (reliability coefficient = .92 - .96). Based on the college transcript data, we also identified *high-impact practices*, the mix of curricular and co/extra-curricular activities that help boost both academic and sociocultural learning; this index includes participation in study abroad, foreign language, co-op or internship, student teaching, advanced math and writing courses, research, and volunteer activities.

Fourth, we conducted a series of logistic regression analyses to explore the relationships between college students' background characteristics, experiences, and outcomes and examine change in the gaps among the U.S.-born native, first- and second-generation immigrant, and international student groups after taking into account their other related background and college experience factors. A multinomial logistic regression model below was applied to examine

college learning outcome gaps among the four student groups and explore the relationships among their college experience and outcome variables in the BPS data.

$$Y_{mij} = \alpha\ (\text{Student Groups})_i + \beta\ (\text{Background Characteristics})_i + \gamma\ \ (\text{College Experiences})_i$$

Y_{mij} is the log-odds of falling into category *m* relative to category *M* for student i in school j; $Y_{mij} = \log(P_{mij} / P_{Mij})$ for which m = 1 (earned a bachelor's degree but neither employed in a full-time job nor enrolled in graduate/professional schools), 2 (earned a bachelor's degree and employed in a full-time job), and 3 (earned a bachelor's degree and enrolled in graduate/professional schools). The reference group is those who did not finish 4-year college and earn a bachelor's degree within six years after college entry (including dropouts and stopouts).

Further, another multinomial logistic regression model below was applied to examine college major choice gaps among the student groups and explore the relationships among college readiness factors and STEM vs. non-STEM major choices in the BPS data.

$$Y_{mij} = \alpha\ (\text{Student Groups})_i + \beta\ (\text{Background Characteristics})_i + \gamma\ \ (\text{College Experiences})_i$$

Y_{mij} is the log-odds of falling into category *m* relative to category *M* for student i in school j; $Y_{mij} = \log(P_{mij} / P_{Mij})$ for which m = 1 (Business & Social Sciences), 2 (Humanities), and 3 (Human Services including Education, Law, Social Work, etc.). The reference group is those who chose STEM major for bachelor's degree.

In addition to our secondary analysis of nationally sampled data, we conducted one-on-one interviews of undergraduate and graduate students (N = 18) in a large public research university to conduct in-depth case studies on college student career and graduate/professional education readiness and engagement. This university is selected among ones with reputed institutional policy for internationalization and innovation, ranked among top 25 public universities in the U.S. in terms of the number of international students.

Our interview data collection and qualitative data analysis procedure is as follows. Each of the eighteen eligible students responded to our study team's online invitation sent to randomly selected student groups of the purposefully selected campus. The interview participant group consisted of 18 undergraduate and graduate students who are diverse in terms of gender (11 men and 7 women), race/ethnicity (7 Asians, 6 Whites, 3 Blacks, 1 Latinx, and 1 Native American), immigrant/international student status (8 U.S. natives, 5 immigrants, and 5 international students), and undergraduate majors (7 social sciences, 5 humanities, 4 STEM majors, and 2 human services). All participants' names presented in this paper are pseudonyms to protect confidentiality and anonymity.

The procedure for our semi-structured interview—either in-person or online scheduled according to the interviewee's preference and availability—was adapted from Seidman's three-interview series (2013) to create a dialogic space so as to (a) build trust, (b) establish the context of their college learning experience, (c) detail the relevant college learning experience, and (d) reflect on their meaning making. Each one-time interview with 14 guiding questions regarding career and graduate/professional education readiness was conducted in English, a common language for communication between the interviewee and the interviewer; it took approximately 30 minutes on average. Introspective field-notes were particularly instrumental in fulfilling the objectives for the first two parts of the procedure and conducting Preliminary and Descriptive Analyses. Data for the other two parts of the interviews (794 minutes in length in total) were audio-taped upon consent and transcribed verbatim, which enabled the next steps of data analyses with constant comparison and inductive coding for Focused Analysis and Natural Generalizations (Spradley, 1980). To aid in these further analyses of the interview data, we used NVivo 12 software and researcher's developmental log that included annotated field-notes and

analytical and literature memos to conduct critical discourse analysis with focus on student narratives serving as a cultural tool that "mediates relationships of power and privilege in social interactions, institutions, and bodies of knowledge" (Roger et al., 2005, p. 367) and then to develop overarching themes that represented a mosaic of students' diverse college learning experiences. In the "Qualitative analyses" section later, we present the following themes together with select exemplar stories regarding diverse college students' learning gaps: (a) outcome of multi-systemic mechanism and (b) sociocultural privilege effect and intersectional synergy of challenges and opportunities.

Results

We present below the findings of the quantitative and qualitative analyses of complementary nature. Quantitative analyses provide the multi-layered state of current college students' academic and sociocultural readiness toward career and graduate/professional education, whereas qualitative analyses offer additional empirical evidence with student-perspective narratives of ecological factors and strategies for self-forming transformations through quality college experiences.

Quantitative analyses

Quantitative analysis of the BPS national sample data led to finding very diverse patterns of 4-year college education outcomes in terms of bachelor's degree attainment, full-time job employment, and graduate/professional school enrollment within the timeframe of 6 years after the fist-time college entry (see Figure 1). For bachelor's degree attainment, 58 percent of 4-year university students completed their college degree in time, whereas remaining 42 percent did not. Among those 58 percent 4-year college completers, we can break them down into three

subcategories: 9 percent of students in the sample were in neither full-time job employment nor graduate/professional school enrollment, whereas 34.5 percent were in full-time job employment and remaining 14.5 percent were in graduate/professional school enrollment.

Figure 1 here

Table 1 summarizes demographic, social and academic profiles among the four groups of 4-year college students in our study sample, including the U.S.-born natives (i.e., third or later generation), the second-generation immigrants, the first-generation immigrants, and the international students. By and large, the immigrant group, particularly the first-generation one, tends to be more disadvantaged than the U.S-born native group. The first-generation immigrants are more likely to be racial minorities (Hispanics and Asians), and have relatively lower levels of parental education and SAT/ACT scores. The international group is predominantly Asians, and they tend to have higher SAT/ACT scores and attend more private institutions than the U.S. native group. It should be noted that all these four groups include the mix of diverse racial/ethnic subgroups and hence we cannot equate any of these groups with particular category of race or ethnicity.

Table 1 here

Statistical analysis of the gaps among the student groups in our BPS national sample data led to finding mixed patterns of 4-year college education outcomes in terms of bachelor's degree attainment, full-time job employment, and graduate/professional school enrollment within 6 years after the fist-time college entry (see Figure 2). For bachelor's degree attainment, there are significant differences among the student groups, showing more favorable records of timely college completion among international students than immigrant students: 64 percent for international students, 59 percent for the second-generation immigrants, and the U.S. native

students, and 52 percent for the first-generation immigrants. Regarding employment status, there are also significant differences among the student groups, showing a relatively higher rate of job landing among the U.S. domestic students compared to international students or recent immigrants: 35 percent for the U.S. native students and the second-generation immigrants, 29 percent for the first-generation immigrants, and 32 percent for international students. With regard to graduate/professional school enrollment, there are relatively higher levels of graduate enrollment among international students and non-immigrant domestic students: 15 percent for international students and the U.S. native students, 14 percent for the second-generation immigrants, and 12 percent for the first-generation immigrants.

Figure 2 here

Correlation analysis of the associations among the other key student background variables and college learning readiness variables is summarized in Table 2. We found that students' age, parental education, and high school academic background as measured by SAT/ACT scores have significant associations with their college learning experiences, including diverse forms of engagement and performance. The older students (non-traditional students), the first-generation college students (with parents who do not have college education) and students with poor academic preparation (with lower college entrance exam scores) tend to have relatively lower level of engagement and performance. At the same time, there is also a weak to moderate range of relationships among academic engagement, sociocultural engagement, high-impact practices, college credit, and college GPA. Further, the comparison of college learning experiences and outcomes among the U.S.-born native, immigrant, and international groups of 4-year college students reveals significantly different patterns of engagement and achievement (see Figure 3).

Table 2 and Figure 3 here

Our study also found that those college learning experience factors matter for both career and educational success (See Table 3). Logistic regression analysis reveals that above and beyond the influences of student/family background characteristics, college students' learning experiences as measured by academic and sociocultural engagement and high-impact practices are significant predictors of bachelor's degree attainment with either full-time job employment or graduate/professional school enrollment 6 years after college entry. For example, one-unit increase in the frequency of high-impact practices (a composite index of study abroad, foreign language, co-op or internship, student teaching, advanced math and writing courses, volunteer activities, and research) is associated with 17 percent increase in the chance of bachelor's degree attainment with full-time job employment (odds ratio = 1.17, $p < .05$) and also 30 percent increase in the chance of bachelor's degree attainment with graduate/professional school enrollment (odds ratio = 1.30, $p < .05$). Other positive factors that influence the chances of bachelor's degree completion with full-time job employment or graduate/professional school enrollment include college credits and GPA. In contrast, negative factors include remedial courses and transfer experience. Once we take into all these student background and college learning experience factors, the original gaps among the U.S. native, immigrant and international student groups narrow or disappear; only the first-generation immigrant group's gap in terms of bachelor's degree attainment with graduate/professional school enrollment remains statistically significant.

Table 3 here

In terms of the choice of college major, our study also found significant gaps among the student groups who obtained bachelor's degree within 6 years after college entry (see Figure 4).

Both immigrant and international students tend to be overrepresented in STEM fields: the percentages of STEM major choices follow the rank order of international students (35%), first-generation immigrants (30%), second-generation immigrants (23%), and U.S. natives (18%); these differences are statistically significant (see STEM variable in Table 1). In the opposite direction, both immigrant and international students were underrepresented in human service-related professional fields (education, law, social work, etc.): U.S. natives (19%), second-generation immigrants (15%), first-generation immigrants (13%), and international students (9%).

Figure 4

Further, the logistic regression analysis of college major choice shows a variety of personal and institutional factors that affect college major choice beyond immigrant or international student status (See Table 4). Specifically, male students with relatively high SAT/ACT scores were more likely to choose STEM major, whereas students with transfer and remedial course experience were more likely to choose humanities and human service-related majors. There are mixed patterns of college engagement and performance among different major groups. Academic engagement was less likely to promote non-STEM major choice; for example, one-unit increase of academic engagement was associated with 28 percent decrease in the chance of choosing human services-related major over STEM major (odds ratio = 0.72, $p < .001$). In contrast, sociocultural engagement was more likely to promote the choice of humanities or human service-related majors; for example, one-unit increase in sociocultural engagement was associated with 33 percent increase in the chance of choosing human service-related majors such as education and law (odds ratio = 1.33, $p < .001$). Higher college credits were associated with STEM major choice, whereas higher college GPA was associated with humanities and human

service-related majors. Once we take into account these mixed influences of background and college experience factors, there hardly remain any longer significant gaps in college major choice among immigrant and international student groups; only the first-generation immigrant group's gap in terms of choosing STEM major over human services-related major remains statistically significant.

Table 4 here

Qualitative analyses

Outcome of multi-systemic mechanism

First, the factors that the students identified as influencing their readiness for career and graduate/professional education were coming from multiple sources (see Figure 5). For example, career- and professional education-ready students were resilient and hard workers whereas they may have struggled on campus as they transitioned and persisted. Although some classes did not foster "critical thinking" enough and they wished earlier career advising and more experiential learning, they developed "soft skills" and writing competency while working on research independently or with faculty and also networking with peers and professionals on and off campus. Except for two still continuing in college, these are the stories of the students who completed the degree and enrolled successfully in graduate or professional schools despite more external influencers such as immigration, financial aid, and institutional policies, family and cultural community expectations, and even age-long history of global nation states.

Figure 5 here

Following stories of four students with minoritized backgrounds illustrate part of the multi-systemic ecological model of contemporary college students' career and

graduate/professional education readiness. These students completed their college degrees but their stories of success were fraught with ecological challenges, diverse as follows. First, Jorge, a first-generation male immigrant from an indigenous community in Mexico who completed his college degree in Spanish, shared his struggle in college as he said, “I have to be with my parents all the time” due to the family and cultural community expectation of sacrifice until they pass, which was a constant challenge for Jorge navigating his college journey in becoming a student-affairs professional. Charita, a female international student from India with her undergraduate degree in accounting and post-undergraduate certificate in child rights law, lamented the systemic barriers—saying “I would have had to sell myself”—that caused her to have to give up her dream to go to law school in the U.S. due to financial challenge coupled with immigration and institutional policies.

Additionally, when it comes to Aatish, a first-generation immigrant from Bangladesh, entering a college landscape as the first person in his family to go to college without adequate networking and soft skills development was not an easy transition as he would “feel inferior to professors in the classroom” all the time and had to stop out of college for a while. Aatish’s chronic questioning—“Am I worth it (college)?”—took 15 years for him to complete his degree in psychology as a non-traditional student. And, for Mingli, an international economics-major male student from China who had participated in a short-term US-China exchange program during high school, coming to America for college did not seem challenging at first. However, he could not develop a good sense of belonging on college campus and went adrift in college with the difficulty of sociocultural disconnect—“We [Chinese international students] don’t want special treatment. We want respect”—in his transition and persistence throughout his American college years. Despite all the demographic differences and ecological challenges that are

important to understand, what these college completers who successfully enrolled in graduate/professional school all had in common is their engagement in quality high-impact practices (HIPs)—identified in the quantitative analyses—to different extent.

Sociocultural privilege effect and intersectional synergy of challenges and opportunities

From the beginning of the college students' individual college trajectories, sociocultural privileges or lack thereof in terms of immigration generation status, country of origin, English competence, socioeconomic class, gender, etc. affected their learning opportunities as well as challenges. Importantly, the cases of minoritized students illustrating the first theme above regarding the multi-layered ecological collegiate landscape must not be misinterpreted to downgrade or nullify who the students really are and what they bring to college and can do—as opposed to being pre-labeled or prejudicially positioned at risk of college success.

Thus, it is worth highlighting what can make a transforming difference in the college environments that privilege some but marginalize others. The student stories suggest that it is not a single individual- or group-specific background characteristic that may be related to the experienced challenges, nor a one-time participation in a college educational activity. It is the *accumulation* of intersecting learning opportunities, in which the students engaged (called quality high-impact practices, HIPs), leading to "turning points" and positive college outcomes. The synergy of accumulated engagement of learning opportunities seemed to foster successful trajectories among students often lacking social, economic, and cultural capital for college success.

The case of Kariem, a first-generation college student and first-generation immigrant and refugee from South Sudan, is an exemplar of rising from nested ecological challenges and dispelling the odds against his college success. After such a long, difficult time in resettling in

the U.S. due to a Sudanese Civil War and global geopolitical tension after the September 11 terrorism, Kariem faced continuing challenges adjusting to the new culture and education system. He would recount the time learning the new alphabet under the trees in a refugee camp and describe how he first felt excited at the possibility to succeed in the new country but how he later felt "discriminated" by some of the people with whom he interacted including government workers and teachers. Notably, what we heard was not a story of distress and lost hopes but one of resilience, agency, and pride as one self-forming and becoming a "role model" for others.

> "(When starting college) I had no friend, didn't know anyone...but I was a member of a lot of student organizations, Asian Students, African American Students, and had interaction with many people, leading to fellowship, volunteer work through the connections, and also graduate school."

What seemed to be a new "turning point" in Kariem's continuing life was not just resettlement in the U.S. but his accumulated sociocultural engagement of multiple student leadership activities and continuing volunteer and community service activities. Kariem is a continuing graduate student with his undergraduate degree in economics.

Compared with the stories of the first-generation immigrants like Kariem and Jorge presented above, those of later immigrants—Cheng, a female 1.5-generation Singaporean Chinese immigrant, and John, a male second-generation Caribbean immigrant from Belize—first presented differences as navigating their bicultural ecologies (Cheng, "I don't think I thought about (bicultural identity) much growing up (but) it's obviously a lot different times of my life now"). As minoritized college students, they still had similar experiences under the influence of nested ecological systems in their daily college lives, including the critical period of choosing a major, which Cheng ended up with switching without felt support in the beginning college year.

She “feared…, had little to no knowledge of what people in the communication field do…., (and) had to research on my own.” Ensuing high-quality academic and sociocultural college experiences changed the trajectory and helped her reflect and grow more as “a minority and global aspect of higher education.” Cheng now feels that she “can be a strong woman who is of Asian-American identity who can make a statement and be a leader in this field”: a self-formation and contribution to the ecology.

Like Cheng, the beginning year of John was not an easy cruise as it involved a major change from a STEM major to human services. Although he felt that he had to “work twice” in the environment with the “lack of representation” of minoritized populations, “the network that I had during my undergraduate”, three internships and extended engagement in a larger professional community beyond campus, and major-to-career mentoring through an institutional program focused on underrepresented populations, made a difference. John now positions himself as part of a desired system where “multicultural relations really influence policies amongst our colleges and universities today”.

Discussion

The state of disproportionate career and graduate education readiness

The descriptive analysis results showed mixed patterns of educational and career readiness gaps among different groups of college students. By and large, there exist significant overall gaps in terms of 4-year college completion with full-time job employment or graduate/professional school enrollment rates within a 6-year time frame. The bottom line is that only about half of the 4-year college student cohort in our study sample meets this common expectation of college success. The results also show consistent disadvantages for recent

immigrant students who lag behind in terms of both educational and career attainment, whereas there are both advantages and disadvantages for international students who excel in bachelor's degree attainment and subsequent graduate/professional school enrollment but trail in full-time job employment (at least in the U.S.).

Among all four groups, international students have the highest percentage of those (17% compared to 8.5% among the U.S. natives) who already graduated from a college with bachelor's degree but still remain neither employed nor enrolled in a graduate school. The strict immigration policy that requires international students to maintain full-time status, limits on-campus employment hours, and does not permit unauthorized off-campus employment may have contributed to this completion record. However, it may show a partial portrait of student success in that the federal immigration policy as part of the national exosytem of college student development ecology (Renn & Reason, 2013) is not fully welcome as it creates a challenging environment for them to gain high-impact *practical* experiences such as internship or research opportunity that may not be a typical part of the formal curricular activities but instrumental in improving career or graduate school readiness.

Further, faculty, staff, and peer students who are not familiar with the federal regulations may exacerbate the state of inequitable access to learning opportunities among international students and some of recent-generation immigrant students who share transnational educational experience and related challenges with international students (Lee et al., 2019). It is important that institutions include international student issues—such as academic adjustments, language difficulties, cultural norms, social isolation, financial concerns, and discrimination and stereotyping (Lee, 2015; Terzian & Osborne, 2016)—and their needs in all campus community members' inclusion and multicultural competency development as it helps build an inclusive

campus climate where all students feel respected, supported, belonging, and thus successful. Then, institutional concurrent innovation in support focused on student outcomes--career and graduate education--after undergraduate education is imperative for current international students (Choudaha, 2017).

Also, our findings identified first-generation immigrant students, often first-generation college students and from lower socioeconomic status, as lagging behind in their career and graduate/professional education readiness compared to U.S. natives, second-generation immigrants, and international students. Echoing what Aatish lamented during his interview for this study—"I didn't know how to do (college)…No one pushed or guided", those who are the first in the family to immigrate to the U.S., and to go to college with limited means are not on equal footing with the privileged regarding college knowledge and success. This vulnerable student population whose low success trends are often traced to the beginning of their learning trajectories, needs targeted academic and sociocultural support with major-to-career mentoring and networking that should begin early and continue throughout their college years.

The impact of high-quality college education on career and graduate education readiness

The need to improve college experience is propelled by our further result regarding the college factors that affect the chance of 4-year college degree attainment along with job employment or graduate/professional school enrollment. Our educational and career attainment measures have statistically significant associations with age, gender, race/ethnicity, parental education, and college entrance exam SAT/ACT scores. Even when we control for such background characteristics along with college credits and GPA, we find that college experience factors—such as academic and sociocultural engagement, study abroad program, foreign

language courses, co-op or internship program, student teaching, and advanced college-level math courses--positively affected the chances of college completion with full-time employment or graduate/professional school enrollment, whereas factors such as remedial courses and transfer experiences negatively affected outcomes. Overall, international students fared well except for job employment, whereas immigrant students, particularly the first-generation immigrant group, lagged behind others in both academic and sociocultural readiness measures.

In terms of college major choice, however, both immigrant and international groups tend to be overrepresented in STEM fields but at the same time underrepresented in humanities and human service fields including education and law. This major choice bias toward STEM fields may reflect cultural and language barriers among both immigrant and international student groups or, more importantly, barriers within the college environments that may not support holistic development. In order to address the overrepresentation of immigrant/international groups in STEM fields, it is desirable to make more balanced improvements of both academic and sociocultural engagement; academic engagement is associated with the choice of STEM majors, whereas sociocultural engagement is associated with the choice of humanities and human service majors. Therefore, early career guidance and support are needed for the immigrant student groups who tend to shun away from humanities and human service-related majors and at the same time do not actively participate in sociocultural learning activities.

The afore-presented findings converge to the culminating theme: the high impact of high-quality college education on career and graduate/professional education readiness. For individual students, macro-level ecological challenges were difficult to address. However, the findings of this study suggest that it is possible to turn college experience into the real pathway to career and graduate or professional school. Intentional, committed action at the institutional level is vital to

students' self-forming agency development (Marginson, 2014) toward college readiness and success as it integrates various academic and sociocultural high-impact practices from which all students benefit, particularly, minoritized student populations (Kuh, 2008; Kuh et al., 2017).

The story of Cheng—a 1.5-generation Singaporean Chinese immigrant from this study—adds positive empirical evidence of self-forming agency development through high-quality college education. Although she encountered discrimination off campus, she built her resilience and success on engaging in more than six high-impact practices in college as she said,

> "The town is different (from the college). I *am* a minority there but that's ok.…I talked to the professor, who thought I was a good fit for the course….I taught a year as a TA. It helped my public speaking….I wrote a thesis and took more advanced writing courses using MLA and APA (scholarly writing styles)."

Currently in her second semester in graduate school at the time of the interview, Cheng found herself ready for her intended career in higher education administration.

To conclude, the increasing diversity and changing portrait and needs of fast-growing immigrant and international student groups—which is, indeed, growing assets to the higher education ecology—presents new challenges for American colleges and universities to become globally inclusive higher education institutions that should connect and integrate diversity into their educational and civic missions of higher education (Hurtado, 2007). The federal government's recent anti-immigration policies as well as new regulations during the current pandemic crisis extend additional challenges to higher education institutions, since their immigrant and international students may experience more alienation and marginalization in college campuses, job market, and the larger society. With those caveats in mind, our study results give implications for institutional equity and diversity policies that help close the gaps

among U.S.-native, immigrant, and international students on ever-increasingly multicultural college campuses in the era of globalization and internationalization of higher education.

We acknowledge that our study has several limitations in terms of both internal and external validity of findings. Limitations include the timing of BPS data collection, the selection of students in 4-year colleges and universities, the relatively small sample size of international students, and the self-report nature of survey about students' academic and sociocultural engagement activities. Due to the sample size limitation, we were also unable to differentiate the nuances of racial/ethnic or socioeconomic variations within the U.S-native, immigrant or international group each. Further research is needed to address the interactions of race/ethnicity, socioeconomic status, and immigrant/international status for college success. We also think that tracking students' progress beyond a 6-year time frame after college entry is desirable, particularly among non-traditional part-time students who need extended time for college completion. Further research is needed to update our quantitative analysis with recently released BPS data (2012-17 cohort) on the profiles of newer college student population and also to follow up with our qualitative study participants about the longer-term effects of academic and sociocultural engagement on educational and career outcomes.

Appendix. Variable Descriptions

Gender (Male): student gender, recoded into dummy variable (1=male, 0=female).

Age: student age, at the time of first year enrolled in college.

Parental education: parent's highest level of education, coded as 1= Did not complete high school, 2= High school diploma or equivalent, 3= Vocational or technical training,4= Less than two years of college, 5= Associate's degree, 6= 2 or more years of college but no degree, 7= Bachelor's degree, 8= Master's degree or equivalent, 9= First-professional degree, 10= Doctoral degree or equivalent.

Race/ethnicity (White): race as White; recoded into dummy variable (1=yes, 0=no).

Race/ethnicity (Black): race as Black or African American; recoded into dummy variable (1=yes, 0=no).

Race/ethnicity (Asian): race as Asian; recoded into dummy variable (1=yes, 0=no).

Race/ethnicity (Hispanic): race as Hispanic or Latinx origin; recoded into dummy variable (1=yes, 0=no).

A*dmissions test scores (ACT/SAT)*: college admissions test scores by ACT (SAT-equivalent conversion) or SAT.

College GPA: GPA at all 4-year institutions.

College credits: credits earned in all 4-year institutions.

Transfer: school transfer status, recoded into dummy variable (1= student stay in the same school, 0= student changed school equal or more than 1 time).

ESL courses: indicator of English as a second language courses taken, recoded into dummy variable (1= have taken ESL course, 0= haven't taken any ESL course).

Remedial Courses: indicator of remedial courses taken, recoded into dummy variable (1= have taken remedial course, 0= haven't taken any remedial course).

Academic engagement: average score of academic integration index in 2004 (ACAINX04) and 2006 (ACAINX06). Academic integration index in 2004 (ACAINX04) consists 4 subitems in student questionnaire (numbers in parentheses indicate factor loadings): frequency of informal meeting with faculty (0.64), frequency of talking with faculty about academic matters outside of class (0.71), frequency of meeting with an academic advisor (0.76), or frequency of participating in study groups (0.62). Academic integration index in 2006 (ACAINX06) consists 4 subitems in student questionnaire (numbers in parentheses indicate factor loadings): frequency of informal meeting with faculty (0.65), frequency of talking with faculty about academic matters outside of class (0.78), frequency of meeting with an academic advisor (0.72), or frequency of participating in study groups (0.61).

Sociocultural engagement: average score of social integration index in 2004 (SOCINX04) and 2006 (SOCINX06). Social integration index in 2004 (SOCINX04) consists 3 subitems in student questionnaire (numbers in parentheses indicate factor loadings): frequency of attending fine arts activities (0.71), frequency of attending school clubs (0.81), or frequency of participating school sports (0.62). Social integration index in 2006 (SOCINX06) consists 3 subitems in student questionnaire (numbers in parentheses indicate factor loadings): frequency of attending fine arts activities (0.71), frequency of school clubs (0.82), or frequency of participating school sports (0.62).

High-impact practices (HIP): an index of student participation in high-impact activities (the sum of dummy-coded 10 practices) including: taking foreign language course, study abroad, co-op or internship, student teaching, taking advanced college-level math course, taking advanced college-level writing course, volunteer activities in both 2004 and 2006, studying in research intensive institution, belonging to the top 25% in academic engagement, and belonging to the top 25% in sociocultural engagement.

Institution control (Public): institution control last attended through 2006, recoded into dummy variable (1=public, 0=private).

Institutional type (Doctoral): doctoral degree as the highest level of offering (first institution) during 2003 to 2004, dummy variable (1=yes, 0=no).

College loan: cumulative total student loan amount borrowed through 2009.

STEM major: STEM major field of study indicator, recoded into dummy variable (1=yes, 0=no).

College GPA: GPA in 4-year institutions (all).

College credits: credits earned in 4-year institutions (all).

Bachelor's degree without full-time job or graduate school: The indicator of "bachelor's degree but no full-time job or graduate/professional school yet", recoded as dummy variable (1=yes, 0=no).

Bachelor's degree with full-time job: The indicator of "bachelor's degree and full-time employed", recoded as dummy variable (1=yes, 0=no).

Bachelor's degree with graduate/professional school: The indicator of "bachelor's degree and enrolled in graduate/professional school", recoded as dummy variable (1=yes, 0=no).

College Major: categories of college major for bachelor's degree attained, coded as 1=STEM, 2=business and social sciences, 3=humanities, 4=education, law and other human services, 5=others.

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Table 1

BPS National Sample Descriptive Statistics for 4-Year College Subgroups of Students

Variables	Statistics	Student Type			
		U.S.-born Natives	Second-generation Immigrants	First-generation Immigrants	International Students
Number of Students	N	6648	1024	841	130
Gender (Male)	Mean	0.44	0.42	0.47	0.59***
	SD	0.50	0.49	0.50	0.49
Age	Mean	19.75	19.37*	19.98	19.83
	SD	5.14	4.98	4.65	3.07
Parental education	Mean	5.72	5.06***	5.25***	5.92
	SD	2.56	2.97	2.94	2.82
Race/ethnicity (White)	Mean	0.80	0.31***	0.26***	0.28***
	SD	0.40	0.46	0.44	0.45
Race/ethnicity (Black)	Mean	0.11	0.08**	0.12	0.14
	SD	0.31	0.27	0.33	0.35
Race/ethnicity (Asian)	Mean	0.01	0.19***	0.24***	0.46***
	SD	0.07	0.39	0.43	0.50
Race/ethnicity (Hispanic)	Mean	0.05	0.30***	0.30***	0.08
	SD	0.22	0.46	0.46	0.27
Admissions test scores (ACT/SAT)	Mean	1060.65	1053.70	1018.17***	1114.97**
	SD	185.01	203.44	199.65	218.34
College GPA	Mean	2.87	2.75***	2.86	3.22***
	SD	0.82	0.85	0.78	0.57
College credits	Mean	97.98	98.99	100.35	107.30*
	SD	50.22	51.02	53.36	40.63
Transfer	Mean	0.25	0.23	0.29*	0.24
	SD	0.44	0.42	0.46	0.43
ESL courses	Mean	0.01	0.02***	0.11***	0.09***
	SD	0.07	0.14	0.31	0.29
Remedial Courses	Mean	0.36	0.33*	0.49***	0.39
	SD	0.48	0.47	0.50	0.49

Academic engagement	Mean	89.90	86.25**	87.89	103.79***
	SD	36.29	37.20	36.73	35.79
Sociocultural engagement	Mean	63.96	56.48***	51.85***	73.46*
	SD	47.02	44.87	42.29	43.41
High-impact practices (HIP)	Mean	2.52	2.60	2.32**	2.85*
	SD	1.76	1.79	1.61	1.65
Institution control (Public)	Mean	0.65	0.63	0.62	0.40***
	SD	0.48	0.48	0.49	0.49
Institutional type (Doctoral)	Mean	0.37	0.46***	0.40	0.40
	SD	0.48	0.50	0.49	0.49
College loan	Mean	12660.40	11491.69*	10697.04***	1403.00***
	SD	16837.68	16831.78	15258.07	4756.39
STEM major	Mean	0.18	0.23**	0.30***	0.35***
	SD	0.38	0.42	0.46	0.48
Bachelor's degree without full-time job or graduate school	Mean	0.08	0.10*	0.11*	0.17***
	SD	0.28	0.31	0.31	0.38
Bachelor's degree with full-time job	Mean	0.35	0.35	0.29***	0.32
	SD	0.48	0.48	0.46	0.47
Bachelor's degree with graduate school	Mean	0.15	0.14	0.12*	0.15
	SD	0.36	0.34	0.33	0.36

Note. The statistical significance of group mean difference (relative to the U.S.-born native group) is marked by asterisk: *$p < .05$, **$p < .01$, ***$p < .001$

Table 2. *Correlations among 4-year college students' background and readiness variables*

	Age	Parental education	Admissions test scores (ACT/SAT)	College GPA	College credits	High-impact practices (HIP)	College loan	Academic engagement	Sociocultural engagement
Age	1								
Parental education	-.24**	1							
Admissions test scores (ACT/SAT)	-.11**	.35**	1						
College GPA	.02	.17**	.40**	1					
College credits	-.22**	.22**	.27**	.59**	1				
High-impact practices (HIP)	-.26**	.30**	.39**	.36**	.52**	1			
College loan	.00	-.10**	-.08**	.05**	.20**	.04**	1		
Academic engagement	-.17**	.13**	.05**	.17**	.24**	.45**	.06**	1	
Sociocultural engagement	-.25**	.27**	.25**	.20**	.30**	.55**	.01	.50**	1

Note. The statistical significance of correlation coefficients (Pearson correlation) is marked by asterisk: **$p < .01$

Table 3

Multinomial Logistic Regression Analyses of 4-Year College Outcome Gaps among U.S. native, Immigrant and International Groups

	4-Year College Outcomes (Non-bachelor's degree as reference group)		
	Bachelor's degree without job or graduate school	Bachelor's degree with full-time job	Bachelor's degree with graduate school enrollment
International student	0.91	0.85	0.78
First-generation immigrant	0.89	0.94	0.75*
Second-generation immigrant	0.95	1.06	0.77
Gender (Male)	1.10	0.85^	0.68***
Age	1.62**	1.15	0.72
Parental Education	1.31***	1.14*	1.34***
Race (White)	0.67**	1.23^	0.74*
Admissions test scores (ACT/SAT)	1.17^	1.09	1.21**
Institution control (Public)	1.04	0.96	0.99
Institution type (Doctoral)	1.06	1.11	1.36*
College loan	1.28***	1.15**	1.23***
Transfer	0.55***	0.23***	0.23***
ESL courses	0.94	0.65	0.95
Remedial courses	0.77^	0.71**	0.68***
Academic engagement	1.10	1.17*	1.30***
Sociocultural engagement	0.96	1.11^	1.13^
High-impact practices (HIP)	1.09	1.21*	1.29**
College GPA	1.53***	2.65***	5.88***

College credits	5.02***	3.66***	3.49***

Note. Odds ratios are reported and marked with asterisks for statistical significance: ^$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$. For all comparisons, the reference category is the group of students who have not completed 4-year college for bachelor's degree within 6 years after their first college entry. All predictors except for dummy variables are standardized (z-scores).

Table 4

Multinomial Logistic Regression Analyses of 4-Year College Major Gaps among U.S. native, Immigrant and International Groups

	4-Year College Majors (STEM as reference group)		
	Business & Social Sciences	Humanities	Human Services (Education, Law, Social Work, etc.)
International student	1.51	0.60	0.65
First-generation immigrant	0.83	0.78	0.47**
Second-generation immigrant	1.24	0.95	0.83
Gender (Male)	0.81^	0.59***	0.33***
Age	1.16	0.66	1.78
Parental Education	0.96	1.06	0.96
Race (White)	1.57**	1.13	1.55**
Admissions test scores (ACT/SAT)	0.51***	0.95	0.44***
Institution control (Public)	1.02	0.87	1.08
Institution type (Doctoral)	0.99	0.91	0.82
College loan	1.01	1.15*	1.07
Transfer	1.38	1.53*	1.51*
ESL courses	0.82	0.94	0.95
Remedial courses	1.73***	1.72**	2.02***
Academic engagement	0.72***	0.97	0.72***
Sociocultural engagement	1.14	1.29***	1.33***
High-impact practices (HIP)	0.93	0.81*	1.09
College GPA	1.16	1.68***	1.89***

College credits	0.57***	0.44***	0.66**

Note. Odds ratios are reported and marked with asterisks for statistical significance: ^$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$. For all comparisons, the reference category is students who have chosen STEM for college major. All predictors except for dummy variables are standardized (z-scores).

Figure 1

The State of 4-year College Students' Bachelor's Degree Completion with Full-Time Job Employment or Graduate/Professional School Enrollment, 6 Years after the First-Time College Entry

(source: BPS 2004-09 data)

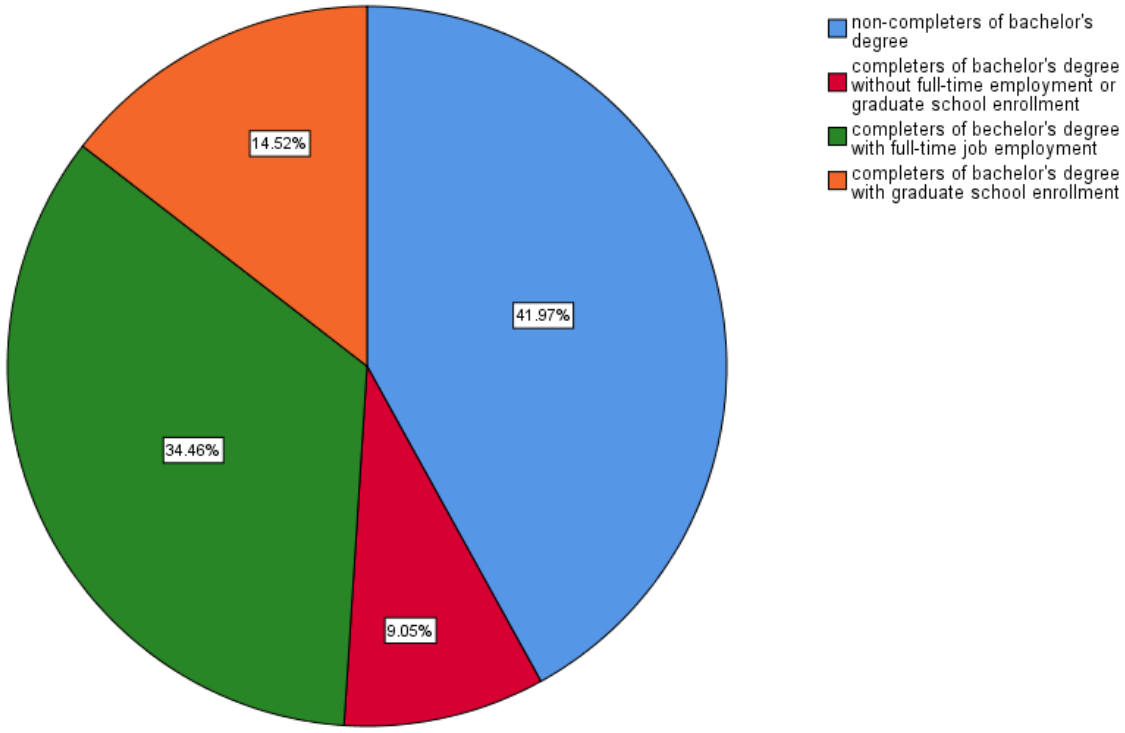

Figure 2

4-year College Students' College Education Outcomes 6 years after the First College Entry by Immigrant and International Status: the Rate of Bachelor's Degree Completion with Full-Time Job Employment or Graduate School Enrollment

(source: BPS 2004-09 data)

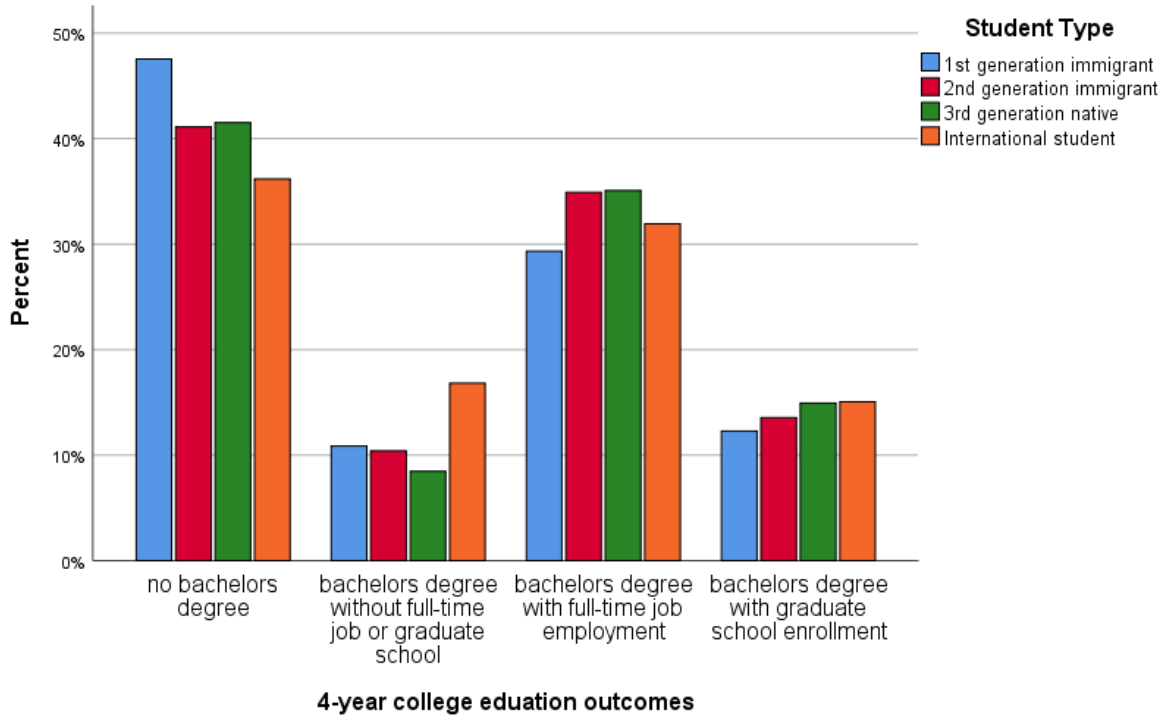

Figure 3

4-year College Students' Average Grades, Credits, Learning Engagement and Practices by Immigrant and International Status

(source: BPS 2004-09 data)

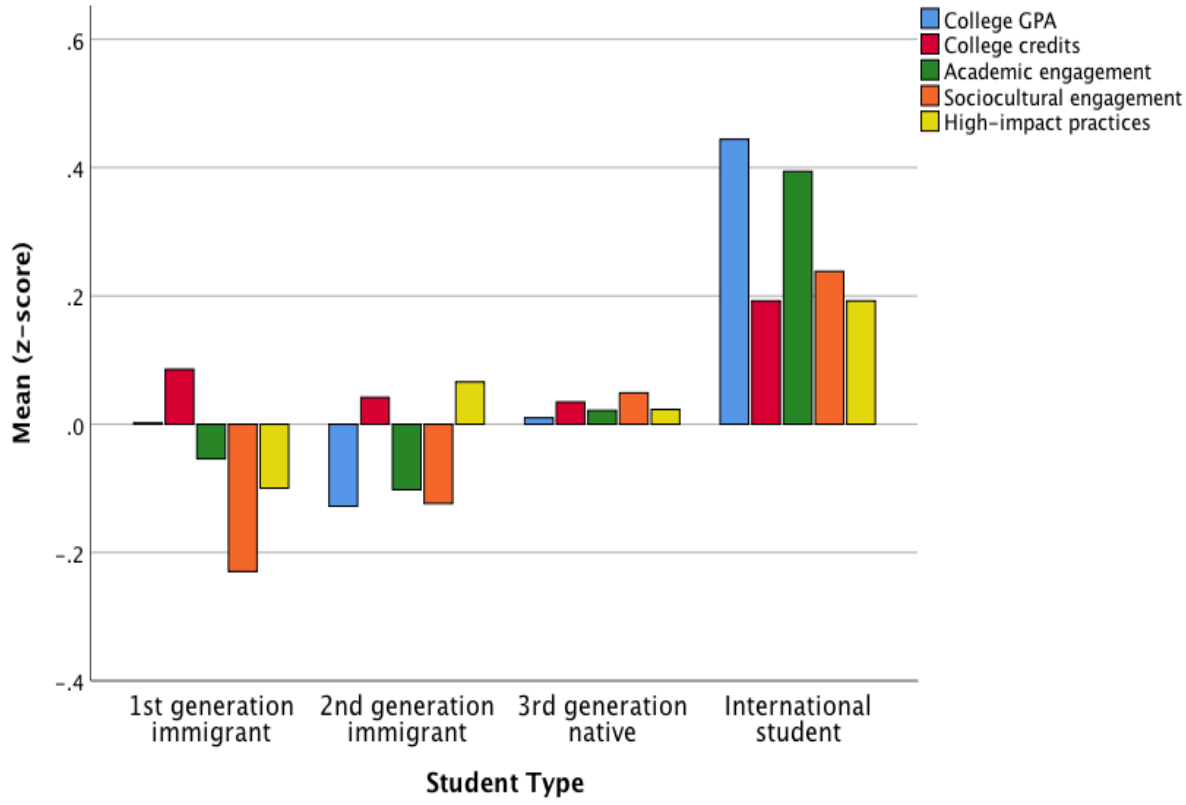

Figure 4

4-year College Students' College Major Choices for Bachelor's Degree Attainment by Immigrant and International Status

(source: BPS 2004-09 data)

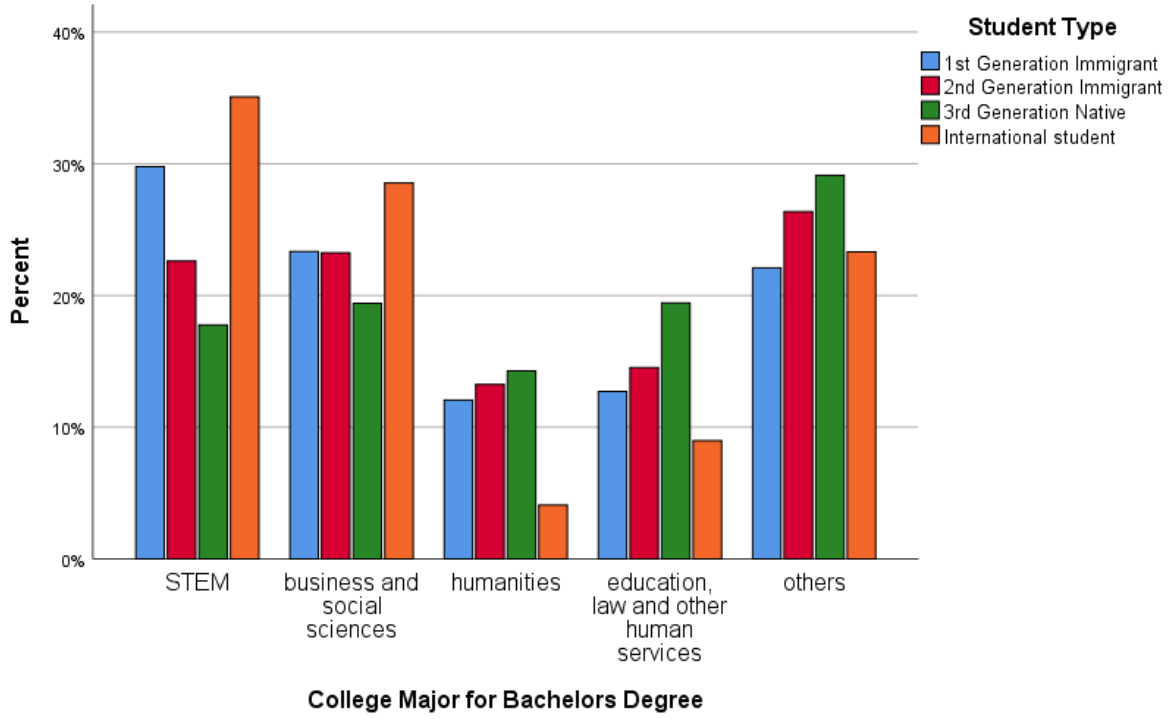

Figure 5

Ecological Dynamics of Factors Influencing College Students' Career and Graduate/Professional Education Readiness