Latino Engagement: Investigating the Effects of High Impact Practices Participation on Students' College Outcomes

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Noelia N. Pacheco Diaz
May 2022

Copyright © 2022 by Noelia N. Pacheco Diaz.
All rights reserved.

DEDICATION

I dedicate this dissertation to my family, the most important people in my life.

To my children, Hannah and Leo, you both are my inspiration. You always make me want to be better. I am so grateful to have you as my kids.

To my loving husband, Lucas. Honey, you know that I could not have finished this journey without your support and encouragement. You gave me the strength to believe that I could do it. I am so fortunate to have you in my life.

I love the three of you so very much….. you are my whole world!

ACKNOWLEDGEMENTS

I would like to sincerely thank my advisor, Dr. Louis Rocconi, for his guidance throughout this dissertation. You were so supportive and generous with your time. I am so grateful for how much I learned by working as your advisee. I also want to thank the rest of the ESM faculty that supported me through my doctoral journey. Dr. Gary Skolits, thank you for your encouraging words throughout my studies. I am grateful that I got to work with you as a Graduate Research Assistant; I became a better scholar because of you. Dr. Morrow, you are such a great teacher. You made statistics easy to understand, and you gave me the confidence I needed to be here today. Finally, I want to thank Dr. Jimmy Cheek and Dr. Lisa Driscoll for serving on my dissertation committee. Your feedback made my study better.

ABSTRACT

Latino students are a growing minority in higher education in the United States, but they still lag behind their peers to have a successful college experience (Hussar et al., 2020; Schack et al., 2019). On the other hand, research has indicated that undergraduate students' participation in purposeful educational activities such as so-called High Impact Practices (HIPs) is an effective way to foster college success (Kuh, 2003; Kuh, Schneider, et al., 2008). Therefore, the purpose of this research was to investigate how participation in high-impact practices influences student engagement, satisfaction, perceived learning gains, and self-reported GPA in college for undergraduate students. Also, this study examined how participation in HIPs might lead to different outcomes for undergraduate students from various races/ethnicities compared to Latinos. This investigation used data from the National Survey of Student Engagement (NSSE) and structural equation modeling to estimate a model that explains the impact of HIP participation on undergraduate students. Results show that HIPs increase students' satisfaction with college and their perceived learning gains. Also, HIPs are related to students reporting higher GPAs.

Additionally, findings suggest that Latino students benefit in different degrees in various HIPs compared to students from race-ethnicities. In other words, the positive benefits of participating in a HIP are greater for Latino students, in some instances, than students from other race-ethnicities. Thus, this study contributes to the understanding of the relationship between HIPs and student engagement. Moreover, this research offers implications for practice that higher education stakeholders can consider implementing and promoting HIPs in their institutions.

TABLE OF CONTENTS

Chapter 1: Introduction **1**

Overview of Student Engagement and High Impact Practices (HIP) **2**

Purpose of the Study **6**

Research Questions **7**

Research Hypotheses **7**

Significance of the Study **8**

Assumptions **8**

Delimitations **9**

Limitations **9**

Terms and Definitions **10**

Chapter Summary **11**

Chapter 2: Literature Review **13**

Latino Students: Higher Education, Barriers, and College Success. **13**

Student Engagement: Theoretical Background. **16**

Student Engagement: Empirical Research. **21**

Measuring Student Engagement: National Survey of Student Engagement (NSSE) **22**

Benchmarks and Engagement Indicators **24**

High Impact Practices (HIPs): Conceptual Background **25**

High Impact Practices: Empirical Research **28**

Six High Impact Practices: Description and Impact on College Outcomes **32**

Learning Communities **32**

Research with Faculty **34**

Study Abroad Experiences **36**

Service-Learning **40**

Internships **41**

Capstone courses or culminating senior experiences **43**

Latino Students and Student Engagement **45**

Latino Students and High Impact Practices **47**

Theoretical Framework **50**

Environment **50**

Outputs **51**
A Better Way to Assess College Student Development **53**
Chapter Summary **54**
Chapter 3: Methods **58**
Research Hypotheses **59**
Research Design **59**
Sample and Data Source **61**
Academic Challenge **66**
Learning with Peers **66**
Experiences with Faculty **67**
Campus Environment **67**
Validity of NSSE **68**
Reliability of NSSE **70**
Data Screening and Preparation **71**
SEM Assumptions and Other Important Data Considerations **71**
Sample Size **71**
Absence of Multicollinearity **73**
Lack of Outliers **73**
Multivariate Normality **74**
Absence of Missing Data **74**
Variables **76**
Dependent Variables **76**
Independent Variables **77**
Data Analysis **81**
Steps When Conducting SEM **87**
Structural Equation Modeling and the Conceptual Model **92**
Limitations **95**
Chapter 4: Results **99**
The Model Building Process **99**
The Measurement Model **101**
Research Question 1: HIPs and their Relationship to Selected Student Outcomes **104**
Full Structural Model for First-Year Students **104**
Full Structural Model for Senior Students **107**

Research Question 2: Conditional Effect of Race/Ethnicity 110
First-Year Students: Conditional Effect of Race Between HIPs and Target Outcomes 111
Senior Students: Conditional Effect of Race/Ethnicity Between HIPs and Target Outcomes 116
Research question 3: Mediation Effect of Student Engagement Between HIPs and College Outcomes. 124
Mediation Effect First-Year Students 124
Chapter 5: Discussion 132
HIPs, Student Engagement and Outcomes 132
HIPs and Student Engagement 133
HIPs and College Outcomes 134
Conditional Effect of Race-Ethnicity 134
Implications for Practice 141
Encourage Student-Faculty Interactions 141
Ensure Quality in HIPs Implementation 143
Narrow down on equity and HIP that are targeted towards minorities such as Latinos 145
Limitations 147
Future Research 148
Conclusion 149
List of References 151
Vita 178

LIST OF TABLES

Table 1 From Benchmarks to Engagement Indicators and High-impact Practices 29
Table 2 Frequencies and Percentages for Demographic Characteristics of Participants 63
Table 3 Demographic and Academic Characteristics of Latino Students 64
Table 4 Themes and Engagement Indicators 65
Table 5 Cronbach's Alpha for NSSE's Engagement Indicators for Sample 72
Table 6 Independent Variables: Demographic and Enrolment Characteristics 79
Table 7 Independent Variables: Institutional Characteristics 82
Table 8 Engagement Indicators included, corresponding items, and response options 83
Table 9 Fit indices for first year structural models containing an interaction effect 113
Table 10 Fit indices for senior's structural models containing an interaction effect 118
Table 11 Direct effects of engagement indicators on outcomes for first-year students 127
Table 12 Direct effects of engagement indicators on outcomes for senior students 130

LIST OF FIGURES

Figure 1. Pascarella's (1985) casual model 19
Figure 2. Astin's Input-Environment-Outputs (I-E-O) Model 52
Figure 3. Theory of study constructs and their relationship to Astin's I-E-O model. 55
Figure 4. Study's Theoretical Framework and Corresponding Variables 78
Figure 5. Example of direct and indirect effects 88
Figure 6. Structural Equation Conceptual Model 94
Figure 7. Relationship Between Student Engagement and Student Outcomes Mediated by High-Impact Practices (HIP) 97
Figure 8. Full SEM Models 103

Chapter 1: Introduction

Latinos are the largest racial/ethnic minority group in the United States, making up 18.3% of the total population (United States Census Bureau, 2019). The United States Census Bureau (2020) defines "Hispanic or Latino as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race" (About the Hispanic Population and it's Origin section, para. 1).

Latinos' matriculation in post-secondary education has been rapidly growing within the last ten years. According to the U.S. Department of Education, Latino student enrollment more than doubled between 2000 and 2018, rising from 1.4 million to 3.4 million students (Hussar et al., 2020). Despite their increasing numbers in higher education, Latinos are still underrepresented in post-secondary education (Schack et al., 2019). A recent report by The Education Trust, a national non-profit organization, found that Latino students are underrepresented at associate degree granting institutions as well as bachelor's degree granting institutions; the proportion of Latino students attending college is not on par with the number of Latinos residing in each state (Schack et al., 2019). Additionally, data from the U.S. Department of Education (2019) reveals that graduation rates are lower for Latinos than White students and Asian students at four-year institutions, but slightly higher when Latinos are compared with students from other racial/ethnic groups (e.g., African American). Latinos' average four-year graduation rate is 14% lower than the average graduation rate for White students, and 18% lower when compared with Asian students (U.S. Department of Education National Center for Education Statistics., 2019). Looking at these data, it becomes imperative to find strategies to help Latino students to succeed in college. Research suggests that student engagement or involvement in purposeful educational activities such as so-called High Impact Practices (HIPs)

are catalysts that foster learning and lead to college success (Kuh, 2003; Kuh, Schneider, et al., 2008). Thus, the purpose of this study is to investigate how student engagement and high-impact practices affect the success of Latino college students.

This first chapter of the present study describes higher education scholars' general interest in student engagement and students' participation in HIPs. This section addresses the research problem, and it articulates the purpose of this study. These elements establish the basis for the research questions and the significance of this investigation for higher education research with Latino students. Additionally, this initial chapter concludes with a definition of terms and a summary. Succinctly, the current chapter presents a general overview of student engagement, HIPs, and undergraduate Latino students. Later, chapter 2 will expand on the issues mentioned in this introductory section.

Overview of Student Engagement and High Impact Practices (HIP)

It has been a great concern of American colleges for some time to understand how to enhance college learning (Association of American Colleges and Universities, 2007). Over the last two decades, the premise of student engagement has emerged as a popular strategy to foster college learning and success (Kuh, 2003; Kuh et al., 2006; McCormick, Kinzie, et al., 2013; Pascarella & Terenzini, 2005). Kuh (2003, 2009) defines *student engagement* as the time and effort students invest in meaningful educational practices and how institutions encourage students to participate in those activities. Examples of how student engagement has been operationalized include: a) activities that measure the level of academic difficulty, such as number of hours studying or number of presentations done for a class; b) behaviors that reflect active learning and collaboration between students, such as asking questions or working in groups; c) activities that measure student-faculty interactions, students discussing with faculty

their class work, their grades or their future career plans (Kuh, 2009; McCormick, Kinzie, et al., 2013). Student engagement has been positively associated with persistence (Kuh, Cruce, et al., 2008; Kuh et al., 2007), grades (Carini et al., 2006; Kuh, Cruce, et al., 2008; Kuh et al., 2007), critical thinking (Carini et al., 2006), moral reasoning (Mayhew et al., 2012), and students' inclination towards activities that require deep thinking or "need for cognition"(Padgett et al., 2010).

Through the research done on student engagement, the concept of *high impact practices (HIPs)* emerged (McCormick, Kinzie, et al., 2013). HIPs are educationally purposeful practices believed to increase students' engagement and lead to better academic performance (Kuh, 2008). Some of the educational activities included in HIPs are first-year seminars, learning communities, study abroad, service-learning, and internships (Kuh, 2008). There is a considerable amount of research in support of the use of HIPs with undergraduate students because they are thought to have a positive effect on their academic development and emotional wellbeing (Bonet & Walters, 2016; Kilgo, Ezell Sheets, & Pascarella, 2015; Seifert, Gillig, Hanson, Pascarella, & Blaich, 2014; Tukibayeva & Gonyea, 2014). Despite the positive benefits of HIPs, data from the National Survey of Student Engagement (NSSE) indicate that participation is inequitable; students from underserved populations (e.g., Latinos) are not involved in these experiences at the same rate as White students do (Kuh et al., 2017).

Statement of the Problem

Evidence suggests that student engagement and HIPs have a *compensatory effect* for students from historically underserved populations. In other words, there is evidence to suggest that when these students become engaged and participate in HIPs, they receive greater educational benefits than their socially advantaged peers (Kuh, 2003; Kuh, Schneider, et al.,

2008). Despite the known compensatory effects attributed to HIPs on minority populations such as Latino, absent from the literature is a comprehensive study focusing exclusively on the relationship between student engagement and HIPs targeted solely towards Latino students. Currently, existing research on student engagement and HIPs lacks analysis that narrows down on Latino students. For example, studies combine findings for Latinos and students from other races and then compare them with White students (Athens, 2018; Nelson Laird et al., 2007). This approach can be problematic because by not separating the effect of student engagement and HIP specifically for Latinos, the analysis and discussion might lack depth regarding the nuances of student engagement and HIPs on Latino students. This kind of research fails to consider that various types of students experience college differently and that the impact of college is not the same for all students (Pascarella & Terenzini, 2005).

The literature on student engagement and Latinos is limited, but there is evidence that Latinos, as part of an underserved group, benefit from being engaged (Kuh, 2003). Kuh and colleagues (2007) examined the effects of student engagement and its impact on grades and persistence. They had a sample of 11,000 students that included participants from Historically Black Colleges and Universities (HBCUs) and Hispanic Serving Institutions (HSIs). Kuh et al. (2007) found that "historically underserved students benefit more from engaging in these activities than White students in terms of earning higher grades and persisting to the second year of college" (p. 2). Another aspect of student engagement that has shown positive effects for Latino students are student-faculty interactions (Anaya & Cole, 2001; Kim & Sax, 2009; Lundberg et al., 2018). For example, Craft Defreitas and Bravo (2012) examined the relationship between student-faculty interactions, mentoring, self-efficacy, and grade point average on African American and Latino students. They found that interactions with faculty predicted

students' grade point average, and they observed that this relationship was partially mediated by students' self-efficacy. These two studies demonstrate the important role that student engagement can play in increasing the success of racial and ethnic minorities students. However, it is yet unknown whether HIPs have an effect on Latino students' engagement, and whether that relationship improves their college outcomes.

Similar to student engagement, research on HIPs targeted explicitly towards Latino students is scarce. Latino students are frequently included within a larger group (e.g., minority students), and studies usually draw conclusions for students as a group (Finley & McNair, 2013). In this context, thus far, research has demonstrated that HIPs are positively associated with engagement (Sweat et al., 2013), grade point average and timely graduation (Huber, 2010), deep learning (Finley & McNair, 2013), perceived learning and personal gains (Daniels et al., 2016), and overall satisfaction with the college experience (Daniels et al., 2016; Finley & McNair, 2013; Huber, 2010; Sweat et al., 2013).

In a recent study, McCormick et al. (2017) examined the relationship between HIPs and a selection of outcomes measured by NSSE for racial minority students. The four outcomes that they studied were: general quality of interactions, quality of interactions with faculty, perception of supportive environment, and overall satisfaction with the college experience. Their regression analysis showed that participation in HIPs had a positive effect on all four outcomes mentioned earlier. Also, McCormick et al. (2017) found that research with faculty members positively impacted students' perceptions of the quality of their relationship with faculty in general. This study did not elaborate much on the specific implications for Latino students. However, it appears that from all HIPs, service-learning and research with faculty had a modest effect on overall quality of interactions, and quality of interactions with faculty, respectively.

Given the connection between student engagement and HIPs with a range of positive college outcomes, scholars have expressed the need to exhaustively examine the impact of these experiences on students from underserved populations (J. E. Brownell & Swaner, 2010; Núñez, 2018). The existing literature provides evidence of the effectiveness of student engagement, and HIPs in the context of underserved students, such as Latinos, and it offers support to investigate these practices further. However, missing from the literature is a study that focuses only on Latino students and the effect of student engagement and HIPs on their college outcomes. The present study will provide insights on how student engagement relates to HIPs for Latino students. It will create a roadmap to understand how these constructs contribute to Latino students' success in America.

Purpose of the Study

The purpose of this research was to investigate how participation in HIPs influences student engagement, satisfaction, perceived learning gains, and self-reported grade point average and whether this effect differs for Latino and non-Latino students. This research fills in the gap in existing literature regarding HIPs participation, student engagement, and Latino college students.

The examination of this topic is prompted by the premise that students' characteristics (e.g., being Latino) influence their college engagement and, in turn, their engagement affects their college outcomes. This study will examine whether HIP participation has a differential or compensatory effect for Latino students, due to the fact that the literature has established that minority students' benefits more when they participate in HIPs than other groups of students. This research will contribute to the existing literature regarding Latino students' college

engagement and their participation in HIPs by broadening the understanding of such educational practices' effect on Latino students.

Research Questions

To understand the impact of student engagement and high-impact practices the present study will focus on the following research questions:

1. How does participation in HIP relate to students' engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others), satisfaction, and perceived learning gains, and self-reported grade point average (GPA)?
2. Is the relationship between participation in HIP on satisfaction, perceived learning gains and self-reported grade point average (GPA) the same for Latino and non-Latino students?
3. Does student engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others) mediate the relationship between high-impact practices and college outcomes (e.g., satisfaction, perceived learning gains) for Latino students?

Research Hypotheses

H_a (2): There is a statistically significant positive relationship between HIPs, student engagement, satisfaction, and perceived learning gains, and self-reported GPA for Latino students.

H_a (3): There is a stronger statistically significant effect of participation in HIPs on satisfaction, perceived learning gains, and self-reported GPA for Latino than for non-Latino students.

H_a (4): Student engagement mediates the relationship between HIPs and college outcomes.

Significance of the Study

This study's relevance lies in its contribution to the understanding of Latino students' engagement experiences during college. Pascarella and Terenzini (2005) have pointed out how important it is that institutions understand student engagement so that they can foster it:

> if, as it appears, individual effort or engagement is the critical determinant in the impact of college, then it is important to focus on the ways in which an institution can shape its academic, interpersonal, and extracurricular offerings to encourage student engagement (p. 602)

The present research will provide higher education stakeholders (e.g., faculty, administrators, and staff) with insights regarding relevant educational practices which can promote Latino students' college success. Knowing how Latino students engage with purposeful educational practices will help college administrators and faculty to target their efforts towards effective educational policies and practices.

By narrowing the focus of student engagement and high-impact practices on Latino students, this study will provide institutions with information on environmental or institutional practices they can utilize to benefit such a growing minority. Furthermore, this study will offer a framework for comprehending the effect of what institutions offer to Latino students and its influence on some of their college outcomes. On this note, Astin (1991) asserted that institutions should "learn as much as possible about how to structure educational environments so as to maximize talent development" (p. 18). Moreover, this research will contribute to the existing literature regarding Latino college students and their engagement in purposeful educational practice.

Assumptions

There are assumptions worth mentioning in the present study. First, the researcher assumed that the sample for this study was representative of the different racial groups in each campus. Also, the researcher assumed that the sample contained institutions that represent the population of the United States. Moreover, the present study assumed that the Survey of Student Engagement (NSSE), the instrument utilized to collect the data, does not measure student learning directly. Still, it assesses the way students engage in educational practices on their campuses. Finally, it is assumed in this study that the institutions who participated in National adhered to NSSE's terms of participation, including information about IRB requirements, protection of participants, and confidentiality of the results.

Delimitations

The present study had delimitations that should be addressed. First, this research was restricted only to data from NSSE administered in the United States. It does not include data from the Canadian version of NSSE because the purpose of this study was to focus on the Latino population within the United States. Additionally, this study did not include data from sources other than NSSE. NSSE is the largest survey of student engagement, and it is the only instrument that focuses on the high-impact practices of interest for this study. Finally, in terms of data analysis, the present research utilized five engagement indicators out of the ten offered by NSSE. The reason for not including all indicators was to narrow down on the more appropriate ones for the population and the study's research questions. Finally, this study was limited to cross-sectional data, which means that it is limited to data from a specific point in time.

Limitations

As with any research, the present study has limitations that should be mentioned. The first limitation is related to self-selection bias. Participation in HIPs is voluntary, and students decide whether or not they want to take part in them, so "Students who choose to participate in HIPs may be more motivated or more engaged, so their better outcomes may result from those types of internal factors rather than being an effect of the HIP" (Provencher & Kassel, 2019, p. 235).

Another limitation within this study has to do with the way HIPs are employed. Kuh (2008) has stated that the way HIPs are implemented will influence their effect on students; he observed that HIPs "must be done well" (p. 20). In other words, if HIPs are not executed well, then students will not obtain the expected benefits that these practices could bring them. This is a limitation for the present study because it is not possible to verify if HIPs were well implemented or if these programs were delivered poorly.

Terms and Definitions

The following terms represent key concepts within student engagement and the college experience.

High Impact Practices (HIPs). High Impact practices are purposeful educational activities which result in positive college outcomes, especially for students from underserved populations (Kuh, Schneider, et al., 2008). HIPs include firs-year seminar, common intellectual experiences, learning communities, writing and inquiry intensive courses, collaborative assignments and projects, undergraduate research, study abroad, service learning, internships or field experiences, capstone course, and ePortfolios (Kuh et al., 2017).

Latino/Hispanic. The United States Census Bureau defines "Hispanic or Latino as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race" (About the Hispanic Population and it's Origin section, para. 1). The present study will follow this definition and it will use the word Latino for consistency throughout the study.

National Survey of Student Engagement (NSSE). As stated by Kuh (2001a), NSSE is a survey instrument that "annually assesses the extent to which students at hundreds of four-year colleges and universities are participating in educational practices that are strongly associated with high levels of learning and personal development." (p. 12)

Student Engagement. According to Kuh and colleagues (2008), "student engagement represents both the time and energy students invest in educationally purposeful activities, and the effort institution devotes to using effective educational practices" (p. 542).

Chapter Summary

Latinos' matriculation in college has been steadily increasing within the last few years (Hussar et al., 2020). Regardless of Latino students attending college at higher rates, their graduation rates are not on par with other students (e.g., White students) (U.S. Department of Education National Center for Education Statistics., 2019). Student engagement and high-impact practices (HIPs) have emerged as educational experiences that have a positive effect on students' college experience (e.g., retention, grades) (Kuh, 2003; Kuh, Schneider, et al., 2008). According to Kuh (2008), HIPs have a *compensatory effect* for students belonging to minority racial groups, which means that they benefit even more than their peers. Kuh (2008) adds:

> engaging in educationally purposeful activities helps level the playing field, especially for students from low-income family backgrounds and others who have been historically

> underserved. Moreover, engagement increases the odds that any student—educational and social background notwithstanding—will attain his or her educational and personal objectives, acquire the skills and competencies demanded by the challenges of the twenty-first century, and enjoy the intellectual and monetary gains associated with the completion of the baccalaureate degree (p. 22)

Despite HIPs' known compensatory effect on minority students, there is very little research regarding the impact of HIPs on Latino students. Also, there is a gap in the literature concerning the relationship between student engagement and HIPs and how that influences Latino students' college outcomes. Thus, the present study will investigate how HIPs' participation influences student engagement, satisfaction, perceived learning gains, and self-reported GPA for college Latino students. The present study will expand the literature on Latino college students. Additionally, the present research will provide higher education stakeholders with a broader understanding of educational practices that are beneficial for Latino students and that could contribute to improving their college experience.

Chapter 2: Literature Review

The first chapter of this research provided a general overview of Latino students in higher education, student engagement, and HIPs. This second chapter offers a deeper review of Latinos in higher education, student engagement, and the conceptualization of HIPs. Then, this chapter presents an examination of the existing empirical research for student engagement and each HIP. Next, this section depicts the findings of the literature regarding Latino students in relation to engagement and HIPs. Lastly, this chapter ends with a discussion of the theoretical framework that will guide this study.

Latino Students: Higher Education, Barriers, and College Success.

Latino students in post-secondary education are more likely to be first-generation and have a job to pay for college (Excelencia in Educacion, 2020). Currently, Latino students are underrepresented at four-year institutions, as well as in community and technical colleges (Schack et al., 2019). In a comprehensive review of the literature, Nora and Crisp (2009) found that Latino students experience a series of barriers which affect their access to college. First, high-school dropout, a lot of Latinos do not complete high-school. Second, poor academic college preparation, Latino students are not well prepared to apply for post-secondary education. Third, socioeconomic problems and insufficient cultural and social capital, Latino students might not have access to the resources required to register or apply for college. For example, Latino students might not have anyone in their family who can help them navigate the enrollment process. Fourth, high tuition costs and inadequate financial support. Fifth, acculturative stress, Latinos come from a culture that makes them more susceptible to feel less confident in their academic abilities than students from other races/ethnicities. Finally, parental influence, when Latino students have their parents' support, they are more likely to have college aspirations.

According to the U.S. Department of Education (2020), Latino students have the lowest college degree attainment when compared to peers from other major races/ethnicities. Arbona and Nora (2007) used data from the National Educational Longitudinal Study of 1998 to investigate the elements that predicted Latino students' college attainment and persistence. They found that parents' college expectations, number of peers intending to enroll in college, being matriculated full-time, cumulative credit hours attempted, not postponing college registration, uninterrupted enrollment, and first-year grade point average increased Latino students' attainment and persistence (Arbona & Nora, 2007).

Later, Crisp et al. (2015) carried out an exhaustive review of the literature to examine the aspects that contribute to Latino students' academic success. They operationalized academic success as grade point average, persistence, and degree completion. Crisp et al. (2015) found that the factors that contributed to Latino students' academic success were

> (a) sociocultural characteristics; (b) academic self-confidence; (c) beliefs, ethnic/racial identity, and coping styles; (d) precollege academic experiences; (e) college experiences; (f) internal motivation and commitment; (g) interactions with supportive individuals; (h) perceptions of the campus climate/environment; and (i) institutional type/characteristics (p. 255).

As previously mentioned, Latinos' enrollment in post-secondary education has increased significantly in the last few years. The Association of American Colleges and Universities (AAC&U) asserts that in order to ensure Latino students' success it is not enough just to enroll them in college, but there needs to be targeted initiatives to promote their college success (Association of American Colleges and Universities, 2019). The AAC&U (2019) refers to *Excelencia in Education* as a nationwide program that has been implemented to foster Latino

students' success through data that they collect to understand Latino students' college experiences. According to the latest report by Excelencia in Education (2020) there are a number of initiatives that have been demonstrated to work to promote Latino students' college success. First, implementing academic advising, having an advisor that guides students allows them to have better academic outcomes. Second, promote career preparation, offerings that help Latino students develop competencies that prepare them for the job market are deemed crucial, especially activities that involve professional development and experiential learning opportunities. Third, participating in mentoring, Latino students need to have the chance to be in close contact with faculty, peers and others during their time in college so that they can feel supported and have a better sense of belonging. Fourth, provide financial aid support, the cost of post-secondary education has been identified as a barrier to Latino students' success, Excelencia in Educacion found that Latino students need help with a variety of financial issues such as "scholarship support, tuition assistance, and paid experiential learning opportunities." (p. 3). Finally, culturally responsive offerings, institutions should provide Latino students with a welcoming environment, by offering programming that is culturally appropriate for students and that makes their bilingual capabilities better.

The Excelencia report also reveals the value of close interactions with others (e.g., faculty, peers) and participation in experiential learning as strategies that contribute to Latino students' success. Both of these experiences are tied to the concepts of student engagement and HIPs. For example, students who are engaged tend to have more frequent interactions with faculty which in turn helps them fare better academically (Astin, 1993; Lundberg & Schreiner, 2004; Pascarella & Terenzini, 2005). Additionally, HIPs can be considered to be a form of experiential learning because students learn a topic through a hands-on experience (e.g.,

internship) (Kuh, Schneider, et al., 2008). Therefore, it makes sense to examine how student engagement and HIPs relate to Latino students' college success.

Student Engagement: Theoretical Background.

Student engagement can be defined as the time and effort that students invest in educationally purposeful activities and the policies that institutions introduce to encourage students to participate in those pursuits (Kuh, 2003, 2009). In a more detailed description, Kuh (2009) added:

> The engagement premise is straightforward and easily understood: the more students study a subject, the more they know about it, and the more students practice and get feedback from faculty and staff members on their writing and collaborative problem solving, the deeper they come to understand what they are learning and the more adept they become at managing complexity, tolerating ambiguity, and working with people from different backgrounds or with different views. Engaging in a variety of educationally productive activities also builds the foundation of skills and dispositions people need to live a productive, satisfying life after college. (p. 5)

The theoretical roots of student engagement can be traced back to several scholars who shaped the ideas behind this construct (Kuh, 2009; McCormick, Kinzie, et al., 2013). Back in the 1930s, Ralph Tyler, a prominent educational psychologist at The Ohio State University, stated the need to have educational objectives that were tied with specific student behaviors (Merwin, 1969). Later Tyler joined Robert Pace in the Committee on Personality Development in Youth. The purpose of this group was to research the development of students' personality during college. The committee's objective was to find personality constructs that were appropriate to measure outcomes in higher education (Pace, 1998).

The findings from the Committee lead Pace (1980) to develop the concept of "quality of effort" students make when they engage with their academic experiences throughout college. Pace argued that the "quality of effort" students put into their college experience has a direct impact on their success. In other words, when students take advantage of the facilities and opportunities offered to them in college, they are more likely to achieve their educational goals (Pace, 1980). Pace stated that the motivation behind the idea of measuring "quality of effort" is related to accountability, meaning that if students do not achieve their learning outcomes, it is their school's fault

> this assumes that the student is buying a product when actually the student, at a later point in time, is the product. So, the other side of accountability is the quality of effort students invest in using the facilities and opportunities college provides (Pace, 1998, p. 28).

Later, Pace developed the "College Student Experiences Questionnaire"(CSEQ) survey to operationalize his concept of quality of effort. This survey measures the effort students invest when they take advantage of what college offers them (Pace, 1990). Pace (1990) found that students learn more when they are engaged in educational activities that are meaningful to them. For example, Pace suggested that the combination of academic and social undertakings could prompt students to increase the quality of the effort that they devote to their educational experiences (Pace, 1990).

Pace's ideas relate to the contribution of Alexander Astin, who postulated his *Theory of Involvement* (Astin, 1984), which he defined as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). Astin suggested that students' involvement in their academic experience had a direct impact on their achievement; he

noted that the concept of motivation was part of the construct of involvement; however, he wanted to highlight the behavioral aspect of this concept (Astin, 1984).

The concept of student engagement was also shaped by the work of Vincent Tinto, who examined the effect of the institution's environment on student's assimilation and success in college (Tinto, 1975, 1986). Tinto explored the idea of student integration; he defined integration in academic and social terms (Tinto, 1975). Academic integration is operationalized through students' grades and intellectual development. Social integration takes place when students engage in informal activities through college, peer associations (friendships), and interactions with faculty (Tinto, 1975). Based on the college integration idea Tinto (1975) proposed a Theory of College Departure. This theory stated that students' lack of integration into the institution's system would lead them to have an increased probability of leaving college "it is the individual's integration into the academic and social systems of the college that most directly relates to his continuance in that college" (Tinto, 1975, p. 96). Student engagement draws from Tinto's student integration ideas because it incorporates ideas such as interactions with peers and faculty, the way students make use of educational resources, and how students assess their overall learning experiences.

Pascarella expanded Tinto's research on the influence of the institution's environment on students' success. Pascarella (1985) created a general causal model to understand the impact of college environments on students' learning and cognitive development. Figure 1 displays Pascarella's casual model.

Pascarella's (1985) model theorized that students' pre-college (background) traits affect student's college experience. At the same time, students' pre-college traits are correlated with the institution's characteristics.

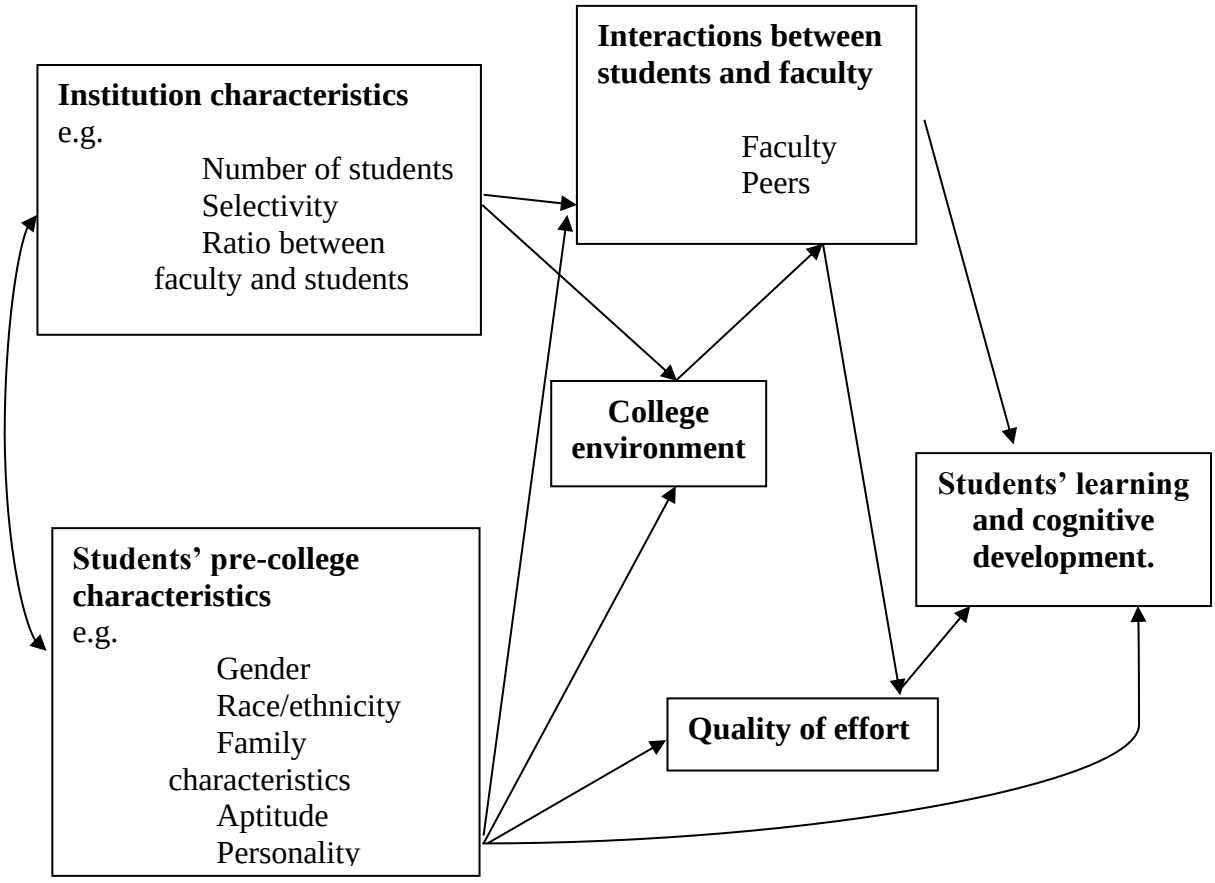

Figure 1. Pascarella's (1985) casual model

Both of these elements influence the interactions that students have with "agents of socialization" (faculty and peers), and the environment at the corresponding institution, which in turn affect the quality of students' effort. Lastly, the general causal model by Pascarella (1985) states that "learning and cognitive development are directly influenced by student background characteristics, interactions with major agents of socialization, and quality of effort" (p. 49). The student engagement concept is informed by Tinto's and Pascarella's theories because it considers the way students interact with their institution's environment, their contacts with faculty, and how this influences their success in college.

The work of Chickering and Gamson (1987) also contributed to the concept of student engagement. They created seven principles of good practice in undergraduate education, which summarized 50 years of research on teaching and learning practices that affect learning outcomes. These principles are 1) Promote student-faculty interactions, 2) create opportunities for students to collaborate, 3) utilize active learning, 4) provide timely feedback, 5) promote time on task, 6) convey high expectations, 7) recognize students' different abilities and their varied ways of learning. Chickering and Gamson (1987) emphasized the key role of educators and institutions in fostering the use of these practices to create an environment that is conducive to learning.

Following the footsteps of Chickering and Gamson's work, Pascarella and Terenzini (2005) summarized the research on college impact in *How College Affects Students Volume 2*. In this piece, Pascarella and Terenzini (2005) assert that there are a series of educational practices or experiences which affect students' success in college, such as student-faculty interactions, active learning, collaborative learning, learning communities, peer tutoring, and service-learning courses. Ultimately, Pascarella and Terenzini (2005) stated that "the greater a student's

engagement work or in the academic experience of college, the greater his or her level of knowledge acquisition and general cognitive growth" (p. 608). A lot of the practices identified by Chickering and Gamson and Pascarella and Terenzini became key constructs of the concept of student engagement.

Student Engagement: Empirical Research.

Empirical research has positively associated student engagement with persistence in college (Fredricks et al., 2004; Hu & McCormick, 2012; Kuh, 2003; Kuh, Cruce, et al., 2008), better grades (Carini et al., 2006; Kuh, Cruce, et al., 2008; Kuh et al., 2007; Pascarella & Terenzini, 2005), critical thinking (Carini et al., 2006; Pascarella et al., 2010), moral reasoning (Mayhew et al., 2012; Pascarella et al., 2010) and inclination to activities that require students' deep concentration (Padgett et al., 2010).

A recent study by Miller et al. (2019) examined the connection between faculty-related engagement and senior students' sense of belonging. They used data from the 2014 National Survey of Student Engagement (NSSE) to carry out their investigation. The researchers assessed sense of belonging utilizing an added module from NSSE which measured students' level of institutional acceptance. Miller et al. (2019) conducted a series of regressions in which they controlled for students' demographic characteristics as well as institutional characteristics. They found that "Student–faculty interaction, effective teaching practices, and participation in research with faculty are indeed important for predicting institutional acceptance" (Miller et al., 2019, p. 601).

In another current study, Tafesse (2020), examined the relationship between social networking, academic performance, and student engagement. According to Tafesse (2020) studies have shown that students' use of social networking sites has a negative effect on

students' academic performance (semester GPA). Tafesse (2020) conducted a mediation analysis to understand the effect of student engagement on social networking and academic performance. He found that "student engagement mediated the relationship between social networking site use and college students' academic performance." (Tafesse, 2020, p. 4759). Tafesse (2020) concluded the findings of his study showed that students' time spent on social networking sites takes away time from students' engagement which in turn results in poor academic performance.

Measuring Student Engagement: National Survey of Student Engagement (NSSE)

In order to measure the concept of student engagement, the Indiana University Center for Postsecondary Research (IUCPR) along with the National Center for Higher Education Management Systems (NCHEMS) developed the National Survey of Student Engagement (NSSE) (Kuh, 2009). According to its website, the National Survey of Student Engagement (NSSE) is a survey instrument that gathers information from first year and senior undergraduate students at four-year colleges regarding students' engagement in educational practices that are related to student learning, more specifically:

> The questionnaire collects information across five categories: (1) participation in dozens of educationally purposeful activities, (2) institutional requirements and the challenging nature of coursework, (3) perceptions of the college environment, (4) estimates of educational and personal growth since starting college, and (5) background and demographic information (NSSE Survey Instruments n.d.-c, para. 1)

According to NSSE's website, this instrument was employed by over six hundred postsecondary institutions nationwide in 2020 (National Survey of Student Engagement, n.d.-a). NSSE was first administered in the United States in the year 2000, and it went through an update in 2013 (McCormick, Gonyea, et al., 2013). Since its conception NSSE has been adapted for use

in many other countries (e.g., Australia, Canada, China) (Coates & McCormick, 2014). Additionally, NSSE's principles have been adapted to other educational areas such as law school with the Law School Survey of Student Engagement (McCormick, Kinzie, et al., 2013)

NSSE was created based on the principles of student engagement (Kuh, 2009). Thus, from the start this instrument attempted to capture the conceptual elements of student engagement through the behavioral and perceptual expressions of this concept (McCormick, Kinzie, et al., 2013). As stated by McCormick and colleagues (2013), NSSE measures the behavioral aspects of student engagement by asking students questions about their activities inside and outside the classroom, and the way faculty promotes learning. Additionally, NSSE measures the perceptual expressions on student engagement by including questions regarding students' views on their relationship with key people at their institution (e.g., faculty, peers) and their opinions on the environment that their institution provides.

In principle, NSSE's strong focus on the behavioral features of student engagement provides institutions with actionable data that they can use to promote student learning (McCormick, Gonyea, et al., 2013). Thus, NSSE was created to be used by institutions as a benchmarking instrument "that institutional leaders can use to gauge the effectiveness of their programs by comparing results for their students against those from a group of comparison institutions." (McCormick, Kinzie, et al., 2013, p. 60).

It is essential to mention that the validity of survey data, and more specifically NSSE, has been questioned by higher education scholars (Bowman, 2011; Campbell & Cabrera, 2011, Porter, 2011). Some of the apprehensions with NSSE include possible problems with social desirability bias (Bowman, 2011), validity and psychometric integrity (Campbell & Cabrera, 2011), and low response rates and subjectivity of self-reporting (Porter, 2011). While some of

the concerns raised are valid, most are limitations of cross-sectional survey research in general. Moreover, some studies have shown that the social desirability bias is not crucial in how students report of their attitudes and behaviors in college (Miller, 2012). Moreover, the psychometric attributes of NSSE that were utilized in this research have been validated by NSSE (National Survey of Student Engagement, n.d.) and have been utilized in other published research (Fosnacht & Gonyea, 2018; Gordon et al., 2008; Pike, 2006). While the average institutional response rate to NSSE is low (around 30%), research on response rates (Fosnacht et al., 2017) indicates that even relatively low response rates can provide accurate and reliable estimates. Survey data can be seen as a manifestation of respondents' perceptions; the data obtained through surveys provides useful information regarding students' experiences, it can be considered by institutions to inform decisions and policies on campus (Gonyea & Miller, 2011; Pike, 2013).

Benchmarks and Engagement Indicators

In an effort to provide information that could be used by institutions for benchmarking, NSSE drew from the work of Chickering and Gamson to develop "Benchmarks of Effective Educational Practice," or simply "Benchmarks" (National Survey of Student Engagement, 2004, 2005). Kuh (2009) indicated that these Benchmarks attempted to capture essential elements of students' experiences in college; he added that "These student behaviors and institutional features are some of the more powerful contributors to learning and personal development" (p. 16). These Benchmarks were clustered in five groups: level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences, and supportive campus environment. *Level of academic* challenge explored whether institutions were setting high levels of expectations regarding students' performance. *Active and collaborative*

learning examined the effects of working with peers on students' college experiences. *Student-faculty interaction* examined the contacts between students and faculty in and out of class and how these interactions affect student learning. *Enriching educational experiences* measured the impact of a series of educational practices on student outcomes (e.g., learning communities, undergraduate research, capstone experiences). *Supportive campus environment* assessed students' perception of their institutions' environment; it attempted to understand how students viewed the quality of their relationships with peers, faculty, and college administrators (Kuh, 2009).

According to McCormick et al. (2013), despite the fact that the NSSE Benchmarks had face validity, institutions reported that they were too general and did not provide them with useful information for improvement. In 2013, NSSE went through a process of general review, and the NSSE Benchmarks were replaced with Engagement Indicators. McCormick and colleagues (2013) stated that "The new Engagement Indicators combine high face validity with a more coherent framework and specific measures for the improvement of teaching and learning" (p. 10). Another big change to the new updated NSSE was to include a category called High Impact Practices. These purposeful educational activities were previously included in the Enriching Educational Experiences benchmark. Table 1 (McCormick, Gonyea, et al., 2013, p. 11) displays the shift from Benchmarks of Effective Educational Practice to Engagement Indicators and the inclusion of High Impact Practices.

High Impact Practices (HIPs): Conceptual Background

High-impact practices (HIPs) are defined as effective educational practices that offer students considerable benefits. Participation in HIPs is deemed especially advantageous for students from underserved populations, minorities, and students who start college with lower test

scores (Kuh, Schneider, et al., 2008). Some examples of HIPs are learning communities, undergraduate research, and study abroad experiences (Kuh, Schneider, et al., 2008).

The term "high-impact practices" was first mentioned by George Kuh in the *2006 National Survey of Student Engagement (NSSE) Annual Report*, where Kuh defined them as "activities that make a claim on student time and energy in ways that deepen learning and change the way students think and act" (National Survey of Student Engagement, 2006, p. 9). The educational activities which could be categorized as HIPs were not new in higher education and had existed since the 1970s (Finley & McNair, 2013). However, Kuh, O'Donnell, and Schneider (2017) describe that NSSE just started measuring their impact around 1998, when NSSE was first piloted; back then, they were called "engaging educational practices." Later, in their 2007 report, *College Learning for a New Global Century*, the Association of American Colleges and Universities (AAC&U) employs the term "high-impact practices" to refer to a series of effective educational practices, informed by research, which institutions can use to foster student learning (Association of American Colleges and Universities, 2007). The HIPs mentioned in this report include first-year seminars, common intellectual experiences, writing-intensive courses, collaborative assignment projects, learning communities, undergraduate research, diversity learning, service learning, internships, and capstone courses and projects (Association of American Colleges and Universities, 2007).

Kuh added nuance to the definition of HIPs by outlining the specific benefits that these practices bring to students (National Survey of Student Engagement, 2007). Kuh asserted that HIPs require that students spend a substantial amount of time and effort in more meaningful tasks, increase interactions with faculty and peers, and prompt students to engage with diverse others (National Survey of Student Engagement, 2007). HIPs give students the chance to receive

continuous feedback from faculty and peers; allow students to appreciate how to apply what they have learned beyond college; and have the potential to be life-changing (National Survey of Student Engagement, 2007).

In the 2008 report *High-Impact Educational Practices: What Are they, Who Has Access to Them, and Why they Matter,* George Kuh expanded the concept of HIPs even further by linking these practices with learning outcomes and empirical research that supported their use. Kuh (2008) expressed that to assess college student success, institutions needed to move beyond measurements of retention and grade point average (GPA). However, the definition of college success should include "whether graduates are in fact achieving the level of preparation—in terms of knowledge, capabilities, and personal qualities" (Kuh, Schneider, et al., 2008, p. 2). Kuh (2008) stated that college success should include measurements of student learning outcomes and the assessment of practices that allow students to achieve those outcomes. Thus, Kuh (2008) asserted that higher education institutions should examine the influence of "effective educational practices" on college outcomes. For this reason, Kuh associated HIPs with a series of "essential learning outcomes," which were developed by the AAC&U through their Liberal Education and America's Promise (LEAP) initiative.

The LEAP essential learning outcomes stated that higher education institutions should foster: "knowledge of human cultures and the physical and natural world", "intellectual and practical skills" (e.g., critical thinking, analysis, problem-solving, applying mathematical knowledge to real-world problems, communication skills), "personal and social responsibility" (e.g., civic engagement- local and global-, intercultural competence, ethics), and "integrative learning" (i.e., the ability to apply knowledge to complex problems and situations) (Association of American Colleges and Universities, 2007). Then, Kuh (2008) showed how institutions could

foster each of these outcomes by implementing the appropriate HIPs. For example, if colleges wanted to "strengthen students' intellectual and practical skills," they should promote participation in undergraduate research, or if administrators wanted to increase students' "personal and social responsibility," they should encourage students to take part in service-learning courses (Kuh, Schneider, et al., 2008).

In addition to associating HIPs with the LEAP "essential learning outcomes," Kuh (2008) presented empirical evidence of the educational benefits associated with HIPs. He showed that HIPs are positively and strongly related to deep learning (i.e., ability to acquire information and comprehend its meaning) and self-reported learning gains. Kuh's abovementioned report was pivotal to bring attention to HIPs, and it prompted researchers to examine these practices in more detail.

High Impact Practices: Empirical Research

It has been more than a decade since George Kuh and his colleagues at the National Survey of Student Engagement (NSSE) linked student participation in HIPs with a series of educational benefits (Kuh, Schneider, et al., 2008; National Survey of Student Engagement, 2006, 2007).

Since then, scholars have positively associated HIPs with higher levels of student engagement (Nelson Laird et al., 2007; Pike et al., 2010; Rocconi, 2011), better grades (Bonet & Walters, 2016; Bowman & Holmes, 2018), and persistence (Kinzie, 2012; Kuh et al., 2017; Lockeman & Pelco, 2013). In a recent study, Provencher and Kassel (2019) observed that participation in HIPs predicted second-year students' retention; sophomore students that participated in HIPs were 12 percent more likely to persist for a third year of studies.

Table 1 From Benchmarks to Engagement Indicators and High-impact Practices

Former NSSE Benchmarks	New Engagement Measures
Level of Academic Challenge	● Higher-Order Learning ● Reflective and Integrative Learning ● Learning Strategies ● Quantitative Reasoning *Theme: Academic Challenge*
Active & Collaborative Learning	● Collaborative Learning ● Discussions with Diverse Others *Theme: Learning with Peers*
Student-Faculty Interaction	● Student-Faculty Interaction ● Effective Teaching Practices *Theme: Experiences with Faculty*
Supportive Campus Environment	● Quality of Interactions ● Supportive Environment *Theme: Campus Environment*
Enriching Educational Experiences	*Participation in High-Impact Practices* ● Learning Communities ● Service-Learning ● Research with Faculty ● Study Abroad ● Internships and Field Experiences ● Culminating Senior Experiences

Note. This table shows the evolution of NSSE's benchmarks into engagement measures and HIPs. Adapted from Refreshing engagement: NSSE at 13, McCormick, R., Gonyea, R., & Kinzie, J, 2013, *Change: The Magazine of Higher Learning,* p. 11. (https://doi.org/10.1080/00091383.2013.786985). Copyright 2013 by Taylor & Francis.

Throughout the years, scholars have related HIPs with a series of cognitive and affective outcomes, such as enhanced critical thinking (Brower & Inkelas, 2010; Kilgo et al., 2013; Seifert et al., 2014), need for cognition (Kilgo et al., 2015; Kilgo et al., 2013; Seifert et al., 2014), deep learning (Bureau et al., 2014; Gonyea et al., 2008), intercultural effectiveness (Engberg, 2013; Kilgo et al., 2013), and satisfaction (Bowman & Holmes, 2018; McGill, 2012; Zilvinskis, 2019). In a comprehensive review of the empirical research, Brownell and Swaner (2010) found a number of positive student outcomes associated with participation in HIPs. Some of these outcomes included higher grades, persistence, better graduation rates, enhancement of research skills, improved civic engagement, better appreciation for diverse others, and increased satisfaction with their experience in college in general. These effects were positive for all students in general, but Brownell and Swaner noted that there was little attention given to the impact of these practices on underserved college students (low-income, first-generation, African American, and Latino/a). Tukibayeva and Gonyea (2014) examined first-year students' participation in three HIPs (service learning, learning communities, and undergraduate research). Using data from NSSE 2011, they were able to associate HIPs with deep approaches to learning (higher-order learning, integrative learning, and reflective learning), self-reported learning gains (e.g., real-world applied knowledge, personal development, and ethics), and satisfaction with first-year experience.

In the past, there have been concerns regarding students' access to HIPs; it has been reported that not all groups of students are able to access HIPs at the same rate (Kuh et al., 2017). Thus, scholars have started to focus their research on particular groups of students based on their ethnicity/race, gender, sexual orientation, academic upbringing (first-generation), and socioeconomic status (Brckalorenz et al., 2017; Conefrey, 2018; Kilgo et al., 2019; Kinzie,

2012). Garvey et al. (2018) examined students' participation in HIPs according to their sexual orientation. While controlling for student and institutional characteristics, they found that lesbian, gay, bisexual & questioning (LGBQ) students participated in HIPs at the same rate than heterosexual students. However, they noticed that regular interactions with faculty increased the chances of LGBQ students participating in HIPs (Garvey et al., 2018). Zilvinskis and McCormick (2019) assessed students' involvement in HIPs according to their employment status. They found that students who work on campus up to 30 hours per week tend to take part in more HIPs. But they found that working more than 30 hours per week had a negative effect on HIP participation. Sweat et al. (2013) compared the exposure to HIPs of White students versus students belonging to racial minorities (African American, Native Americans, Asian Americans, Latino). They learned that White students experienced more exposure to HIPs than racial minority students (Sweat et al., 2013).

Besides the focus on specific populations of students, some researchers have turned their interest to the post-college impacts of HIPs. For instance, Miller et al. (2018) examined the effect of HIP participation on students' future career plans. They found that students who took part in HIPs had a greater chance to look for employment right after graduation and had plans of enrolling in graduate school. Later, Wolniak and Engberg (2019) explored the influence of HIP experiences on early career outcomes. Their analysis showed that students who participated in internships or a study abroad experience tended to earn higher salaries after college than those students who did not participate. Wolniak and Engberg (2019) note that the effect of HIPs on career outcomes was not broad and that it depended on students' experiences (e.g., major).

Another aspect that has been on scholars' research agenda is to examine the quality of HIPs. Kuh (2008) has argued that it is not sufficient that students engage in HIPs, but it is

essential to focus on the quality of these experiences. In 2015 NSSE asked students specific questions regarding the quality of their HIPs. Zilvinskis (2019) examined these data and found that quality elements such as increased level of expectations, faculty interactions, and real-world applications were positively associated with higher-order learning, effective teaching practices, supportive environment, grade point average, and satisfaction. Zilvinskis (2019) noted that these positive results were inconsistent among underserved students (African-America, Latino/a Hispanic, and first-generation).

Six High Impact Practices: Description and Impact on College Outcomes

The present study will focus on six HIPs: 1) learning communities, 2) undergraduate research, 3) study abroad experiences, 4) service-learning, 5) internship or field experiences 6) capstone courses or culminating senior experiences. The aforementioned HIPs have been associated with multiple positive college outcomes, which will be discussed in detail next.

Learning Communities

Learning communities have been around since the early 1920s, and since then, they have been prevalent in American universities (Fink & Inkelas, 2015; Kellogg, 1999). Gabelnick et al. (1990) defined learning communities as:

> any one of a variety of curricular structures that link together several existing courses – or actually restructure the curricular material entirely – so that students have opportunities for deeper understanding and integration of the material they are learning, and more interaction with one another and their teachers as fellow participants in the learning enterprise. (p. 19)

Kuh (2017) asserted that the main objectives of learning communities are to give students the opportunity to integrate what they have learned across courses and to engage them with issues

that go “beyond the classroom”. Learning communities can be classified into five modalities: 1) paired or grouped classes, 2) smaller cohorts within larger courses, 3) coordinated or teamed-taught lectures, 4) learning communities for specific groups of students (e.g., minorities in STEM), 5) Residential/living-learning communities (Fink & Inkelas, 2015; Kellogg, 1999).

There is a wealth of research describing students’ gains when they participate in learning communities (Otto et al., 2015; K. Taylor et al., 2003). Involvement in learning communities has been positively linked with persistence (Bruffee, 1999; Engstrom & Tinto, 2008; J. L. Johnson, 2000; Price, 2005), higher grade point average (Baker & Pomerantz, 2000; Bonet & Walters, 2016; Knight, 2003; Price, 2005; Rocconi, 2011), and increased engagement (Engstrom & Tinto, 2008; Hall & O’Neal, 2016; Pike, 1999; Rocconi, 2011), to name a few. Zhao and Kuh (2004) analyzed the effects of participating in learning communities on a large sample of college students (80,479 individuals). They concluded that after controlling for student and institutional characteristics, involvement in learning communities is positively associated with better grades, student engagement, personal and social gains, and satisfaction with the college experience. Later, Pike et al. (2010) used NSSE data to investigate the relationship between learning communities and student engagement. They found that learning community participation was positively linked to student engagement constructs such as academic effort, integrative and higher-order thinking, diversity experiences, student-faculty interaction, and perceptions of a supportive environment. In a more recent study, Rima et al. (2019) investigated the implications of course-based learning community participation for first-year criminal justice students in several cohorts. They observed that students in the learning communities showed improved academic progress (obtained higher grades) and had better retention rates when compared to students who did not engage in the course-based learning community.

Researchers have also connected learning community participation with improving students' appreciation of diversity (J. E. Brownell & Swaner, 2010; Inkelas et al., 2006; Pike et al., 2010), facilitating students' transition into college (J. E. Brownell & Swaner, 2009; Inkelas & Weisman, 2003; Knight, 2003), and increasing sense of belonging (J. E. Brownell & Swaner, 2010; Hoffman et al., 2002). Ribera et al. (2017) examined the relationship of three HIP and sense of belonging. They found that after controlling for student and institutional characteristics, learning community involvement was positively related to sense of belonging. Browner and Inkelas (2010) studied students' gains from living-learning communities. They observed that students who participated in this experience had increased critical thinking, showed stronger dedication to civic engagement, and reported having an easier transition into college.

Research with Faculty

Research with faculty or undergraduate research is a form of experiential learning that allows undergraduate students to engage in empirical inquiry (Kuh et al., 2017). Pascarella and Terenzini (2005) define undergraduate research as:

> an amalgam of situational and behavioral factors intended both to provide a window on the intellectual life of the scholar and to promote students' active involvement in their own learning, increased and more meaningful interactions with faculty members, opportunities to apply course-related theory and skills in solving real problems, and a challenging intellectual activity. (p. 406)

Undergraduate research experiences have been associated with a host of benefits (Astin, 1993; J. E. Brownell & Swaner, 2010; Lopatto, 2009). Some studies have found that research with faculty has an impact on retention, graduation rates, and degree completion (Ishiyama, 2001; Jonides et al., 1992; Pascarella & Terenzini, 2005; Rodenbusch et al., 2016). Rodenbusch et al. (2016)

compared students' participation in a course-based undergraduate research experience and used propensity score matching to account for students 'differences. They found students who engaged in undergraduate research had a higher probability of graduating within six years when compared to students who did not take part in undergraduate research.

Studies have shown that undergraduate research can boost students' understanding of how to conduct research, and it can increase their confidence as researchers (Russell et al., 2007; Seymour et al., 2004; Wolf, 2018). Undergraduate research improves students' critical thinking abilities (Bauer & Bennett, 2003; Hu et al., 2008; Ishiyama, 2002; Wolf, 2018), and it enhances learning (S. E. Brownell et al., 2015; Lopatto, 2004, 2007; Olimpo et al., 2016). There is evidence that undergraduate research increases the probability that students will pursue post-graduate studies (Bauer & Bennett, 2003; Eagan et al., 2013; Lopatto, 2004, 2007). Russell et al. (2007) they surveyed 15,000 individuals between 2003 and 2005 regarding their experiences in undergraduate research. They observed that undergraduate research improved students' understanding of how to conduct research, increased students' confidence, and it enhanced their knowledge of what it means to be a graduate student. Also, the longer students participated in research, the more likely they were to "expect obtaining a Ph.D." Russell et al. (2007) indicate that these effects were strongest for Hispanics/Latinos (Russell et al., 2007). Craney et al. (2011) sent a pre-and post-survey to undergraduate students who had participated in a summer research experience going from 2001 to 2005. Craney et al. (2011) had 465 respondents, and they utilized descriptive and inferential statistics to draw conclusions. They found that participants reported the most gains in learning how to conduct research and acquiring knowledge from their specific area of study. Students stated that this experience helped them solidify their choice of attending graduate school. Craney et al. (2011) asserted that students who were involved in multiple

summers of research were more likely to consider research as a possible career choice. Moreover, they noticed that undergraduate research participation was associated with long-term achievement (higher graduation rates and receiving national awards).

Research with faculty has been associated with improved communication skills and overall satisfaction with college (Bauer & Bennett, 2003; Bowman & Holmes, 2018; Craney et al., 2011; Hu et al., 2008; Wolf, 2018). Carter et al. (2015) examined the impact of undergraduate research on 5,126 engineering students. They used propensity score matching to analyze the data so that they could account for self-selection bias since not all students in engineering might have had the chance to engage in research. After adjusting scores for propensity to participate, Carter et al. (2015) learned that undergraduate research is a good predictor of communication skills such as wiring, presenting, communicating well with other team members, non-technical audiences, and people from different backgrounds. In summary, undergraduate research can be described as a life-changing because it allows students to realize that they have the necessary capabilities to do research, and it "helps students to clarify their career paths"(Yaffe et al., 2014, p. 31).

Study Abroad Experiences

Higher education institutions have provided students with the opportunity to study abroad for quite some time (Pascarella & Terenzini, 2005). Study abroad programs or courses provide students with the chance to "explore cultures, life experiences, and worldviews different from their own." (Association of American Colleges and Universities, 2007, p. 54). Therefore, by engaging in this activity, students would be able to increase their competence in global and cultural awareness (Kuh, Schneider, et al., 2008).

Studies have found that study abroad promotes students' global perspective (Clarke III et al., 2009; Engberg, 2013; Hudson & Tomás Morgan, 2019; Tarrant et al., 2015). When students have a global perspective, it means that they are able to consider many cultural perspectives when they engage with the world around them, students are able to "relate to others who differ with respect and openness."(Chickering & Braskamp, 2009, p. 28). Study abroad enhances intercultural proficiency, better understanding, and appreciation of other cultures (American Institute for Foreign Study, 2013; Black & Duhon, 2006; Engberg, 2013; Ingraham & Peterson, 2004; Lott, 2013).

Tarrant et al. (2015) explored the relationship between studying abroad and the development of a global perspective among 291 undergraduate students. They surveyed students before and after they studied abroad (pretest, posttest). The researchers used the Global Perspective Inventory (GPI) to measure students' experiences. The GPI measures students' cognitive knowledge (understanding of different cultures), respect and tolerance for other cultures, and relating to others while acting with cultural sensitivity (Iowa State University, n.d.). After analyzing their data, Tarrant et al. (2015) concluded that studying abroad enhanced students' global perspective as measured by the GPI. This study did not include findings for students according to their racial or ethnic differences.

More recently, Hudson and Tomás Morgan (2019) examined how some elements of the study abroad experience, "program duration and the extent of students' engagement in learning and with local communities while abroad" (p. 25), influenced global perspective. As in the previous study, Hudson and Tomás Morgan (2019) used the GPI to collect their data, and they analyzed their data using structural equation modeling. Hudson and Tomás Morgan (2019) found that while studying abroad, the length of the experience and students' involvement in purposeful

educational activities (e.g., research within the community) were positively linked to global perspective.

Some studies have associated studying abroad with increased civic engagement and self-efficacy (Covert, 2014; Cubillos & Ilvento, 2012; Lott, 2013; Murphy et al., 2014; Petersdotter et al., 2017). Recently, Mitic (2020) investigated the connection between study abroad and civic engagement as measured by volunteering. He used longitudinal data and regression analysis to draw his conclusions. Mitic (2020) found that "study abroad participants were more likely to volunteer after college even when accounting for prior volunteer behavior" (p. 622). Petersdotter and colleagues (2017) studied the relationship between studying abroad and self-efficacy. They analyzed data from 221 students who studied abroad. They learned that studying abroad was a significant predictor of improved self-efficacy, and this effect was enhanced by the number of social contacts students made while studying abroad. This study did not have findings for students corresponding to different races or ethnicities.

There has been research suggesting that studying abroad influences retention, graduation rates, and timely graduation (Cochran, 2019; Di Maggio, 2019b; Hamir, 2011; Metzger, 2006; O'Rear et al., 2012; Xu et al., 2013). One of these studies found that after controlling for high-school GPA, first-year GPA, gender, and race studying abroad was a statistically significant predictor of five-year and six-year graduation (Xu et al., 2013). Di Maggio (2019b) observed that participation in study abroad enhances students' positive feelings of their colleges, which in turn increases retention. Additionally, in a different study, Di Maggio (2019a) noted that students who study abroad tend to be involved in other HIPs. This is important because the more HIPs in which students engage, the more they theoretically benefit (Kuh, Schneider, et al., 2008).

Research indicates that studying abroad has an impact on students' career plans (Carlson et al., 1991; Dwyer, 2004; Geyer et al., 2017; Jon et al., 2020; Norris & Gillespie, 2009; Orahood et al., 2004). A study done by the American Institute for Foreign Languages (2013) found that students who participated in study abroad programs reported that this experience made them reaffirm or reconsider their career choice. Also, students reported that studying abroad gave them the chance to develop skills that helped them find employment right after graduating from college. Similarly, in a report by the Institute of International education, researchers indicated that students who studied abroad reported that the experience allows them to gain the necessary skills for their future careers (Farrugia & Witherell, 2017). In another investigation, Di Pietro (2013) found that studying abroad increased students' likelihood of obtaining a job within three years following their graduation. Moreover, Wolniak and Engberg (2019) report that students who study abroad during college tend to earn 5% more at the beginning of their careers.

In a mixed-methods study, Ruth et al. (2019) investigated the benefits of studying abroad participation. They surveyed 118 alumni regarding their experiences studying abroad; more specifically, they asked participants to report on both personal and professional gains from studying abroad. The researchers concluded that this experience increased students' personal development and allowed them to improve skills that were necessary for their future careers. Also, students reported that studying abroad "improved academic performance, enhanced interest in their academic study, influenced subsequent educational experiences and their decision to attend graduate school, expanded their worldview, and built community" (Ruth et al., 2019, p. 278).

Service-Learning

Service-learning is an experiential learning activity that is usually part of a course. Students have the opportunity to work within the community to find solutions to real-world problems using the knowledge that they have acquired in class (Kuh et al., 2017; Kuh, Schneider, et al., 2008). Kuh (2017) states that for this experience to be successful the key is that students have the chance to reflect on the connection between what they learn in their courses and what takes place in their communities.

Service-learning is not a new pedagogical method; it has been employed in the United States since the mid-1960s (Taylor, 2017). Thus, researchers have been documenting the effects of this experience on students for quite some time (A. W. Astin & Sax, 1998; Eyler et al., 1997; Lockeman & Pelco, 2013; Taylor et al., 2019). Some studies have found that participation in service-learning is positively associated with a number of academic and cognitive outcomes such as higher grade point average (GPA), enhanced critical thinking, and improved writing skills (Astin et al., 2000; J. E. Brownell & Swaner, 2010; Pascarella & Terenzini, 2005). In a longitudinal study, Lockeman and Pelco (2013) examined six years of data and compared students who enrolled in service-learning courses to students who did not. They observed that students who enrolled in service-learning classes had significantly higher GPA and graduated at higher rates, especially minority and low-income students. Furthermore, through discrete-time survival analysis, Lockeman and Pelco (2013) found that involvement in service learning-courses was a significant predictor of degree completion. Later, Bureau et al. (2014) use NSSE data to examine the impact of service-learning involvement. While controlling for student and institutional characteristics, they observed that service learning had a significant positive

influence on students' deep learning, integrative learning, and self-reported learning gains (benefits in social and personal development).

Scholars have observed that participation in service-learning courses has an impact on students' identity development, personal development, sense of belonging, and global perspective-taking, which is broadly the ability to understand other people's realities/points of view (Chesbrough, 2011; Engberg & Fox, 2011; Litke, 2002; Ribera et al., 2017). Additionally, this HIP has a positive effect on students' appreciation of diversity; students are able to have a better understanding of people from different backgrounds (Keen & Hall, 2009). More recently, Hemer et al. (2019) found that service-learning was positively associated with perspective-taking, which means being able to understand or view a situation from someone else's perspective.

Internships

Internships or field experiences/placements are experiential learning opportunities in which students have the chance to gain practical experience in a topic related to their career interest, under the supervision of professionals in the field (Coco, 2000; Kuh et al., 2017). These types of experiences are supposed to provide students with an easier way to transition from college into the job market. In addition, they provide future employers with the chance to evaluate potential employees without risk, they are "a win-win situation for students, host companies, and universities" (Coco, 2000, p. 42). According to Kuh (2017) "Internships and other forms of field experiences such as student teaching are increasingly common" (p. 10). In their 2019 annual report *Engagement insights: Survey findings on the quality of undergraduate education,* the National Survey of Student Engagement reported that 48 percent of senior

students engaged in internships or field experiences. Additionally, the report indicated that the participation rate for Latinos was 41 percent.

Internship experiences have been associated with a series of cognitive and career-related benefits for students (Kuh, Schneider, et al., 2008; Sanahuja Vélez & Ribes Giner, 2015). Studies have found that participating in internships improved students' knowledge of the topic and enhanced their communication and analytical skills (Coco, 2000; Gilbert et al., 2014; Jones, 2002). Engaging in internships has been associated with improved academic performance (higher grades) (Gomez et al., 2004; Mansfield, 2011; Parker et al., 2016).

Binder and colleagues (2015) examined the effects of internship completion on academic outcomes. They had a sample of more than 15,000 students from several cohorts from the years 2001 to 2005. Due to the nested nature of their data (students within degree courses), the researchers used multilevel modeling to analyze the data. Binder et al. (2015) found that while controlling for gender, ethnicity, and previous academic achievement, internship participation was positively associated with better grades. Also, the effect was the same for students from disadvantaged and advantaged backgrounds.

There are several studies discussing the effects of internship completion on work-related outcomes, employment, and career benefits (Coco, 2000; Knouse & Fontenot, 2008; Margaryan et al., 2020; Sanahuja Vélez & Ribes Giner, 2015; Weible & McClure, 2011). By completing an internship, students are able to understand what the job entails, and they can better appreciate what type of occupation would be more suitable for them (L. Brooks et al., 1995; Coco, 2000; Fernald & Goldstein, 2013; Jones, 2002; Keller, 2012). Students who participate in internships are more likely to find employment faster and earn higher salaries than those who do not

(Callanan & Benzing, 2004; Coco, 2000; Gault et al., 2010; Jones, 2002; Margaryan et al., 2020; Wolniak & Engberg, 2019).

In a recent study funded by the National Association of Colleges and Employers (NACE), researchers surveyed 4,000 graduates from 25 liberal arts institutions across the United States regarding their experiences with internships (Guarise & Kostenblatt, 2018). The purpose of this study was to examine the factors that contribute to short-term and long-term career success. The researchers used a series of multiple regressions to conduct their study. After controlling for demographic and academic factors, researchers found that respondents who completed an undergraduate internship obtained employment faster than those who did not have an internship; students that had internships found a job within three months compared to the usual average of three to six months. Also, respondents who had an undergraduate internship earned $2,977 more per year in their first job than the students who did not. However, the reported R^2 associated was only .10, which means that this model only explained 10% of the variance in the salary earned by students. A more interesting finding of this study is that respondents who participated in an undergraduate internship have current salaries that are on average $2,082 higher than those who did not. The R^2 associated with this result was .43 , which means that this model explained 43% of the variance in the current salary earned by respondents.

Capstone courses or culminating senior experiences

Capstone courses or culminating senior experiences "require students nearing the end of their studies to complete some sort of project that integrates and applies what they have learned" (Kuh et al., 2017, p. 10). These experiences can take two forms, they can be based on a course, or they can be centered on a project (Padgett & Kilgo, 2012). According to Padgett and Kilgo (2012), the main objective of capstone courses is for students to improve their critical thinking

abilities (analytical or problem-solving skills). Currently, 44% of undergraduate students participate in a culminating experience during their senior year in college (National Survey of Student Engagement, 2019).

There is some evidence that culminating experiences offer students a series of educational benefits (Henscheid et al., 2019; Kinzie, 2013; Kuh, Schneider, et al., 2008). The National Survey for Student Engagement (NSSE) has provided consistent findings regarding capstone's educational outcomes. Capstone course participation improves students' critical thinking, intellectual curiosity, ability to learn independently, and making determinations based on logic. Also, it increases students' interaction with faculty, collaborative learning, and perceptions of a supportive environment (National Survey of Student Engagement, 2009). Also, students who participate in capstone experiences describe gains in their work-related skills and knowledge (National Survey of Student Engagement, 2011). Moreover, students who are expected to deliver a final project as the product of their capstone experience show greater gains than those who are not (National Survey of Student Engagement, 2007).

Some studies have found that capstone experiences foster integrative learning; students are able to incorporate what they have learned throughout their college experience (Henscheid, 2008; Kerrigan & Carpenter, 2013; Redman, 2013; Schneider, 2003). Other studies claim that participation in a culminating senior experience improves students' interpersonal skills, personal values, and tolerance for others (R. Brooks et al., 2004; Rhodes & Agre-Kippenhan, 2004). Capstones facilitate students' transition from college to work and prepares them for their professional life (Henscheid, 2008; McGill, 2012; Sill et al., 2009). Collier (2000) examined the effect of capstones in how students develop their college student role identity. He observed that

participation in capstone was positively associated with students' identification as college students and socialization.

Schermer and Gray (2012) examined the capstone experiences of undergraduate students in four private liberal art colleges. They used data corresponding to more than two thousand capstone courses, going from 2009 until 2011. After controlling for grade point average, socioeconomic status, gender, and academic division, they found that capstone courses/projects were positively associated with improved critical thinking, communication skills, academic confidence, and management skills.

Latino Students and Student Engagement

There is a wealth of evidence that student engagement has a positive effect not only on academic success (e.g., grade point average, persistence, degree completion), but it also influences students' attitudes towards their college experience (Hu & McCormick, 2012; Kuh et al., 2007; Pascarella & Terenzini, 2005). Rendón (1994) observed that engaging racial minority students with the social and educational aspects of their institution fostered students' academic development. Engaging in interactions with faculty or participating in clubs helped racial minority students validate their role as college students. These experiences allowed them to believe in their ability to learn, and thus they could become successful.

Empirical research that has examined the effects of student engagement exclusively on Latino students is scarce. Nelson Laird and colleagues (2007) examined the impact of student engagement on African Americans and Latino students; they attempted to compare students from minority-serving institutions with undergraduates from predominantly White colleges. Nelson Laird et al. (2007) observed that Latino students from minority-serving institutions had similar levels of engagement, college satisfaction, and self-reported gains when compared to their peers

in predominantly White institutions. Greene et al. (2008) investigated whether African Americans and Latinos at community colleges invest more time and effort (engagement) in educational practices when compared to White students and if academic outcomes differ for these groups of students. Greene et al. (2008) measured engagement with a scale composed of three items: class assignments, mental activities (work harder than you thought, organize ideas, make judgments), and academic preparation (number of readings, papers written). For Latino, they found that these students showed higher levels of engagement only in the mental activities items. Also, they observed that Latinos had lower academic outcomes (lower grades) than their White peers.

In a more recent study, Arana and Blanchard (2018) explored the relationship between ethnic loyalty (alliance to origin country) and Latino students' campus engagement. They found that "students who were more loyal to the country of origin were more likely to engage in campus activities than students with less ethnic loyalty"(Arana & Blanchard, 2018, p. 339). Also, the researchers found that older Latino students (with or without children) were less likely to engage in on-campus activities, but Latino students who had a higher high-school grade point average were more likely to take part in on-campus offerings. Luciano-Wong and Crowe (2019) investigated the link between the Your First College Year survey engagement indicators ("satisfaction with peer interactions, satisfaction with faculty interactions, satisfaction with first-year programs, sense of belonging") and Latino undergraduates' intent to persist at four-year institutions. Luciano-Wong and Crowe (2019) observed that all engagement indicators were positively associated with Latino students' intent to persist.

Studies have found that student-faculty interactions positively impact Latino students' grade point average, degree aspirations, critical thinking, communications skills, college

satisfaction, and improved learning (Craft Defreitas & Bravo, 2012; Kim & Sax, 2009; Lundberg & Schreiner, 2004). Anaya and Cole (2001) found that interactions with faculty (academic and personal) and the perceived quality of interactions were positively associated with academic performance (grades). Similarly, Lundberg et al. (2018) investigated the effect of faculty-student interaction in Latinos in community colleges. They discovered that frequent student-faculty contacts contributed to student learning. However, they observed some differences between Latinos (men) and Latinas (women). Male students profited more from receiving prompt feedback, while female students gained more from discussing grades.

Latino Students and High Impact Practices

As previously discussed, evidence suggests that engaging undergraduates in HIPs is beneficial for all, regardless of their characteristics (Kuh, Cruce, et al., 2008; Zhao & Kuh, 2004). However, Kuh (2008) has observed that HIPs have a "compensatory effect" for students from underserved groups. Using NSSE data, Kuh (2008) showed that Latino students with lower ACT scores that engaged in HIPs received a larger boost to their first-year grade point average when compared with their White peers. Later, Huber (2010) found that participation in HIPs had a greater positive effect on grade point average for Latino senior students when compared with other students. Additionally, Latino students who engaged in HIPs "had significantly lower average times to degree and greater improvements in timely graduation with increased HIP participation" (Huber, 2010, p. 4).

Finley and McNair (2013) conducted a mixed-methods study on the impact of HIPs on underserved students. The students included in their study were either first-generation, transfer and underrepresented racial or ethnic minority students. In general, they found that all students who participated in even one HIP had a more positive perception of their learning experiences

when compared to students who did not engage in HIPs. Also, they observed that students who engaged in research with faculty and service-learning reported higher levels of deep learning and perceived gains when compared to students who did not take part in these activities. For Latinos, Finley and McNair (2013) noticed that students in this group benefited a great deal from participating in multiple HIPs "levels of reported engagement in deep learning approaches and in perceived gains were 10 percent higher on average with one or two high- impact practices, 17 percent higher with three or four practices, and 26 percent higher with five or six practices, compared to Hispanic students who did not participate in any high-impact practices." (p.12).

Sweat et al. (2013) studied the relationship between HIP and student engagement. They compared White students with students from racial minorities. Their study found that white students had more opportunities to be exposed to HIPs than peers from other races. Also, their multiple regression analysis indicated that "service learning, group assignments, having a close faculty mentor, participation in a learning community, and sequenced courses predicted student engagement in both White and minority students." (p.11). For minority students specifically, Sweat and colleagues found that capstone courses that involved research were associated with engagement.

Some studies regarding undergraduate Latino students have found that research with faculty or undergraduate research is positively associated with grade point average, graduate degree aspirations, timely graduation, and persistence (Chang et al., 2014; Kim & Sax, 2009). Zilvinskis et al. (2015) studied the relationship between undergraduate research and engagement for Latino students. They found that undergraduate research fostered greater quantitative reasoning, student-faculty interaction, and perception of a supportive environment. Also, Zilvinskis and colleagues (2015) observed that students who were transferred, enrolled part-time, had lower

grades, and lived off-campus were less likely to engage in undergraduate research. A couple of studies have looked at the effect of undergraduate research in Hispanic-majority institutions. These studies have found that undergraduate research for Latinos is associated with gains in skills, personal gains, overall satisfaction, increased interactions with faculty and institutional support (Collins et al., 2017; Daniels et al., 2016).

The literature is scant regarding other HIPs and Latino undergraduate students. However, some studies have examined the effects of learning communities and service-learning for Latinos. For example, Inkelas and Weisman (2003) observed that Latino students who were part of a living-learning community had an easier transition to college compared to their peers who did not have this opportunity. Sandoval-Lucero et al., (2011) examined nontraditional Latino students learning community participation and their retention rates. They found that students who participated in a learning community had a retention rate of 88% compared to 25% for students who did not take part in this experience. Ribera et al. (2017) examined sense of belonging and selected HIPs. They discovered that, in general, Latino students had a lower sense of belonging than White students, but participation in service-learning and learning communities positively impacted their sense of belonging. Recently, a qualitative study by Wick et al. (2019) investigated the benefits of studying abroad for Latino students. Latino students reported that they were able to use their cultural capital to connect with the locals. At the same time, students that participated in this experience, said that they were able to reinforce their cultural identities and increase their social justice awareness.

As stated earlier, missing from the literature is a study that examines the impact of student engagement and HIPs specifically on Latino students. This research will provide a better

understanding on how student engagement and HIPs relate to each other and how they contribute to Latino students' college outcomes.

Theoretical Framework

In theory, when students are engaged and participate in HIPs, they receive several educational benefits (Kuh, Schneider, et al., 2008). Thus, this research aims to examine the impact of student HIPs on Latino students. More specifically, the purpose of this research is to investigate how participation in HIPs influences student engagement, satisfaction, perceived learning gains, and self-reported grade point average and whether this effect differs for Latino and non-Latino students. In order to understand the complex relationships between the concepts previously mentioned, this study will be guided by Astin's (1970a, 1970b, 1991, 1993) input-environment-outputs/outcomes (I-E-O) model. The I-E-O model's main purpose is to offer a "conceptual guide for studying college student development"(Astin, 1993, p. 7). Astin hypothesized a causal relationship between the inputs, environment, and outputs. The following section presents a detailed description of each item in Astin's model.

Inputs

In Astin's (1993) I-E-O model, the *inputs* are students' traits or characteristics that they bring with them when they begin college. Astin (1970a) asserted that inputs could be seen as the raw materials that institutions use to develop students' talents. As said by Astin (1970a), "Many inputs can be viewed simply as "pretests" on certain outputs (major choice and personal values, for example), whereas others (sex and race, for example) are static personal attributes" (p. 225).

Environment

In the I-E-O model, the *environment* "refers to the various programs, policies, faculty, peers, and educational experiences to which the student is exposed" (Astin, 1993, p. 7). Astin

(1991) emphasized that the environment represents the actual experiences students go through while attending their corresponding program. In Astin's (1991) view, the environment is a critical component of the I-E-O model because it holds the elements that educators can control to promote students' development.

Outputs

In Astin's I-E-O model, the *outputs or outcomes* are what the students obtain after being exposed to what college has to offer. More specifically, Astin (1970a) asserts that outputs are "measures of the student's achievements, knowledge, skills, values, attitudes, aspirations, interests, and daily activities" (p. 224). Astin (1991) argues that the type of outputs that the I-E-O model can assess could be either cognitive or affective. Cognitive outputs are related to logical reasoning or intellectual knowledge, while affective outputs are related to students' feelings, perceptions, and self-concept. Astin (1991) acknowledges that oftentimes researchers shy away from measuring affective outputs. However, he argues that "no program of student outcomes assessment would seem complete without due consideration for assessment of relevant affective outcomes." (Astin, 1991, p. 44). The following diagram portrays the hypothesized causal relationship between inputs, environment, and outputs. Figure 2 presents Astin's I-E-O model. The arrows (A, B, and C) in Astin's (1970a) model show the theoretical relationship between the college variables. Hence, arrow B represents "the effects of the college environment on relevant student outputs." (Astin, 1970a, p. 225). Astin (1970a) stated that arrow B shows the "main effects" of college on students' outputs. Arrow C in Astin's model represents the effect of inputs on college outputs. Arrow A signifies "the fact that college environments are affected by the kinds of students who enroll" (Astin, 1970a, p. 225).

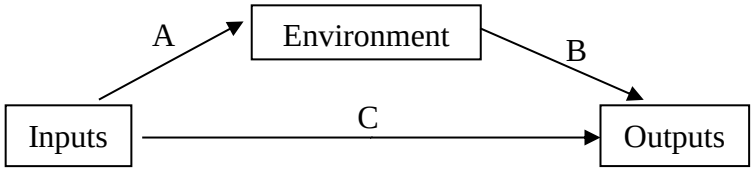

Figure 2. Astin's Input-Environment-Outputs (I-E-O) Model

Astin (1991) stated that it is not feasible to understand the relationship between college environments and outputs without considering the influence of inputs (what students bring to college). Under this frame, Astin (1991) explained "first, that differences among students tend to show some consistency (i.e., correlation) over time (arrow C), and second that different types of students often choose different types of educational environments (arrow B)" (p. 19). Thus, Astin (1991) asserted that the observed connection between environment and output is influenced to a large extent by the inputs.

A Better Way to Assess College Student Development

Astin (1991) stated that he conceived the I-E-O model to improve the assessment of student college development. He argued that before the existence of the I-E-O model, research would focus only on partial aspects of the college experiences (e.g., environment, environment-outcomes, or just outcomes). Astin (1991) viewed the I-E-O model as a more holistic way to assess the effectiveness of educational practices on students' development. In Astin's (1991) words:

> The input-environment-outcome (I-E-O) model is predicated on the assumption that the principal means by which assessment can be used to improve educational practice is by enlightening the educator about the comparative effectiveness of different educational policies and practices. The I-E-O model is specifically designed to produce information on how outcomes are affected by different educational policies and practices. (p. 37)

Astin (1991) indicated that a critical component of this model was the "inputs" (what students bring with them to college). The I-E-O model allows researchers to control for differences in inputs (e.g., student characteristics) to obtain estimates that are less biased (Astin, 1991). In other words, the I-E-O model accounts for variations in students' characteristics to understand better

how the different environments affect various college outcomes. In the present study, controlling for inputs will make it easier to recognize the effect of student engagement and high impact practice participation on the study's outputs. Thus, Astin's I-E-O model provides a rationale for the way constructs will be examined and organized in this study. The following diagram displays this study's constructs and their relationship to Astin's I-E-O model. Figure 3 displays the present study's theoretical framework based on Astin's I-E-O model.

Chapter Summary

This chapter presented a review of the existing literature regarding Latino college students, student engagement and high-impact practices (HIPs). The literature review began with an examination of the challenges or barriers that are inherent to college Latino students, such as being first generation, low academic preparation, socioeconomic problems, insufficient cultural capital, and lack of access to adequate financial support (Excelencia in Educacion, 2020; Nora & Crisp, 2009).

Furthermore, this literature review examined the initiatives that have been proven to be beneficial to aid Latino students' success in college such as advising, offer career preparation, financial support, cultural offerings and frequent contact with faculty and peers to increase their sense of belonging and experiential learning (Excelencia in Educacion, 2020). Frequent student-faculty interactions and experiences in which the students learn by doing (e.g., experiential learning) are at the core of student engagement and HIPs.

Next, this section presented a definition of student engagement, its theoretical roots, the research supporting this concept, and how the National Survey of Student Engagement (NSSE) measures it. Additionally, this segment described high-impact practices (HIPs) and the research that supports them.

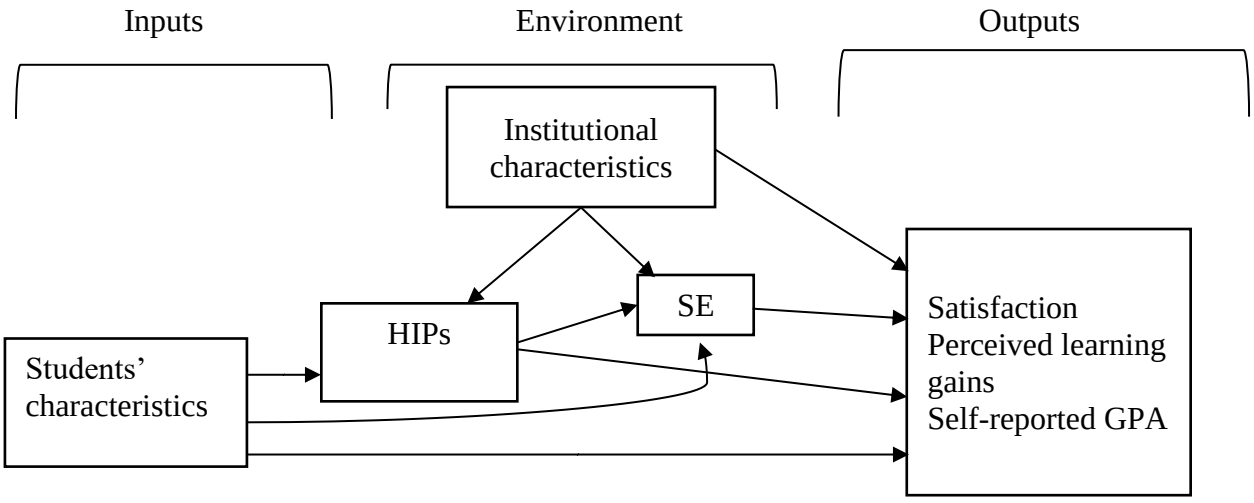

Figure 3. Theory of study constructs and their relationship to Astin's I-E-O model.

Also, this section depicted the existing research involving Latino students' engagement and HIPs.

Student engagement can be defined as the time, and effort students invest in meaningful educational activities and the institutional policies that support it (Kuh, 2001b). Student engagement comes from a lineage of theories and research striving to understand how to foster student learning (McCormick, Kinzie, et al., 2013). Thus, some of the approaches that influenced student engagement are Pace's (1980) quality of effort concept, Astin's (1984) theory of involvement, Tinto's (1975) notion of student integration, and Pascarella's (1985) causal model of the impact of college environments.

Later, NSSE used the ideas that provided the rationale for student engagement to quantify its impact. HIPs are effective educational practices that provide students with considerable benefits, and they are especially advantageous for students from marginalized populations (Kuh, Schneider, et al., 2008). Scholars have found that HIPs are positively associated with student engagement (Nelson Laird et al., 2007; Pike et al., 2010), higher grades (Bonet & Walters, 2016; Bowman & Holmes, 2018), and persistence (Kinzie, 2012; Kuh et al., 2017; Lockeman & Pelco, 2013). The empirical research focusing on student engagement and HIPs concentrating on Latino students is scarce, but it shows positive benefits for this type of students. Studies have found that student engagement and HIPs have a positive effect on Latino students' academic outcomes (Anaya & Cole, 2001; Craft Defreitas & Bravo, 2012; Gonyea et al., 2008; Huber, 2010) and attitudes towards college (Arana & Blanchard, 2018; Hu & McCormick, 2012; Wick et al., 2019).

This chapter concluded with a description of Astin's (1993) inputs, environment outputs (I-E-O) model, which provides the theoretical foundations of the present study. Astin's (1993) I-

E-O model asserts that in order to examine how college affects students, it is necessary to understand the relationship between students' characteristics (inputs), what the institution offers (environment), and what the students gain from being exposed to the college experience (outputs). This framework will guide the choice of variables and the data analysis method, which will be described in the following chapter.

Chapter 3: Methods

Research on student engagement and high-impact practices (HIPs) allow higher education administrators, faculty, and staff to assess the quality of their educational offerings and the prospect of improvement (McCormick, Kinzie, et al., 2013). Scholars have recognized the need to examine how engagement and HIPs affect students from underserved populations (J. E. Brownell & Swaner, 2010; Núñez, 2018). Thus, the purpose of this research is to investigate how participation in HIPs influences student engagement, satisfaction, perceived learning gains, and self-reported grade point average and whether this effect differs for Latino and non-Latino students. This research used data from the National Survey of Student Engagement (NSSE) and modeled the relationship between HIP participation, engagement, and student success (e.g., satisfaction, perceived learning gains, self-reported GPA) using structural equation modeling (SEM) techniques. SEM is a statistical analysis technique that combines factor analysis and regression analysis. SEM allows researchers to test theoretical relationships among several constructs simultaneously (Hox & Bechger, 1998; Kline, 2016).

The present study will rely on George Kuh's conceptualization of student engagement and HIPs (Kuh, 2009; Kuh, Schneider, et al., 2008), as well as Astin's (1993) input-environment-outcome (I-E-O) model. This chapter provides an overview of the study's research design and the reasoning supporting its suitability for this study. Additionally, this chapter describes the sample, instrumentation, data preparation, variables, and data analysis techniques that will be used to answer the studies' research questions:

1. How does participation in HIP relate to students' engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others), satisfaction, and perceived learning gains, and self-reported GPA?

2. Is the relationship between participation in HIP on satisfaction, perceived learning gains and self-reported GPA the same for Latino and non-Latino students?
3. Does student engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others) mediate the relationship between high-impact practices and college outcomes (e.g., satisfaction, perceived learning gains) for Latino students?

Research Hypotheses

H_a (1): There will be a statistically significant positive relationship between HIPs, student engagement, satisfaction, and perceived learning gains, and self-reported GPA for Latino students. In other words, participation in HIPs will lead to greater engagement, satisfaction, perceived learning gains, and self-reported GPAs.

H_a (2): There is a stronger statistically significant effect of participation in HIPs on engagement, satisfaction, perceived learning gains, and self-reported GPA for Latino than for non-Latino students. In other words, the positive impact of participating in HIPs will be greater for Latino students than non-Latino students.

H_a (3): Student engagement mediates the relationship between HIPs and college outcomes. In other words, participating in HIPs will have both a direct and indirect effect on satisfaction, perceived learning gains, and self-reported GPA.

Research Design

This quantitative study will employ a non-experimental, cross-sectional, explanatory research design to examine the effect of student engagement and HIPs on undergraduate Latino students using NSSE data. In non-experimental research designs, the independent variable is not manipulated, and the researcher cannot randomly assign participants to groups (B. Johnson &

Christensen, 2014). In non-experiment research designs, there can be threats to internal validity. One of the main threats is self-selection bias. For instance, students self-select to participate in a HIP, and we cannot possibly know or control for all the reasons why some students choose to participate and others do not. Under this design, researchers are not able to control for extraneous variables which makes it difficult for researchers to draw causal conclusions (B. Johnson & Christensen, 2014).

In cross-sectional designs, the researcher collects data from study participants at only one point in time (B. Johnson & Christensen, 2014). Explanatory studies attempt to comprehend phenomena by assessing hypotheses and theories associated with them (B. Johnson & Christensen, 2014). The non-experimental design is used in the present study because there was no manipulation of the independent variables or random assignment of groups (e.g., randomly assigning students to HIPs).

In terms of the time dimension, this is a cross-sectional study in nature. The data for this research comes from NSSE which is a survey administered to students at a single point in time. NSSE's respondents answer questions about their experiences in college. Thus, the data for this study are self-reported. In terms of objective, this study will have an explanatory design because it will offer an account of how student engagement and HIPs work in undergraduate Latino students. Finally, within the explanatory design setting, this study will utilize structural modeling procedures. Structural modeling is a type of explanatory investigation in which the researcher proposes a hypothetical model based on research or theory, and then the researcher empirically tests that model (B. Johnson & Christensen, 2014). In the case of this study, the constructs of interest will be tested through a theoretical model based on Astin's (1993) input-environment-

outcome (I-E-O) model and estimated using structural equation modeling (SEM) method. This idea will be described further in the data analytic procedures section.

Sample and Data Source

This study's analytic sample consists of a 30% random sample of first year and senior students at US bachelor granting institutions who completed the NSSE in 2017 or 2018. NSSE only provides researchers with a random sample of the full NSSE dataset to use for research purposes. NSSE data were used with permission from The Indiana University Center for Postsecondary Research. In this sample, there are a total of 136,696 students. Of those students, 33% identified as males, 65% identified females. Most students in this data set are either 19 years old or younger (38%) or between 20 to 23 years of age (39%). Also, a majority of students identified as White (60%), and 10% identified as Latino. Additionally, 44% of students are first-generation, meaning that neither of their parents or people who raised them holds a bachelor's degree. Refer to Table 2 for additional information and a comparison of the sample to the national profile of bachelor students in the U.S.

Out of the 136,696 students in this sample, there 19,885 students that were identified as Latino. Out of the 19,885 Latino participants 67% were females and 33% were males. Most Latino students in this sample (40%) were 19 years old or younger, but they were 23 years old on average. The vast majority of Latino students in this sample were full time students (87%). In this sample, 45% of participants were first year students, and 55% were seniors (4th year students).

Additionally, most Latino participants (66%) identified as first-generation students, and 435 were non-first generation. A great majority of students (83%) had a GPA above 3.0 with an average of 3.3 for the sample. Finally, a large proportion of these students (60%) reported that

they had participated in at least one service-learning course. Table 2 details frequencies and percentages of the demographic and academic characteristics of Latino students in the present study.

The present study will utilize data from the National Survey of Student Engagement (NSSE) to answer its research questions. There are several reasons for employing NSSE for this study. First, NSSE is a widely used instrument that measures student engagement in hundreds of institutions across the United States. In fact, NSSE is the largest survey of undergraduate students in the US. Second, NSSE measures students' participation in HIPs, which are the focus of the present study. Third, NSSE offers a large enough sample of students; thus, it is possible to disaggregate them by race/ethnicity without diminishing the number of students in the sample. Having a sizable number of subjects is necessary for the present study since it will use a statistical analysis method that requires a large sample of participants.

NSSE is administered annually to first-year and senior students in bachelor granting institutions in the United States and Canada (National Survey of Student Engagement, 2019). Additionally, more than 1,600 higher education institutions have administered NSSE since its creation in the year 2000, and 531 colleges and universities participated in 2019 (National Survey of Student Engagement, 2019).

NSSE takes about 15 minutes to complete, and it consists of 115 items. The NSSE questionnaire measures student engagement through ten *Engagement Indicators (EIs)* and involvement in HIPs items. The EIs were developed by NSSE staff to represent the multidimensional nature of student engagement. Each EI is a composite score of a number of related items on the survey.

Table 2 Frequencies and Percentages for Demographic Characteristics of Participants

Variable	n	%	U.S. Bachelor's Granting Population for 2018 (%)[1]
Gender			
Male	44,035	33%	43%
Female	87866	65%	57%
Another gender identity	1,282	1%	
Prefer not to answer	1,499	1%	
Age			
Under 25	107,352	78%	90%
25 to 34 years old	14,200	10%	8%
35 years and older	11,777	9%	2%
Race or ethnicity			
American Indian or Alaska Native	631	.5%	1%
Asian	10,054	7.5%	7%
African American/Black	11,456	8.6%	12%
Hispanic or Latino	13,115	9.8%	16%
Native Hawaiian or Other Pacific Islander	496	.4%	< 1%
Caucasian/White	81063	60%	56%
Other	1,887	1.4%	
Multiracial	10,916	8.1%	4%
I prefer not to answer	4,334	3.2%	
Generational Status			
Not first generation	74,692	56%	
First-generation	59,472	44%	

[1] *Note.* Information retrieved from the National Center for Education Statistics Table 303.10 https://nces.ed.gov/programs/digest/d18/tables/dt18_303.10.asp . Table 303.40 https://nces.ed.gov/programs/digest/d18/tables/dt18_303.40.asp and Table 302.60 https://nces.ed.gov/programs/digest/d20/tables/dt20_302.60.asp

Table 3 Demographic and Academic Characteristics of Latino Students

Variable	n	%
Gender		
Female	13,239	67.0%
Male	6,646	33.0%
Age		
19 years or younger	7,795	39.2%
20 to 23 years old	6,560	33.0%
24 to 29 years old	2,782	14.3%
30 to 39 years old	1,408	7.1%
40 to 55 years old	812	4.1%
Over 55	86	0.4%
Missing	442	2.2%
Enrollment Status		
Full time	17,347	87.0%
Part-time	2,538	13.0%
Class Level		
Freshman (1st year)	8,870	45.0%
Senior (4th year)	11,015	55.4%
Generational Status		
First-generation	12,953	65.0%
Not first generation	6,599	33.2%
Missing	333	1.7%
Grade Point Average (GPA)		
4.00 A	4,399	22.1%
3.67 A-	3,833	19.3%
3.33 B+	4.094	20.6%
3.00 B	4,049	20.4%
2.67 B-	1,541	7.8%
2.33 C+	968	4.9%
2.00 C	559	2.8%
1.67 C-	222	1.1%
Missing	220	1.1%
HIP Participation Rate		
Internship	5,545	28.0%
Capstone Experiences	4,729	24.0%
Service Learning	11,852	60.0%
Learning Communities	3,499	18.0%
Study Abroad	1,603	8.0%
Research with Faculty	2,533	13.0%

Table 4 Themes and Engagement Indicators

Theme	Engagement Indicators
Academic Challenge	● Higher-order learning ● Reflective & integrative learning ● Learning Strategies ● Quantitative Reasoning
Learning with peers	● Collaborative learning ● Discussion with diverse others
Experiences with faculty	● Student-faculty interactions ● Effective teaching practices
Campus environment	● Quality of interactions ● Supportive environment

According to NSSE's website, the EIs are subdivided into four broad themes 1) academic challenge, 2) learning with peers, 3) experiences with faculty, and 4) campus environment. Table 4 displays the themes and their corresponding EIs.

Academic Challenge

This theme contains items that measure opportunities institutions offer students to participate in rigorous academic work. This theme focused on activities that call on students to engage in takes that require intellectual work that goes beyond simple memorization (Kuh, 2009). NSSE (National Survey of Student Engagement, n.d.-b) includes four EIs within this theme.

The first EI is called *Higher-Order Learning* and includes four items. This indicator measures how much students' coursework emphasizes complex cognitive tasks, which require more than just memorizing information (e.g., applying knowledge, summarizing content). The second EI is called *Reflective & Integrative Learning,* it contains seven items that measure how students connect the class content to the world around them; it examines if students can reflect on their own beliefs and consider other people's perspectives when approaching various issues. The third indicator is called *Learning Strategies*. This indicator includes three items and measures the frequency in which students use effective learning strategies to actively engage with the class material (e.g., making summaries of classwork, reviewing course notes). The fourth indicator is *Quantitative Reasoning*. This indicator contains three items, and it measures students' perceptions of their ability to comprehend mathematical and statistical information.

Learning with Peers

This theme includes items that focus on the frequency in which students work with peers to solve class problems or to understand complex course content (Kuh, 2009). NSSE (National Survey of Student Engagement, n.d.-b) includes two EIs within this theme.

The first indicator, *Collaborative Learning,* consists of four items that measure the frequency in which students work together with their peers in various tasks (e.g., prepare a project, study for an exam). The second indicator, *Discussion with Diverse Others*, contains four items and asks students to report on the frequency in which they engage in discussions with people from different races, political views, or religious beliefs.

Experiences with Faculty

This theme consists of items that center on students' experiences with faculty and how students perceive faculty deliver their class content. NSSE (National Survey of Student Engagement, n.d.-b) divides them into two EIs.

The first indicator, *Student-Faculty Interactions,* contains four items that measure students' frequency of interactions with faculty (e.g., discussing course topics, working together). The second indicator in this theme is called *Effective Teaching Practices*. It comprises five items that measure students' perceptions of their instructors' teaching practices (e.g., clearly explaining course goals, providing feedback).

Campus Environment

This theme captures students' perceptions of their institutions. NSSE (National Survey of Student Engagement, n.d.-b) incorporates two EIs within this theme.

The first indicator in this theme is *Quality of Interactions.* This indicator gauges students' perceptions of the quality of their interactions with several people in their institutions (e.g., interactions with peers, faculty, staff). The second indicator, *Supportive Environment*, captures students' views on their institutions' environment and activities their institutions use to foster learning (e.g., providing academic support, offering opportunities to engage with others).

Besides the EIs, NSSE measures students' participation in other purposeful educational practices or HIPs. This instrument reports on students' involvement on a total of six HIPs: service-learning, learning community, research with faculty, internship or field experience, study abroad, and culminating senior experience. NSSE measures senior students' participation in all six HIPs. However, it collects information only on the first three HIPs for first-year students.

The following section will describe the validity and reliability of NSSE as an instrument that measures student engagement and high-impact practices.

Validity of NSSE

Validity can be defined as "the ability of an instrument to measure what you intend to measure" (Colton & Covert, 2007, p. 65). An instrument cannot be classified as intrinsically valid or invalid, but its validity depends on the researchers' interpretations of the responses (Furr, 2017). Therefore, evidence of validity can be assessed by examining the empirical evidence and theoretical assumptions that corroborate the researcher's interpretations of the instrument responses (B. Johnson & Christensen, 2014). In the case of NSSE, Fosnacht and Gonyea (2018) argue that:

> Studies that link student engagement to university outcomes such as critical thinking, moral development, and leadership capacity, or to other indicators of success such as grades, persistence, and graduation, give credence to NSSE’s validity and support such valid uses of the data. (p. 63)

The Psychometric Portfolio, found on NSSE's website, provides another source of validity evidence for this instrument. In it, Miller and colleagues (n.d.) describe how they tested the construct validity of NSSE's EIs. Construct validity refers to how concepts are operationalized within an instrument and the extent to which the items within a questionnaire represent the

construct being measured (Colton & Covert, 2007; B. Johnson & Christensen, 2014). According to Colton and Covert (2007), construct validity includes convergent and discriminant validity. Convergent validity implies that items that intend to measure the same construct should be strongly correlated (Colton & Covert, 2007). Discriminant validity means that items that intend to measure different constructs within an instrument should not be strongly correlated (Colton & Covert, 2007).

An approach to assess the construct validity of an instrument is factor analysis, which "uses correlations to identify common factors that influences set of measures and individual factors that are unique to each item" (Colton & Covert, 2007, p. 72). In their Psychometric Portfolio, NSSE provides evidence of the instrument's content validity through factor analysis procedures (Miller et al., n.d.). Miller et al. (n.d.) used data from NSSE 2013 to examine the structure of the survey's ten Engagement Indicators (EIs) through exploratory and confirmatory factor analyses (EFA/CFA). They had a sample of first-year students (n=32,374), seniors (n=46,259), and online senior students (n=3,464). The results of the statistical tests for the EFA indicated that the ten items in the EIs were valid measures of engagement (Miller et al., n.d.). For example, they reported a Kaiser-Meyer-Olkin statistic of .94, which indicates a "marvelous" factorability of the items (Kaiser, 1974). The ten items in the EIs accounted for over 60% of the explained variance (Miller et al., n.d.). The results of their CFA provided further evidence of NSSE's construct validity. Consequently, the scores for the fit indices indicated a good model fit, and the factors correlations showed that the items were related, but there was no multicollinearity, and the standardized regression weights were strong, which indicated that factor loadings' strength was appropriate (Miller et al., n.d.).

Reliability of NSSE

Reliability can be defined as "the consistency or stability of a set of scores" (B. Johnson & Christensen, 2014, p. 240). Like validity, an instrument is not inherently reliable, but its reliability can be assessed from the participants' scores or results (Colton & Covert, 2007). The reliability of scores can be affected by *measurement error* or *error*, which refers to the effect of the instrument's administration features on the participants' observed scores (Furr, 2017). One way to examine an instrument's reliability is by assessing its internal consistency, which "refers to how consistently the items on a test measure a single construct or concept" (B. Johnson & Christensen, 2014, p. 244). Cronbach's alpha or coefficient alpha is the most common statistic used to demonstrate internal consistency (Devon et al., 2007). According to George and Mallery (2019), the "coefficient alpha may be thought of as the correlation between a test score and all other tests of equal length that are drawn randomly from the same population of interest" (p. 236). Cronbach's alpha values usually range between 0 to 1, and the closer to 1, the better the internal consistency of the instrument (George & Mallery, 2019). As a general rule, researchers have established that this coefficient should have a value of at least .70, and it should be greater than .90 for clinical studies (B. Johnson & Christensen, 2014). George and Mallery (2019) offer a more nuanced rule of thumb to Cronbach's alpha: "α=.9—excellent α=.8—good α=.7—acceptable α=.6—questionable α=.5—poor α<.5—unacceptable" (p. 244). Within these criteria, it is crucial to consider that Cronbach's alpha can be increased by adding more items to the scale, and the intercorrelation between items will also increase alpha (George & Mallery, 2019; Nunnally & Bernstein, 1994). NSSE's Psychometric Portfolio presents the Cronbach alpha for the 2019 sample. They report this index for each of the survey's engagement indicators grouped by first-year students and seniors, see Table 5. Most values for NSSE's Cronbach's alpha are

above .80 which according to George and Malley (2019), would fall in the "good" criteria. Also, Gliem and Gliem (2003) argue that "an alpha of .8 is probably a reasonable goal" (p. 87).

Data Screening and Preparation

Before the data analysis began, I inspected the data to review the file's general accuracy, as suggested by Tabachnick and Fidell (2018). Then, I used frequency tables to find coding errors, missing values, spelling mistakes, and other issues with the data (Morrow & Skolits, 2018; Tabachnick & Fidell, 2018). Next, I modified and created new variables as needed for the analysis (Morrow & Skolits, 2018). As previously mentioned, this study utilized SEM to answer most of its research questions. Thus, following the initial checks on the data and variable preparations, I verified that SEM assumptions are being met.

SEM Assumptions and Other Important Data Considerations

As with other inferential statistical analysis, SEM contains several assumptions that must be met before the investigation can begin (Kline, 2016).

Sample Size

SEM is a technique that requires a large sample (Hoyle, 2012; Kline, 2016). However, there is no consensus in the literature regarding the specific number of cases needed to conduct SEM (Khine, 2013; Kline, 2016). Kline (2016) suggests considering an N:q ratio of 20:1, in which N is the number of cases, and q is the number of parameters to be estimated. Then "if a total of q = 10 parameters require estimates, then a minimum sample size would be 20q, or N = 200" (Kline, 2016, p. 16). In the case of this study the sample size is large (n = 136,696) so this requirement is met.

Table 5 Cronbach's Alpha for NSSE's Engagement Indicators for Sample

Engagement Indicator	Items	First-year students Cronbach's alpha	Senior students Cronbach's alpha
Higher-Order Learning	4	.83	.85
Reflective & Integrative Learning	7	.85	.86
Learning Strategies	3	.76	.78
Quantitative Reasoning	3	.82	.83
Collaborative Learning	4	.83	.85
Discussions with Diverse Others	4	.87	.89
Student-Faculty Interaction	4	.81	.84
Effective Teaching Practices	5	.84	.85
Quality of Interactions	5	.85	.83
Supportive Environment	8	.88	.88

Absence of Multicollinearity

According to Kline (2016), multicollinearity occurs when two or more seemingly different variables appear to be measuring the same construct. I assessed multicollinearity by following Kline's suggestions. Kline (2016) recommends "Calculate R^2 between each variable and all the rest" (p.71). If its value is greater than .90, that would indicate extreme collinearity. Additionally, Kline (2016) states that tolerance values should not fall under .10, and the variance inflation factor (VIF) should not be greater than 10.0. In the data set for this study multicollinearity does not seem to be a problem because R^2 does not exceed the suggested cut off (max $R^2 = 0.37$), tolerances do not fall under .10, and VIF values are not greater than 10.0.

Lack of Outliers

As stated by Kline (2016) outliers are data points that are very dissimilar from the rest. Outliers can be univariate or multivariate. A univariate outlier is a data point "that is extreme on a single variable" (Kline, 2016, p. 72). A multivariate outlier is the presence of multiple extreme or unusual scores in multiple variables (Kline, 2016). The data for this study contains ordered categorical responses with a finite number of responses. Thus, detecting outliers requires a holistic approach in which variables are examined within their own context. For example, if respondents are asked "how often they ask questions in class", it might be that all responses are valid and not cannot be classified as outliers. Nonetheless, I explored the possibility of outliers.

Traditionally, univariate outliers can be detected by inspecting the z scores, which should not be higher than three standard deviations above the mean (Kline, 2016). In the present data set there were a few values that could be called univariate outliers ($z > 3.0$), but it is explained by the fact that the data are ordered categorical data.

In order to examine multivariate normality, I calculated the Mahalanobis distance, "which indicates the distance in variance units between the profile of scores for that case and the vector of sample means, or centroid, correcting for intercorrelations" (Kline, 2016, p. 73). Thus, cases that exceed the chi-critical value of $p < .001$ could be eliminated (Tabachnick & Fidell, 2018). In the data set for this study there were several values that exceeded the cut of chi-critical value of $p < .001$, however, after profiling these cases it was determined the cases do not warrant removal. In addition, this was not unexpected due to the nature of the data containing ordered categorical responses.

Multivariate Normality

Maximum likelihood estimation (i.e., the default estimator in most SEM software programs) assumes that the data used in the analysis are normally distributed (Kline, 2016). As stated by Tabachnick and Fidell (2018), "Multivariate normality is the assumption that each variable and all linear combinations of the variables are normally distributed and independent" (p. 112). I assessed normality by examining the skewness and kurtosis of the distribution of the data (Kline, 2016; Tabachnick & Fidell, 2018). In the case of this study this assumption was violated, the data tended to be negatively skewed. However, skewness was expected because the data contains ordered categorical responses. Thus, when conducting the SEM analysis, I followed Kline's (2016) recommendation and employed an estimation method that does not assume normality such as diagonally weighted least squares.

Absence of Missing Data

In an ideal world, researchers should always try to work with complete data sets, but this is hardly ever possible due to the many factors that might affect the data collection process (Kline, 2016). If researchers have to work with data sets with missing values, they need first to

understand the patterns of data loss (Kline, 2016; Tabachnick & Fidell, 2018). Data can be said to be *missing completely at random* (MCAR), *missing at random* (MAR), *or missing not at random or non-ignorable* (MNAR) (Kline, 2016; Tabachnick & Fidell, 2018). Data classified as MCAR means that the reasons for data to be missing are not related to the data itself; if data are said to be MAR, it means that "the pattern of missing data is predictable from other variables in the data set" (Tabachnick & Fidell, 2018, p. 97). When data are NMAR, the causes for the data to be missing depend on the variables themselves, which cannot be ignored (Tabachnick & Fidell, 2018). Both MCAR and MAR could be considered ignorable since we do not have to include information about the missing data itself to deal with the missing data.

In order to understand the possible parents of missingness in the data set for this study, a Missing Values Analysis (MVA) was completed to examine whether missingness on a particular variable could be predicted from other observed variables. Little's Missing Completely at Random (MCAR) test was statistically significant ($\chi 2(243230) = 280294.483$, $p = .000$), which indicates that data were not MCAR. However, Little MCAR is sensitive to sample size which could be one explanation for the statistical significance.

Missing data issues were first addressed using logical imputation. For students who did not indicate their gender or race-ethnicity, I substituted the gender or race-ethnicity reported to NSSE by their institution. To address missing data issues in the analysis using a weighted least squares estimator, I utilized the approach recommended by Asparouhov and Muthen (2010). In this approach, pairwise deletion is used to calculate the polychoric correlations among ordered categorical variables; these correlations are then used in the weighted least squares estimator. While this is a common missing data technique used with weighted least squares and produces consistent estimates, the missing data assumptions are more restrictive. Asparouhov and Muthen

demonstrate that the WLS estimator with pairwise deletion is consistent when the data are missing at random and only the covariates have an effect on the missing data patterns, not the observed dependent variables, which would be true for the general missing at random assumption.

Variables

This study utilized Astin's (1993) I-E-O model to investigate how high-impact practices (HIPs) relate to student engagement and how these factors influence students' college satisfaction, perceived learning gains, and self-reported GPA in college for Latino students. This research employed data from the National Survey of Student Engagement (NSSE). Figure 4 displays how the variables in the present study fit within the I-E-O model. Next is a description of the variables that comprise the theoretical model.

Dependent Variables

Dependent variables in this study correspond to outcomes in Astin's I-E-O model. Descriptions of each variable are found below.

Satisfaction. NSSE examines students' satisfaction with their experience at their respective institutions in two questions. First, NSSE asks students, "How would you evaluate your entire educational experience at this institution?" with the response options of "excellent" coded 4, "good" coded 3, "fair" coded 2 and "poor" coded 1. Next, NSSE ask students "If you could start over again, would you go to the same institution you are now attending?", with the response options of "Definitely yes" coded 4, "Probably yes" coded 3, "Probably no" coded 2 and "Definitely no" coded 1. The two questions previously mentioned were combined together into a scale that represents students' satisfaction with their institution.

Perceived Learning Gains. NSSE asks students to answer how much their experiences at their institution has contributed to their knowledge, skills, and personal development in ten areas: a) Writing clearly and effectively, b) speaking clearly and effectively, c) thinking critically and analytically, d) analyzing numerical and statistical information, e) acquiring job- or work-related knowledge and skills, f) working effectively with others g) developing or clarifying a personal code of values and ethics, h) understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality), i) solving complex real-world problems, j) being an informed and active citizen. The response options for this question are: very much =4, quite a bit = 3, some = 2, very little = 1. These items were used as indicators/manifest variables to measure the perceived learning gains construct.

Self-Reported GPA. NSSE asks students what most of their grades have been up to this point in their institution. Students' repose options are: A=8, A-=7, B+=6, B=5, B-=4, C+=3, C=2, C- or lower=1. This variable was recoded at midpoint values that reflect GPA units. Thus, 4= A, 3.67= A-, 3.33= B+, 3.00= B, 2.67= B-, 2.33= C+, 2= C, 1.67= C-.

Independent Variables

Students' Characteristics. NSSE asks students to respond to a series of demographic and enrollment questions such as gender, age, race, and residence. The response options available for these questions vary. For instance, NSSE asks respondents "How would you describe yourself" with the following response options: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latina/o, Middle Eastern or North African, Native Hawaiian or Other Pacific Islander, White, Another race or ethnicity, or I prefer not to respond. If responses were missing for this student-reported race-ethnicity variable, I substituted the race-ethnicity reported to NSSE by the respondent's institution.

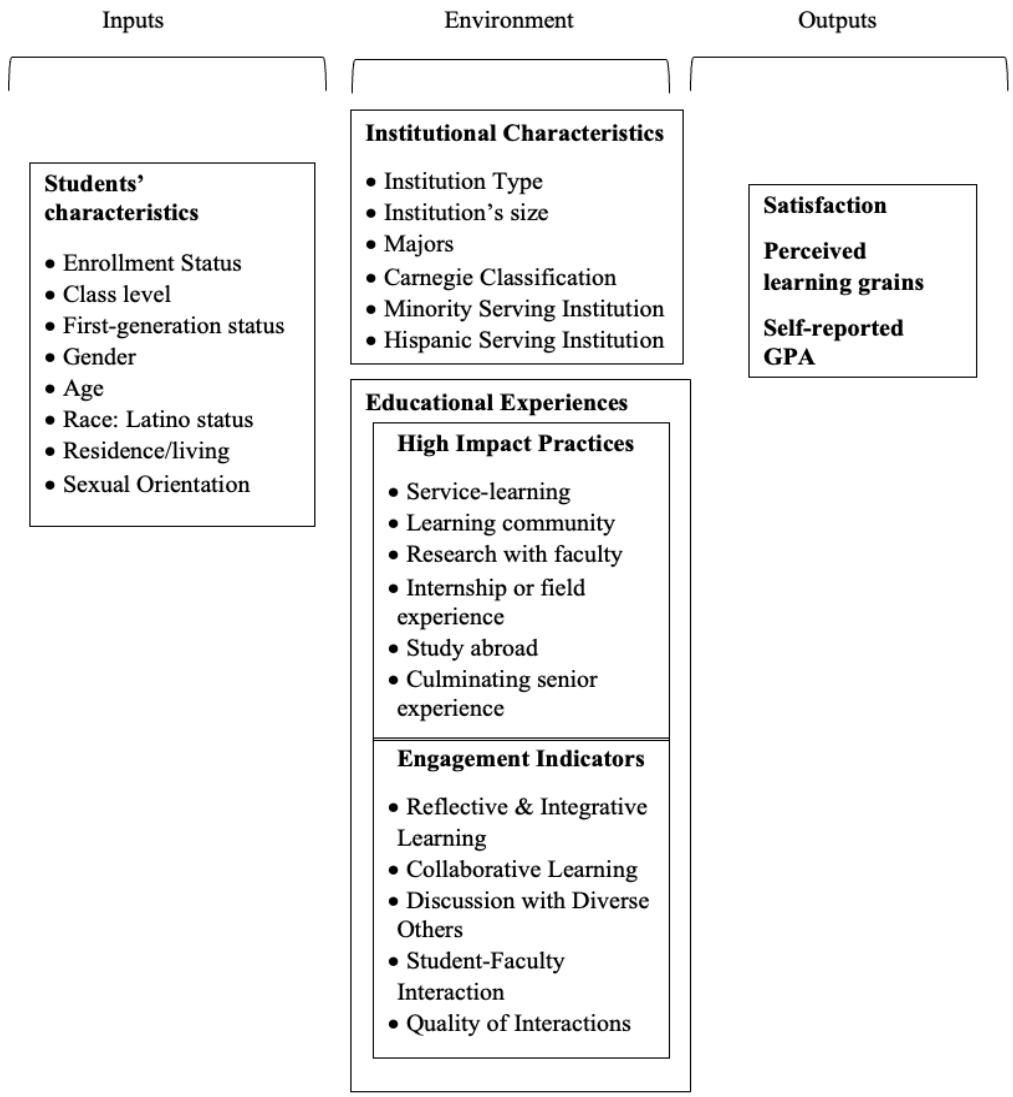

Figure 4. Study's Theoretical Framework and Corresponding Variables

Table 6 Independent Variables: Demographic and Enrolment Characteristics

Variable	Coding
Institution-reported Enrollment Status	Dichotomous scale 1= Full-time 0= Not full-time
Institution-reported Class Level	Dichotomous scale 1= Freshman 4= Senior
First Generation	Dichotomous scale 1= Yes 0= No
Gender	Dichotomous scale 1= female 0= other
Age	Continuous scale (e.g., 18, 19, 20, 21)
Race/ethnicity	Categorical scale 1= American Indian or Alaska Native 2= Asian 3= Black or African American 4= Hispanic or Latino 5= Native Hawaiian or another Pacific Islander 6= White 7= Other 8= Foreign or Nonresident alien 9= Two or more races/ethnicities 10= Unknown
Residence	Dichotomous scale 1= Living on campus 0= Living off-campus
Sexual Orientation	Dichotomous scale 1= straight (heterosexual) 0= other

Some of these variables were recoded before the analysis began. For example, the variable residence was dichotomized into “lives on-campus”, “lives off-campus”. For a full list of the variables and their corresponding response options, see Table 6.

Institutional Characteristics. NSSE collects institutional information from IPEDS, such as enrollment size and sector (i.e., public, private). Additional information describing the type of institution was collected from the Carnegie Foundation including whether the institution was a minority-serving institution or Hispanic serving institution. Some of these variables were recoded so that they could be used during the data analysis. For example, the institutional Carnegie Classification variable was dichotomized into 1= Doctoral school, and 0 = non doctoral school. For a complete list of variables, see Table 7.

Engagement Indicators (EIs). These variables contain a set of items that have been grouped into ten indicators that examine the various dimensions of engagement. For this study, there were five engagement indicators selected according to their theoretical relevance for Astin’s I-E-O model and the population of this study (i.e., Latino students). Table 8 displays the engagement indicators and their corresponding items in the data set.

High-Impact Practices (HIPs) Variables. Students are asked about their participation in six HIPs: learning communities, service-learning, research with faculty, internship or field experience, study abroad, and culminating senior experience. For service-learning, students have a different response option, students can report on the amount of courses which have included a service-learning component by responding "all," "most," "some" or "none." For the present analysis HIPs were recorded as “completed” or “not completed”.

Data Analysis

This research study utilized structural equation modeling (SEM) to answer its research questions: research question 1 (RQ 1) "How does participation in HIPs relate to students' engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others), satisfaction, self-reported GPA and perceived learning gains," research question 2 (RQ 2) "Is the relationship between participation in HIPs on satisfaction, and perceived learning gains the same for Latino and non-Latino students?" and research question 3(RQ) "Does student engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others) mediate the relationship between HIPs and student satisfaction, self-reported GPA, and perceived learning gains for Latino students?".

According to Hoyle (2012), "structural equation modeling (SEM) is a growing family of statistical methods for modeling the relations between variables" (p. 3). SEM incorporates a series of related statistical methods, combining regression techniques, factor analysis, and path analysis (Kline, 2016). SEM can be classified as a confirmatory approach because it allows researchers to specify a model a priori and to test whether the data are a good representation of the theories behind it (Kline, 2016). Simultaneously, SEM is flexible because it lets researchers test "alternative models" using the same variables (Kline, 2016). When taking the latter approach, the goal should be to find a model that "makes theoretical sense, it is reasonably parsimonious, and it has acceptably close correspondence to the data" (Kline, 2016, p. 11).

An essential characteristic of SEM is that variables are categorized as either observable (manifest) or latent (Kline, 2016). *Observed or manifest variables* are represented by the researcher's data, the scores on different variables; they are either categorical or continuous (Kline, 2016).

Table 7 Independent Variables: Institutional Characteristics

Variable	Coding
Institution type	Dichotomous scale 1= public 0= Non-public
Institution Size	Categorical scale 1= very small (fewer than 1,000) 2= small (1,000-2,500) 3= medium (2,500-4,999) 4= Large (5,000-9,999) 5= Very large (10,000 or more)
Majors	Categorical scale 1= Science major 0= Not science Major
Carnegie Classification	Dichotomous scale 1= Doctoral 0= Non doctoral
Carnegie Minority	Dichotomous scale 1= Yes 0= No
Carnegie Hispanic	Dichotomous scale 1= Yes 0= No

Table 8 Engagement Indicators included, corresponding items, and response options

Engagement Indicator	Items	Response Options
Reflective & integrative learning	● How often have you combined ideas from different courses when completing assignments ● How often have you connected your learning to societal problems or issues ● How often have you included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments ● How often have you examined the strengths and weaknesses of your own views on a topic or issue ● How often have you tried to better understand someone else's views by imagining how an issue looks from their perspective. ● How often have you learned something that changed the way you understand an issue or concept. ● How often have you connected ideas from your courses to your prior experiences and knowledge.	Very often= 4, Often,= 3 ,Sometimes= 2, Never = 1.
Collaborative learning	● How often have you asked another student to help you understand course material. ● How often have you explained course material to one or more students. ● How often have you prepared for exams by discussing or working through course material with other students. ● How often have you worked with other students on course projects or assignments.	Very often= 4, Often,= 3 ,Sometimes= 2, Never = 1.

Table 8 Continued

Engagement Indicator	Items	Response Options
Student-Faculty Interaction	● How often have you talked about career plans with a faculty member. ● How often have you worked with a faculty member on activities other than coursework (committees, student groups, etc.) ● How often have you discussed course topics, ideas, or concepts with a faculty member outside of class. ● How often have you discussed your academic performance with a faculty member.	Very often= 4, Often,= 3 ,Sometimes= 2, Never = 1.
Quality of Interactions	Indicate the quality of your interactions with the following people at your institution: • Students • Academic advisors • Faculty • Student services staff (career services, student activities, housing, etc.) • Other administrative staff and offices (registrar, financial aid, etc.)	1=Poor to 7=Excellent, Not Applicable
Supportive Environment	How much does your institution emphasize the following: • Providing support to help students succeed academically • Using learning support services (tutoring services, writing center, etc.) • Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)	Very much=4, Quite a bit=3, Some=2, Very little=1

Table 8 Continued

Engagement Indicator	Items	Response Options
	• Providing opportunities to be involved socially • Providing support for your overall well-being (recreation, health care, counseling, etc.) • Helping you manage your non-academic responsibilities (work, family, etc.) • Attending campus activities and events (performing arts, athletic events, etc.) • Attending events that address important social, economic, or political issues	

Latent variables or factors represent the "theoretical constructs" that the researcher cannot directly measure, but the researcher must operationalize them through observed variables to assess them (Byrne, 2013; Kline, 2016). Unlike observed variables, latent variables are assumed to be continuous (Kline, 2016). Additionally, as noted by Kline (2016), "An observed variable used as an indirect measure of a construct is an indicator, and the statistical realization of a construct based on analyzing scores from its indicators is a factor." (p. 13).

Structural equation modeling (SEM) roots derive from *path analysis*. Thus, "the relationships between the theoretical constructs are represented by regression or path coefficients between the factors" (Hox & Bechger, 1998, p. 354). SEM models are represented by path diagrams with square boxes and circles connected by arrows. The rectangles or square boxes represent observed variables, and the circles represent the latent variables. Single arrows indicate causal relationships between variables. Double-headed arrows represent covariance that does not have a causal relation (Kline, 2016).

Another key feature of SEM is that it allows for the estimation of direct and indirect effects (Khine, 2013). *Direct effects* show the relationship between two variables, and *indirect effects* represent the connection between an independent variable and a dependent variable (Khine, 2013). Both direct and indirect effect are indicated by arrow that show the directionality of the relationship between variables (Khine, 2013) For example figure 5 displays the hypothesized relationship between HIPs, student engagement and student outcomes, in which HIPs have a direct effect on student outcomes, but also have an indirect effect on student outcomes mediated through student engagement.

SEM offers several features that make this approach advantageous and suitable for the present study. First, many analytical methods are in essence descriptive (e.g., factor analysis),

and are not appropriate for hypothesis-testing such as SEM (Byrne, 2013). Second, SEM combines multiple regression, factor analysis procedures, and path analysis, allowing researchers to assess relationships among multiple observable and latent variables in one model (Byrne, 2013; Hoyle, 2012).

Finally, unlike other multivariate methods, "SEM provides explicit estimates of these error variance parameters" (Byrne, 2013, p. 4). Accounting for error during the analysis is crucial because it can prevent researchers from reaching inaccurate conclusions from the analysis (Byrne, 2013). In sum, SEM is an ideal approach to examine the relationship between student engagement and high-impact practices for Latino students.

Steps When Conducting SEM

The SEM analysis is performed in five steps 1) specification, 2) identification, 3) estimation, 4) evaluation of fit and respecification, 5) reporting (Hoyle, 2012; Kline, 2016)

First Step: Specification. In this step, the researcher specifies a conceptual model through a graphical representation (a diagram) that shows the theoretical relationships between the study variables (Kline, 2016). In the diagram, latent variables are represented by a circle and observed variables are represented by a square. The latent variables in this study were five engagement indicators (reflective & integrative learning, collaborative learning, discussion with diverse others, student-faculty interaction and quality of interactions) and perceived learning gains. Additionally, in SEM, variables are considered either endogenous or exogenous. Endogenous variables are the outcomes or dependent variables; these variables are usually located on the right side of the graphical representation (Kline, 2016).

The endogenous variables for this study were satisfaction, perceived learning gains and self-reported GPA. Exogenous variables are the independent variables in the model,

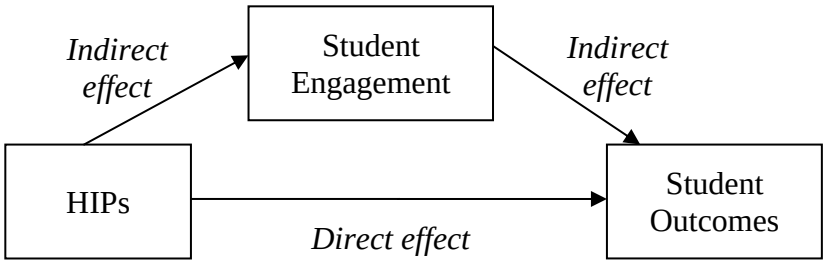

Figure 5. Example of direct and indirect effects

which means that "their causes are unknown as far as the model is concerned" (Kline, 2016, p. 119). For this study, the endogenous variables were student characteristics, institutional characteristics, the five selected engagement indicators mentioned previously, and HIPs.

Before constructing the full structural model, a measurement model must first be constructed. According to Tabachnick and Fidel (Tabachnick & Fidell, 2018) the measurement model is estimated through confirmatory factor analyses (CFA). The purpose of conducting CFA on the latent constructs is to verify the validity of the construct given the data utilized for this study. CFA allows us to confirm that the variables in the measurement model fit the constructs that are being measured (Brown, 2006). After the measurement model is identified, then the structural part is established so that the full model can be completed.

Second Step: Identification. In this step, the researcher must translate the model's graphical representation into a statistical model (a series of equations) (Kline, 2016). According to Byrne (2013), "the issue of identification focuses on whether or not there is a unique set of parameters consistent with the data" (p. 41). There are three types of possible identification categories, *just-identified*, *overidentified*, or *under-identified* (Byrne, 2013). The model can be described as just-identified when the parameters in the model and the data correspond one-to-one, "the number of data variances and covariances equals the number of parameters to be estimated" (Byrne, 2013, p. 41). This type of model does not have any degrees of freedom, so it cannot be discarded (Byrne, 2013). A model is said to be overidentified when there are fewer parameters than data points (Byrne, 2013). This type of model results in positive degrees of freedom, which allows the researcher to discard the model (Byrne, 2013). A model can be labeled as under-identified when the number of parameters is larger than the number of data points (Byrne, 2013). As stated by Khine (2013), "Models need to be overidentified in order to

be estimated and in order to test hypotheses about the relationships among variables." (p. 9). This means that the number of elements in the correlation matrix (observed variables) should be larger than the number of parameters that will be estimated (Khine, 2013). The following formula can be used to compute the necessary number of elements to have an overestimated model: [p (p + 1)]/2, where p is the number of observed variables. In this study the model was overidentified, meaning that the model contained fewer parameters than data points.

Third Step: Estimation. According to Hoyle (2012)**,** "The goal of estimation is to find values for the free parameters that minimize the discrepancy between the observed covariance matrix and the estimated, or implied, covariance matrix given the model and the data." (p. 9). This step is done using SEM software, and the default estimation method is maximum likelihood (Hoyle, 2012). If maximum likelihood is not appropriate, then the researcher must find another estimation method based on the normality of the data (Khine, 2013). A diagonally weighted least squares estimator was utilized in the current study.

Fourth Step: Evaluation of Fit and Respecification. In this step, the fit of the model is assessed, the researcher must determine "how well the model explains the data" (Kline, 2016, p. 120). Schumacker and Lomax (2015) offer three criteria to assess the statistical significance of a model. First, one must check whether the chi-square test is non-statistically significant, "A non-statistically significant chi-square value indicates that the sample covariance matrix and the reproduced model-implied covariance matrix are similar." (Schumacker & Lomax, 2015, p. 109). Second, the individual parameter estimates for the model's paths divided by their corresponding standard error can be compared against a *t* or *z* critical value to assess statistical significance level. Third, Schumacker and Lomax (2015) suggest examining whether the direction and

magnitude of the parameter estimates make theoretical sense. For example, parameters for grade point average and number of hours studying should be positive not negative.

In addition to the statistical significance, researchers can use approximate fit indexes to assess model fit (Kline, 2016). According to Kline (2016) approximate fit indexes are not the same as significance tests, but they "are intended as continuous measures of model–data correspondence" (p. 266). There are many approximate fit indexes, from the ones available, Kline (2016) suggests reporting and checking the Steiger– Lind Root Mean Square Error of Approximation (RMSEA), the Bentler Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR). Khine (2013) states that RMSEA "corrects the tendency of the $\chi 2$ to reject models with large sample size or number of variables" (p. 15). RMSEA should be <.05 to indicate a good fit (Khine, 2013). As stated by Kline (2016) "The Bentler CFI is an incremental fit index that is also a goodness- of-fit statistic. Its values range from 0 to 1.0 where 1.0 is the best result" (Kline p. 276). As indicated by Kline (2016), SRMR "is a measure of the mean absolute covariance residual. Perfect model fit is indicated by SRMR = 0, and increasingly higher values indicate worse fit" (p. 277).

If the model's fit turns out to be poor, then the researcher needs to make changes to the model based on theoretical assumptions; this is called *respecification* (Kline, 2016). As stated by Hoyle (2012), "Decisions about how a model might be modified to improve its fit are based on specification searches, the goal of which is to find sources of misspecification among the fixed and free parameters in the initially specified model" (p. 11).

Fifth Step: Reporting. The final step in SEM is writing the result of the analysis in a written report (Kline, 2016). When reporting results, Hoyle (2012) suggests including data regarding the model specification, the amount of fixed and free parameters, and the

corresponding degrees of freedom. Furthermore, the report should include the estimation method, assumptions met, fit assessment, and information regarding how missing data were handled (Hoyle, 2012).

Structural Equation Modeling and the Conceptual Model

It is a prerequisite in SEM that conceptual models are informed by theory or empirical studies' findings (Kline, 2016). Thus, this study will utilize Astin's (1993) input-environment-outcome (I-E-O) model and empirical research regarding HIPs, student engagement, and Latino college students to answer most research questions, and to verify the hypothesis based on the research questions. Figure 6 displays the hypothesized SEM path diagram within Astin's I-E-O framework.

First, the hypothesis SEM model represented by the path diagram presented in Figure 6 will allow this study to answer its second research question, which will test how participation in HIPs relates to students' engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others), satisfaction, self-reported GPA and perceived learning gains. According to Astin's (1993) I-E-O model, to understand students' college experiences, it is necessary to consider students' input characteristics (e.g., gender, race, ethnicity). Additionally, empirical studies have found that students' traits influence their college experiences, participation in HIPs, and engagement (Nora & Crisp, 2009; Pascarella & Terenzini, 2005). In the specific case of Latino students, the focus of this study, they bring with them sociocultural and pre-college experiences that can make their time in college challenging (Crisp et al., 2015; Nora & Crisp, 2009). In the proposed SEM model under Astin's framework, students' characteristics (inputs) are considered to be observed variables.

In the path diagram, students' pre-college traits have arrows that indicate the hypothesized relationship of this variable with other variables in the model. In this case, as Astin (1970) stated, students' characteristics directly influence their choice of college, which in turn determines their participation in HIPs and their engagement. Additionally, empirical studies have found that HIPs and student engagement have a positive effect on satisfaction (Bowman & Holmes, 2018; Zhao & Kuh, 2004; Zilvinskis, 2019), perceived learning gains (Bureau et al., 2014; Finley & McNair, 2013; Nelson Laird et al., 2007) and grade point average (Baker & Pomerantz, 2000; J. E. Brownell & Swaner, 2010). Thus, the SEM hypothesized model's environmental aspect includes the institution's characteristics and the educational experiences offered by the institution (HIPs and student engagement). This model postulates that both HIPs and engagement influence student outcomes of satisfaction, perceived learning gains, and self-reported GPA.

Second, the hypothesized model will answer research question number three, which states, "Is the effect of participation in HIP on engagement, satisfaction, perceived learning gains, and self-reported GPA the same for Latino and non-Latino students?" The rationale behind this question is that research has found a compensatory effect for students from underserved minorities when participating in HIPs, meaning that these students would benefit even more than other kinds of students (Kuh, Schneider, et al., 2008). Additionally, Finley and McNair (2013) found that this effect could be especially beneficial for Latino students. So, to examine this compensatory effect, I tested a model that included a moderation or conditional effect (interaction effect). As stated by Kline (2016), "A conditional relation implies interaction, where the covariance between X and Y changes over the levels of at least one other predictor, measured or unmeasured" (p. 33).

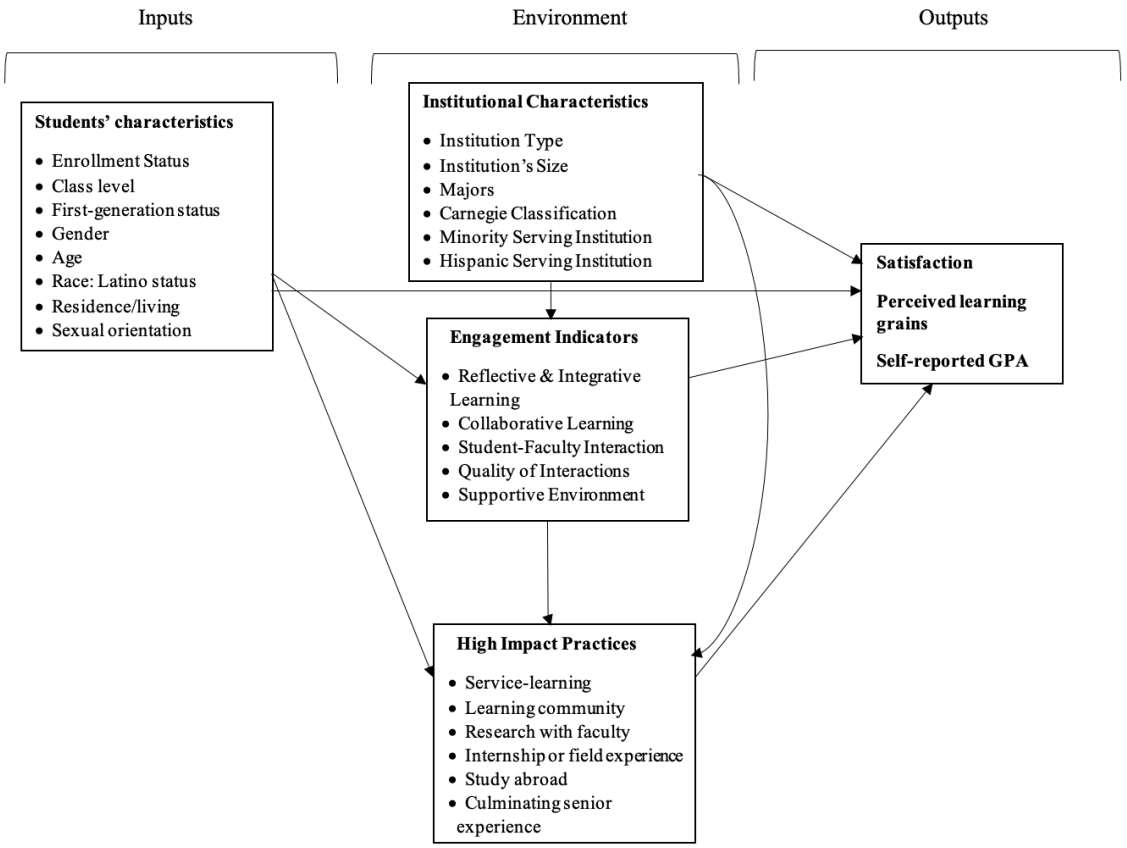

Figure 6. Structural Equation Conceptual Model

According to Astin (1970a), there are two kinds of interaction effects that can be studied under the I-E-O model. One type is the effects of various inputs (students) on outputs depending on the different environments (college). The other kind is the effect of environments (college) on outputs, which varies according to the input type (students). The latter was the focus of this study.

Finally, the hypothesis model will answer research question number four which examines whether student engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others) mediate the relationship between high-impact practices and college outcomes (e.g., satisfaction, perceived learning gains) for Latino students. As stated by Kline (2016), "mediation refers to a causal pathway through which effects are conducted from a source through a conduit— the mediator— to the final outcome" (p. 134) This question was included in the model because scholars have found that participation in HIPs increases student engagement which in turn improve student outcomes (Engstrom & Tinto, 2008; Nelson Laird et al., 2007; Pike et al., 2010; Rocconi, 2011). Thus, participation in HIPs might have both a direct and an indirect effect on student outcomes (e.g., satisfaction, perceived learning gains). This relationship is represented in Figure 7.

Limitations

While NSSE provides quality data that will allow this study to draw meaningful conclusions, like in any other research, there are limitations linked to the general use of a secondary data set. The main limitation of working with a secondary data set is that the research questions and the type of variables chosen for this study depend on what already exists in the data (e.g., NSSE). For example, NSSE does not provide data on specific characteristics of each institution (e.g., location), so that researchers cannot identify students' particular colleges. Thus,

it is not possible to draw conclusions based on specific types of HIPs. For instance, learning communities can take on many different forms (e.g., residential, course and cohort based) and we cannot determine from these data specific details about each HIP. In addition, we are not able to determine whether a HIP was delivered as intended. For instance, a well-structured HIPs could have vastly different impacts on participants than a poorly structured program.

Another possible limitation is that this study relied on self-reported data which may suffer from validity problems such as social desirability bias. Social desirability means that students would not answer questions truthfully, but they would try to offer a socially adequate response (Miller, 2012). However, in a study done by Miller (2012), she stated that her research "did not find strong support for the influence of social desirability on the National Survey of Student Engagement" (p.45). Additionally, some researchers have argued that self-reported data (e.g., self-reported learning gains) lacks validity because students are not able to accurately assess their own learning (Bowman, 2010; Porter, 2013). Nonetheless other scholars point to the need to account for students' perceptions of their learning which should be considered by institutional leaders when making decisions about their programs (Gonyea & Miller, 2011; Pike, 2011).

In this study, it is not viable to include students' actual grade point average (GPA) in the analysis, so conclusions will rely on students' self-reported GPA. However, Cole et al. (2012) found a strong degree of correspondence between self-reported and actual GPAs. It could have been possible to include GPA in this study if the research focused only on one institution. Given that the present research concentrates only on one racial/ethnic group, the sample size might not have been large enough to conduct a meaningful analysis of the data.

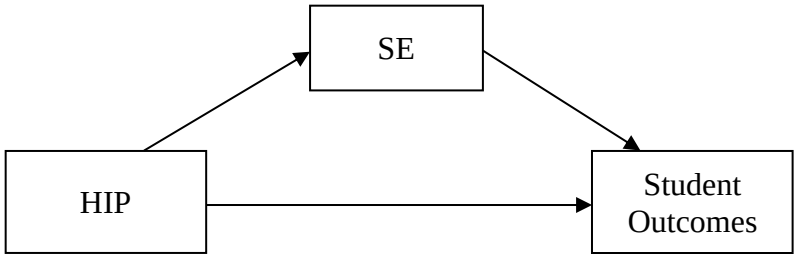

Figure 7. Relationship Between Student Engagement and Student Outcomes Mediated by High-Impact Practices (HIP)

Finally, a common limitation of secondary data sets is that they usually have a fair amount of missing data. As suggested by Kline (2016), the data for this study was examined for missing values, and possible patterns of data loss mechanism. This analysis helped determine the most appropriate strategy for dealing with missing values.

Chapter 4: Results

The purpose of this study was to investigate how participation in HIPs influences student engagement, satisfaction, perceived learning gains, and self-reported grade point average. This study tested the theoretical relationship between the aforementioned constructs. Additionally, the present research examined whether the effect of HIP differs for Latino and non-Latino students. Due to the complex relationship between the constructs at hand, structural equation modeling (SEM) was utilized to explain the relationship between the latent constructs and the observed variables. More specifically, I used SEM to examine the paths between HIPs, student engagement and the outcomes of this study. The data were analyzed by cohort because first year students do not take part in all HIPs, they only participate in three of them (learning communities, service learning, and research with faculty). Thus, I constructed models for first-year students and other ones for senior students. Furthermore, I estimated models to test the conditional effect or race-ethnicity on the relationship between HIP and the outcomes of this study.

This chapter presents the outcome of the data analysis. It begins by describing the process of model building. Then, this section presents the results for the measurement model. Next, the results for the models estimated through SEM are shown. Finally, this chapter provides results for the research questions that were the focus of this research.

The Model Building Process

Originally, this study followed Kline's (2016) suggestion of using robust maximum likelihood (RML) for estimating the models in this study. RML seemed like an appropriate estimation method because it accounts for violations of normality. However, the estimation times for this method were excessive (i.e., between 12 hours and even seven days in one instance).

Thus, based on Kline's recommendation for categorical data, the data were estimated next using a weighted least squares (WLS) method, which is what Kline (2016) recommends for ordered categorical type of data since WLS "makes no distributional assumptions" (p. 323). As a result, estimation times improved dramatically (i.e., between 45 minutes and 2 hours).

The use of WLS improved the time it took the model to converge, but at this stage, the model was producing unsatisfactory fit indexes. This issue led to a revaluation of the variables that should be included in the full structural model. Initially, I proposed to include all engagement indicators (EIs) in the analysis. However, since the focus of this study is the relationship between EIs and HIPs, I decided to go back to the literature and choose those EIs that, in theory, would be directly impacted from participating in HIPs. For example, the "Higher-Order Learning" Engagement Indicator asks students how much their coursework emphasizes various cognitive tasks application, analysis, judgment, and synthesis. As such, it is hard to conceptualize that participating in a HIP such as research with a faculty member would lead to greater higher-order learning as measured by NSSE.

On the other hand, the "Reflective & Integrative Learning" indicator was kept because the items in this latent construct focus on measuring how students make connections between their learning within and between courses and in the real world. The structural models estimated using selected NSSE Engagement Indicators have resulted in much-improved model fit and more interpretable results. Consequently, five EIs were retained: Reflective & Integrative Learning (RI), Collaborative Learning (CL), Student-Faculty Interaction (SI), Quality of Interactions (QI), and Supportive Environment (SE). Conversely, five EIs were dropped: Higher-order Learning (HO), Learning Strategies (LS), Quantitative Reasoning (QR), Discussions with Diverse Others (DDO), and Effective Teaching Practices (ET).

The Measurement Model

The full structural equation model for this study consists of the measurement model and the structural model. The measurement model contains the latent variables and their corresponding indicators. To construct this model, a confirmatory factor analysis (CFA) was conducted on the five engagement indicators chosen for the study (Reflective & Integrative Learning, Collaborative Learning, Student-Faculty Interaction, Quality of Interactions, and Supportive Environment) and the perceived learning gains indicators. The CFA analysis tested the relationship between the latent variables (unobserved constructs) and their indicators (observed constructs). Since the various elements of student engagement should theoretically be related with one another, correlations among the five latent EIs were included in the measurement model.

The data were analyzed by cohort. Thus, I estimated one measurement model for first-year students and another one for senior students. The CFAs for both cohorts were calculated using a robust weighted least square (WLS) method and pairwise deletion. Additionally, the CFAs were calculated using the lavaan package (Rosseel, 2012) in the statistical software R. A complete description of the latent variables and their indicators can be found in chapter three, table 7. Each measurement model includes latent variables denoted by circles, indicators represented by squares, and error terms or disturbances displayed as the smaller circles linked to each indicator. According to Byrne (2013), "[e]rror associated with observed variables represents measurement error, which reflects on their adequacy in measuring the related underlying factors" (p. 10). One-directional arrows indicate regression paths showing the causal relationship between the variables.

The goodness of fit summary for the CFAs corresponding to first-year students and senior students was determined by the criteria suggested by Kline. Hence, usually, a non-significant chi-square (χ_2) indicates a good fit, but this test is highly influenced by samples that exceed 400 participants (Byrne, 2013; Kline, 2016). Thus, as recommended by Kline (2016), this study considered RMSEA (<.06), CFI (>.95), and SRMR (<.08) as the main indicators of good model fit. Fit indices for first-year students: χ^2 (58859) = 108570, p < .001, CFI = 0.986, RMSEA = 0.055, SRMR = 0.042, and for senior students χ^2 (77793) = 108570, p < .001, CFI = 0.983, RMSEA = 0.060, SRMR = 0.048. No modifications to the measurement models were necessary to achieve this fit.

Full Structural Equation Models

After estimating the measurement models for first-year students and seniors, respectively, I proceeded to estimate the full hypothesized structural model that I proposed in chapter 3. The purpose of the full model was to examine the relationship between HIPs, student engagement, satisfaction, perceived learning gains, and self-reported grade point average for Latino students.

The process of constructing the full models was similar to the estimation of the measurement model in that I estimated a full structural model for first-year students and another one for senior students. Both models were estimated using a WLS method. The model fit for first-year students was good χ^2 (5524, 1333) = 109604.064, p =.000, CFI = 0.985, RMSEA = 0.038, SRMR = 0.037. In this model, 34% of the variance was accounted for in satisfaction, 51% of the variance in perceived gains, and 9 % of the variance in perceived GPA were explained by the full structural model.

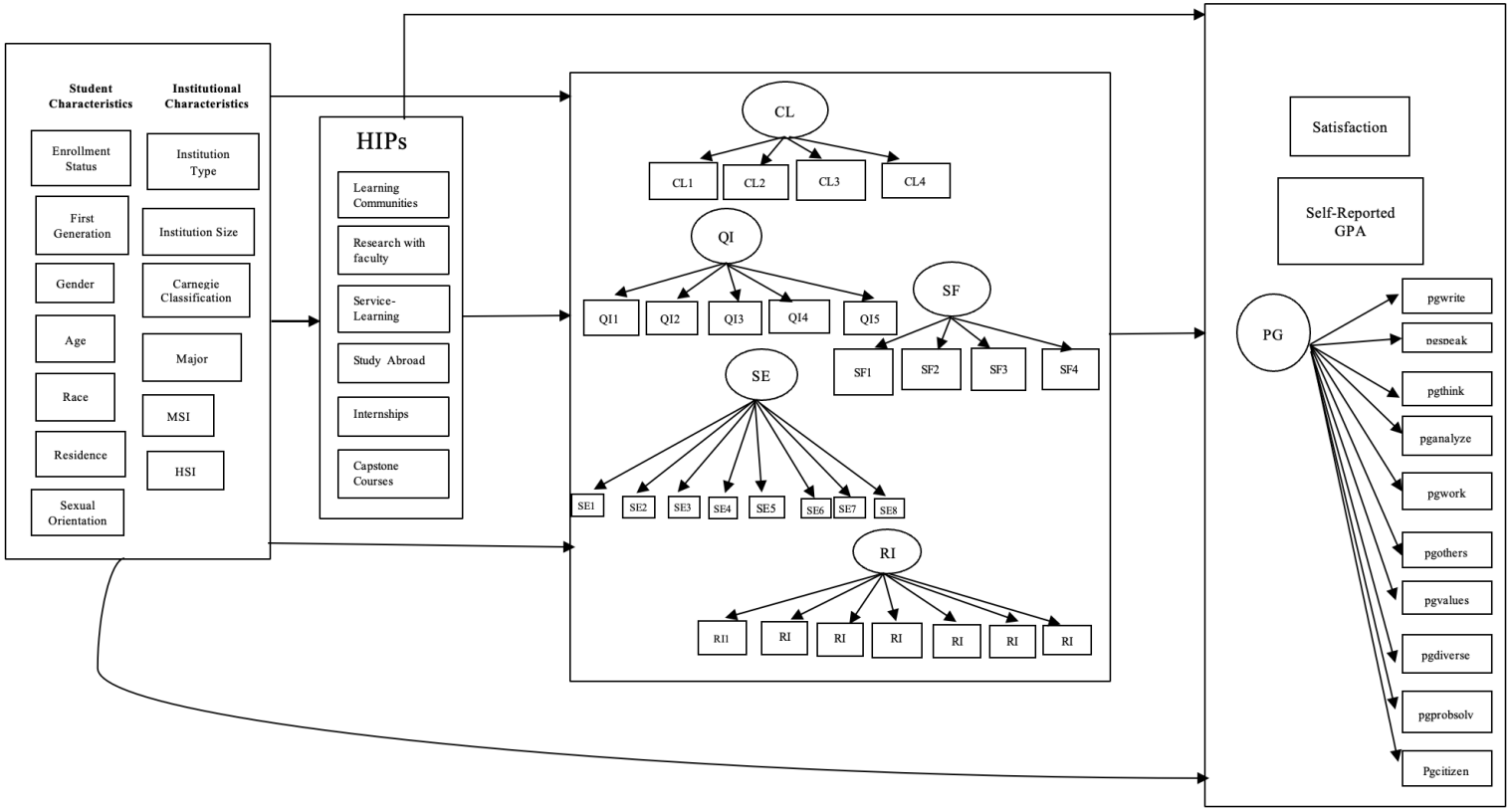

Figure 8. Full SEM Models

The fit for the final model for seniors was good as well χ^2 (73088, 1606) = 177677.450, p =.000, CFI = 0.981, RMSEA = 0.041, SRMR = 0.043. In this model, satisfaction accounted for 40% of the variance in satisfaction, 53% of the variance in perceived learning gains, and 12% of the variance in perceived GPA was accounted for by the full structural model.

After establishing the adequate fit of the full structural models for first year and senior students, the next step was to interpret the paths between the variables of interest. This analysis is presented next through the examination of the research questions. A full representation of the full structural equation models can be found on Figure 8.

Research Question 1: HIPs and their Relationship to Selected Student Outcomes

The first research question for this study asked how participation in HIPs relate to students' engagement, satisfaction, and perceived learning gains, and self-reported GPA? As already established, this question needs to be answered by cohorts.

Full Structural Model for First-Year Students

Concerning the full structural model for first-year students, I began by examining the paths from the three HIPs of interest (learning communities, research with faculty and service learning) to student engagement, which was represented by the latent constructs of Reflective & Integrative Learning (RI), Collaborative Learning (CL), Student-Faculty Interaction (SF), Quality of Interactions (QI), and Supportive Environment (SE). Then, I inspected the paths from the aforementioned HIPs to the outcomes of the study (satisfaction, perceived learning gains, and self-reported GPA).

Paths from HIPs to Engagement Indicators. The path from learning communities to RI (b = 0.219) was statistically significant (p=0.000) indicating that students who participated in a learning community had RI scores 0.219 units higher than those who did not participate in a

learning community. Also, both paths from research with faculty (b = 0.279) and service learning (b = 0.143) to RI were positively statistically significant (p=0.000), indicating that these HIPs have a positive influence on first year students' reflective and integrative learning.

Next, the paths from learning communities (b = 0.249), research with faculty (b= 0.241) and service learning (b= 0.147) to CL were all statistically significant ($p < .001$) suggesting that participating in learning communities, research with faculty, and service learning would increase first year students' collaborative learning by 0.249, 0.241, and 0.141 units respectively.

The path from learning communities to SF (b=0.270, p=0.00) suggests that participation in learning communities would increase first year students' interactions with faculty by 0.270 units. The paths from research with faculty (b= 0.574), and service learning (b= 0.313) to SF were both statistically significant. These results suggest that both research with faculty and service learning have a positive influence on first-year students' interactions with faculty.

The paths from learning communities (b= 0.104), research with faculty (b=0.096) and service learning (b= 0.088) to QI were all positively statistically significant (p = 0.00) showing that participation in learning communities, research with faculty and service learning would increase first year students' quality of interactions by 0.104, 0.096 and 0.088 units respectively.

Lastly the paths from learning communities (b= 0.176), research with faculty (b= 0.198) and service learning (b=0.102) to SE were all positively statistically significant (p = 0.00). These coefficients indicate that first-year students' participation in all three HIPs would have a positive effect on their perceptions of a supportive institutional environment.

Paths from HIPs to Student Outcomes. This section describes the paths from the three HIPs of interest (learning communities, research with faculty and service learning) in relationship to the targeted college outcomes (satisfaction, perceived learning gains and self-

reported GPA). The path from learning communities to satisfaction (b= 0.039) was statistically significant at p = 0.012. This indicates that learning community participation increases first-year students' satisfaction by 0.012 units. The path from learning communities to perceived learning gains (b = -0.046) was also statistically significant at p <0.001. However, this path was negative which means that participation in learning communities would lower first-year students' perceived learning gains by -0.046 units. The path from learning communities to self-reported GPA (0.091) was statistically significant (p <0.001), which shows that for every unit of learning community participation students self-reported GPA increases by 0.091 units.

The path from research with faculty to self-reported GPA (b= 0.070) was statistically significant at p < .001, showing that students' participation in research with faculty would increase their self-reported GPA by 0.070 units. However, the path from research with faculty to satisfaction (b =0.024, p =0.339) and from research with faculty to perceived learning gains (b= -0.011, p =0.330) were not significant.

As far as the path from service-learning course to satisfaction (b= 0.104) was statistically significant (p < .001) suggesting that service course participation students increased their satisfaction by 0.104 units. The paths from service -learning course to perceived learning gains (b= 0.118) was also statistically significant at p < .001, indicating that first-year students' service-course participation would foster perceived learning gains by 0.118 units. There was a decrease of -0.027 units of self-reported GPA when students participated in a service-learning course. This result indicates that self-reported GPA is negatively affected by service-course participation.

In summary, all three HIPs in which first-year students participated had a positive impact on their engagement. As far as the HIPs and their relationship to the study's outcomes, learning

communities, and service-learning participation increased students' satisfaction. On the other hand, perceived learning gains were negatively influenced by participation in learning communities, but positively affected by service learning. Similarly, learning communities and research with faculty had a positive effect on students' self-reported GPA, but service learning had a negative effect on it.

Full Structural Model for Senior Students

This section describes the paths for the full structural model corresponding to senior students. These paths include the relationship between the six HIPs in which seniors typically participate (learning communities, research with faculty, service-learning course, study abroad, internship, and capstone course), and their relationship to student engagement, represented by the latent constructs of Reflective & Integrative Learning (RI), Collaborative Learning (CL), Student-Faculty Interaction (SF), Quality of Interactions (QI), and Supportive Environment (SE). Also, this section contains the paths from the above-mentioned HIPs to the established college outcomes (satisfaction, perceived learning gains and self-reported GPA).

Paths from HIPs to Engagement Indicators. To start, the paths from learning communities (b= 0.284), research with faculty (b= 0.238), service-learning course (b= 0.263), study abroad (b= 0.172), internship (b= 0.155), and capstone course (b= 0.170) to RI were all positively statistically significant ($p < .001$), suggesting that participation in learning communities, research with faculty, service-learning course, study abroad, internship, and capstone course, would increase senior students' reflective and integrative learning would by the coefficients associated to each path.

The paths from learning communities (b= 0.354, $p < .001$), research with faculty (b= 0.184, $p < .001$), service-learning course (b= 0.215, $p < .001$), study abroad (b= 0.103, $p < .001$),

internship (b= 0.234, p < .001), and capstone course (b= 0.131, p < .001) to CL show that these HIPs have a positive effect on collaborative learning. These results imply that senior students' collaborative learning increases when they engage in the aforementioned HIPs.

The paths from learning communities (b= 0.490), research with faculty (b= 0.552), service-learning course (b= 0.375), study abroad (b= 0.217), internship (b= 0.322), and capstone course (b= 0.288) to SF were all positively statistically significant (p < .001), suggesting that engagement in learning communities, research with faculty, service-learning course, study abroad, internship, and capstone courses would increase senior students' interactions with faculty by 0.490, 0.552, 0.375, 0.217 and 0.322 units respectively.

The paths from learning communities (b= 0.127 p < .001), research with faculty (b= 0.119, p < .001), service-learning course (b= 0.170 p < .001), study abroad (b= 0.047 p < .001), internship (b= 0.073 p < .001), and capstone course (b= 0.063 p < .001) to QI suggest that participation in these HIPs had a beneficial effect on senior students' quality of interactions.

Lastly, the paths from learning communities (b= 0.226), research with faculty (b= 0.160), service-learning course (b= 0.248), study abroad (b= 0.099), internship (b= 0.112), and capstone course (b= 0.091) to SE were all positively statistically significant (p <0.001). These results indicate that all of the aforementioned HIPs have an impact on senior students' perception of supportive environment.

Paths from HIPs to Student Outcomes. Next, this section presents the paths from the HIPs in the study to the outcomes of interest. Thus, the path from learning communities to satisfaction (b= 0.006) was statistically significant (p <0.001) indicating when senior students participate in learning communities their satisfaction increases by 0.006 units. The path from learning communities to perceived learning gains (b= 0.052) was also statistically significant at p <0.001,

showing that learning communities participation increases senior students perceived learning gains by 0.052. Also, there as a statistically significant positive relationship between learning communities' participation and self-reported GPA ($p < .001$).

The path from research with faculty to satisfaction (b= 0.011) was statistically significant (p <.001), meaning that research with faculty improves senior students' satisfaction with college by 0.011 units. Also, research with faculty was statistically significantly related to perceived learning gains (p = 0.00). So, when senior students engaged in research with faculty their perceived learning gains increased by 0.31 units. The path from research with faculty to perceived GPA (b= 0.125) was also statistically significant (p < .001) showing that when seniors conduct research with faculty their self-reported GPA would increase by 0.125 units.

Regarding the paths from service-learning course to satisfaction (b= 0.013), perceived learning gains (b= 0.076) gains and self-reported GPA (b= 0. 029) were all statistically significant at $p < .001$. These results suggest that participation in service-learning courses has a positive effect on senior students because when they participate in this activity students would increase their satisfaction, perceived learning gains, and self-reported GPA by 0.013, 0.076 and 0.029 units respectively.

The path from study abroad to satisfaction (b= 0.012) and to self-reported GPA were positively statistically significant ($p < .001$) suggesting that when senior students study abroad their satisfaction and self-reported GPA would grow by 0.012 units and 0.083 units respectively. Conversely, the path from study abroad to perceived learning gains was not statistically significant (p =0.207).

The paths from internship to satisfaction (b= 0.013), perceived learning gains (b= 0.057) and self-reported GPA (b= 0.126) were all positively statistically significant at $p < .001$. These

results indicate that when seniors take part in internships their satisfaction with college, perceived learning gains, and self-reported GPA increase by 0.013 units, 0.057 units and by 0.126 units respectively.

Capstone course participation to satisfaction (*b*= 0.008), perceived learning gains (*b*= 0.058), and self-reported GPA (*b*= 0.072) were all positively statistically significant at $p < .001$. These coefficients indicate that capstone course participation influences students' satisfaction, perceive learning gains, and self-reported GPA.

To summarize, it appears that all six HIPs (learning communities, research with faculty, service-learning course, study abroad, internship and capstone course participation) had a positive statistically significant effect on student engagement, satisfaction, perceived learning gains and self-reported GPA. The only path that was not statistically significant was the path from study abroad to perceive learning gains.

Research Question 2: Conditional Effect of Race/Ethnicity

The second research question asked if the effect of participation in HIPs on satisfaction, perceived learning gains, and self-reported grade point average (GPA) was the same for Latino and non-Latino students. To test the conditional effect (i.e., moderation) of race-ethnicity (being Latino) on the variables of interest, interaction terms between each race (e.g., Asian, Black, White, Multiracial) and HIP were included in separate structural models that tested whether the effect of participating in each HIP with the outcomes of this study (satisfaction, perceived learning grains, self-reported GPA) varied by race-ethnicity. As an example of interpreting an interaction effect, consider the following regression model: $Y = b_1*LC + b_2*non\text{-}Latino + b_3*LC*non\text{-}Latino$. The b_1 coefficient represents the conditional effect of learning community (LC) participation when the other variable in the interaction is zero. Thus, this coefficient is the

conditional effect of participating in a LC for Latino students. The b_2 coefficient is also a conditional effect; it is the conditional effect of race-ethnicity for those not participating in a LC. In order to make the coefficients for race-ethnicity more interpretable and before creating interaction terms, I recoded each HIP so that zero would indicate participation in the HIP. That way, coefficient estimates for the race-ethnicity dummy variables would represent the comparison of each racial/ethnic group to Latino students for those who participated in the HIP (i.e., when the other variable in the interaction effect is zero). The b_3 coefficient is the interaction effect and represents the differential effect of participating in a LC for Latino and non-Latino students. Additionally, the analysis of the interaction effect was conducted by cohort (first year and senior students) because of the different HIPs in which those cohort participated.

First-Year Students: Conditional Effect of Race Between HIPs and Target Outcomes

The conditional effect (interaction) of race between HIP participation and outcomes of interest was tested by creating separate structural models for each HIP (learning communities [LC], service learning [SL], research with faculty [RE]) and the corresponding outcomes (satisfaction, perceived learning gains and self-reported GPA). The reason for estimating separate models for each HIP was to avoid convergence issues. A summary of the fit indices corresponding to each model can be found in Table 9. Since six interaction terms were added to each structure model, a Wald x^2 test was used to test the null hypothesis that the set of interaction terms was equal to zero. If the Wald test is non-significant, this indicates that the set of interaction terms does not add any predictive value to the model.

First Year Students: Learning Communities (LC) Model. This section describes the model looking at the conditional effect of race and the relationship between learning communities, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of an interaction

term between the HIP and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 185.1968, p <0.001. These results then allowed for the interpretation of the coefficients related to HIPs and race-ethnicity. So, the coefficient for Asian was negative and statistically significant (b= -0.221, p = 0.001) suggesting that Asian students who participate in learning communities tend to be less satisfied than Latino students.

The coefficient for Black was also negative and statistically significant (b= -0.399, p <0.001), which shows that Black students who take part in learning communities have lower satisfaction than Latino students who participated in learning communities. The coefficient for Multiracial was negatively statistically significant (b = -0.209, p = 0.008) indicating that Multiracial students who participate in learning communities tend to be less satisfied than Latino students. The effect of race-ethnicity was not statistically significant for White students (p= 0.204).

The inclusion of a racial interaction term between learning communities and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 389.9022, p <0.001. The coefficients for both Asian and White were not statistically significant (p >0.001). On the other hand, the coefficient for Black (b= 0.060, p = 0.014) was statistically significant suggesting that Black students who participate in learning communities have a greater perception of their learning gains than Latino students. Also, the coefficient for Multiracial students was positive and statistically significant (b = 0.074 p = 0.039), showing that Multiracial students who are part of learning communities tend to have a higher perceived learning gains than Latino students. The interaction term between learning community and race-ethnicity on self-reported GPA was statistically significant, Wald x^2 (6) = 224.682, p < 0.001. The coefficient for Asian was statistically significant and positive (b= 0.091 p = 0.002) which indicates that Asian students tend to have higher self-reported GPAs when compared to Latino students.

Table 9 Fit indices for first year structural models containing an interaction effect

Model	x^2	*df*	*p*	RMSEA	CFI	SRMR
LC model	156855.454	1570	0.000	0.042	0.97	0.038
SL model	150867.942	1570	0.000	0.042	0.97	0.037
RE model	157445.006	1570	0.000	0.043	0.97	0.038

The coefficient for White was also positive (b = 0.105 p < .001) which shows that White students who are part of learning communities have higher levels of self-reported GPA than Latino students. On the contrary, Black students that take part in learning communities tend to have lower self-reported GPA than Latino students (b= -0.144, p < .001). The coefficient for Multiracial was not statistically significant (p = 0.432).

First Year students: Service Learning (SL) Model. This section describes the conditional effect of race-ethnicity on the relationship between service learning, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race interaction term between service learning and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 342.2687, p < 0.001. These results then permitted the interpretation of the coefficients related to service learning and race-ethnicity. Thus, the coefficient for Asian was statistically significant and negative (b = -0.207, p = 0.001), indicating that Asian students who participate in service learning have lower satisfaction than Latino students who participated in service learning. The coefficient for Black was also negative (b = -0.350, p= 0.001), meaning that Black students in service learning are also less satisfied than Latinos. Similar results applied for Multiracial students (b = -0.104, p = 0.009) suggesting that Multiracial students are less satisfied than Latinos. Contrarily, White students who participate in service learning seem to be more satisfied than Latino students (b = 0.049, p = 0.016).

The inclusion of an interaction term between service learning and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 1577.304 p < 0.001. The coefficients for both Asian (b = 0.122) and White (b = 0.113) were statistically significant and positive suggesting that Asian and White students who are part of service learning tend to have higher perceived learning gains when compared to Latino students who also participate in it. On the

other hand, the coefficient for Black was negatively (b= -0.169 $p < 0.001$) meaning that Black students that participate in service learning have lower perceived learning gains when compared to Latino students. Additionally, the coefficient for Multiracial was not significant ($p = 0.904$). Lastly, the inclusion of an interaction term between service learning and race-ethnicity on self-reported GPA was not statistically significant ($p = 0.177$).

First Year Students: Research with Faculty (RE) Model. This segment describes the conditional effect of race and the relationship between research with faculty, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race interaction term between research with faculty and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 80.15835 $p < 0.001$. These results then allowed for the interpretation of the coefficients related to research with faculty and race-ethnicity. In this category the only racial coefficient that was statistically significant was the one for Black students (b = -0.376, $p < 0.001$). The coefficient was negative which indicates that Black students that conduct research with faculty tend to be less satisfied than Latino students who participate in this HIP.

The conditional effect of research with faculty and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 341.4908 $p < 0.001$. In this relationship the only racial coefficient that was statistically significant was the one for Black students (b= 0.128 p= 0.001). These results show that Black students that conduct research with faculty tend to have higher perceived learning gains than Latino students in the same HIP.

The inclusion of an interaction term between research with faculty and race-ethnicity on self-reported GPA was statistically significant Wald x^2 (6) = 75.544 $p < 0.001$. The coefficient for Asian was statistically significant and positive (b= 0.18, $p < 0.001$) which indicates that Asian students that engage in research with faculty report higher GPAs than Latino students who

participate in it. The coefficient for Black (b = -0.190, $p < 0.001$) says that Black students who participate in research with faculty tend to have lower self-reported GPA than Latino students. The coefficient for White was positive (b= 0.094 p= 0.005) indicating that White students that conduct research with faculty have higher self-reported GPA than Latinos. Lastly, the coefficient for Multiracial students was not statistically significant (p= 0.273).

Senior Students: Conditional Effect of Race/Ethnicity Between HIPs and Target Outcomes

Similarly, to the process for first year students, the conditional effect (interaction) of race between HIP participation and outcomes of interest was tested by creating separate structural models for each HIP (learning communities [LC], service learning [SL], research with faculty [RE], internship [IN], study abroad [AB], capstone experiences [CA]) and the corresponding outcomes (satisfaction, perceived learning gains and self-reported GPA). The reason for estimating several models was to aid in interpretation and avoid convergence issues. A summary of the fit indices corresponding to each model can be found on Table 10. Also, Wald x^2 statistics were used to test the null hypothesis that the set of interaction terms was equal to zero.

Senior Students: Learning Communities (LC) Model. This segment describes the conditional effect of race and the relationship between learning communities, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race interaction term between learning communities and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 357.8368 $p < 0.001$. These results then made it possible to interpret the coefficients related to learning communities and race-ethnicity. Thus, the coefficients for Asian (b = -0.215), Black (b= -0.405), and Multiracial (b = -0.247) were all statistically significant (p <0.001) and negative indicating that Asian, Black, and Multiracial students who take part in

learning communities tend to be less satisfied than Latino students. The coefficient for White students was not statistically significant ($p = 0.184$).

The conditional effect of learning communities and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 1348. 631 $p < 0.001$. These results then allowed for the interpretation of the coefficients related to learning community and race-ethnicity. Thus, the coefficient for Asian was statistically significant and negative ($b = -0.050$ $p < 0.05$) suggesting that Asian students who participate in learning communities have lower perceived learning gains than Latino students in them.

The conditional effect of learning communities and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 1348. 631 $p < 0.001$. These results then allowed for the interpretation of the coefficients related to learning community and race-ethnicity. Thus, the coefficient for Asian was statistically significant and negative ($b = -0.050$ $p < 0.05$) suggesting that Asian students who participate in learning communities have lower perceived learning gains than Latino students in them. The coefficients for Black ($p = -0.072$), White ($b = -0.075$) and Multiracial ($b = -0.134$) were all statistically significant at $p < 0.001$and negative. These results show that Black, White and Multiracial students who participate in learning communities tend to have lower perceived learning gains than Latino students.

The inclusion of a race interaction term between learning communities and race-ethnicity on self-reported GPA was statistically significant Wald x^2 (6) = 215.5746 $p < 0.001$. These results then permitted for the interpretation of the coefficients related to learning communities and race-ethnicity. Hence, the coefficient for Asian was statistically significant and positive ($b = 0.038$ $p <0.05$) suggesting that Asian students that participate in learning communities tend to have higher self-reported GPA than Latinos in them.

Table 10 Fit indices for senior's structural models containing an interaction effect

Model	x^2	*df*	*p*	RMSEA	CFI	SRMR
LC model	262543.112	1711	0.000	0.046	0.97	0.044
SL model	260433.180	1711	0.000	0.046	0.97	0.046
RE model	265843.361	1711	0.000	0.046	0.97	0.044
IN model	249139.016	1711	0.000	0.045	0.97	0.043
AB model	264359.832	1711	0.000	0.046	0.97	0.046
CA model	250652.125	1711	0.000	0.045	0.97	0.043

The coefficient for White students was also statistically significant ($b = 0.109$ $p < 0.001$) which means that these students also have higher self-reported GPA than Latinos. On the contrary, results for Black students ($b = -0.163$ $p < 0.001$) in learning communities suggest that they have lower self-reported GPA than Latinos. Lastly, the coefficient for Multiracial was not statistically significant ($p = 989$).

Senior Students: Service Learning (SL) Model. This section reports the conditional effect of race-ethnicity and the relationship between service learning, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race interaction term between service learning and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 1084.376 $p < 0.001$. The coefficients for Asian ($b = -0.226$), Black ($b = -0.335$) and Multiracial ($b = - 0.134$) were all statistically significant at $p < 0.001$ and negative which means that Asian, Black, and Multiracial students in service learning tend to be less satisfied than Latinos. The coefficient for White was not statistically significant ($p = 0.973$).

The race interaction effect between service learning and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 2659.676 $p < 0.001$. The coefficients for Asian ($b= -0.050$), White ($b= -0.081$) and Multiracial ($b = - 0.086$) were all statistically significant and negative. These results indicate that Asian, White and Multiracial students who engage in service learning tend to report lower perceived learning gains than Latino students who take part in it. On the other hand, the coefficient for Black was not statistically significant ($p = 0.067$).

The conditional effect of service learning and race-ethnicity on self-reported GPA was statistically significant Wald x^2 (6) = 131.2682 $p < 0.001$. The coefficients for Asian ($b = 0.047$) and White ($b = 0.121$) were statistically significant ($p <0.001$) and positive indicating that Asian

and White students that participate in service learning have higher self-reported GPA than Latino students. Contrarily, results for Black students who engage in service learning (b = -0.137 p< 0.001) suggest that they tend to have lower self-reported GPA. Lastly, the coefficient for Multiracial students was not statistically significant (p= 0.062).

Senior Students: Research with Faculty (RE) Model. This section reports the conditional effect of race-ethnicity and the relationship between research with faculty, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race-ethnicity interaction term between research with faculty and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 428.5695 p < 0.001. The coefficients for both Asian (b = -0.228) and Black (b = -0.441) were statistically significant (p < 0.001) and negative which means that Asian and Black students who participate in research with faculty tend to be less satisfied than Latino students in research with faculty. The coefficients for White (p = 0.057) and Multiracial (p = 0.108) were not statistically significant.

The conditional effect of research with faculty and race-ethnicity on perceived learning gains was statistically significant, Wald x^2 (6) = 830.2974 p < 0.001. The coefficients for White (b = -0.044 p = 0.001) and for Multiracial (b = -0.094 p < 0.001) were statistically significant and negative which means that White and Multiracial students who conduct research with faculty have lower perceived learning gains than Latinos who take part in research with faculty. On the other hand, the coefficients for Asian (p = 0.248) and Black (p= 0.302) were not statistically significant.

The race interaction effect between research with faculty and race-ethnicity on self-reported GPA was statistically significant Wald x^2 (6) = 788.4798 p < 0.001. The coefficients for Asian (b = 0.103), White (b = 0.129), and Multiracial (b=0.045) were statistically significant and

positive at $p < 0.005$ which indicates that students from those race-ethnicities who take part in research with faculty, have higher self-reported GPA than Latino students. On the contrary, Black students ($b = -0.166$ $p < 0.001$) who participate in research with faculty appear to have lower self-reported GPA than Latinos who take part in this HIP.

Senior Students: Internship (IN) Model. This section reports the conditional effect of race and the relationship between internship, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race interaction term between internship and race-ethnicity on satisfaction was statistically significant, Wald x^2 (6) = 345.9352 p < 0.001. These results then allowed for the interpretation of the coefficients related to internship and race-ethnicity. The coefficients for Asian (b= -0.185 $p < 0.001$), Black ($b = -0.346$ $p < 0.001$) and Multiracial ($b = -0.104$ $p = 0.003$) were all statistically significant and negative which indicates that Asian, Black, and Multiracial students who engage in internships tend to be less satisfied than Latinos who take part in internships. On the other hand, the coefficient for White was statistically significant and positive (b= 0.052, p <0.001) which means that White students who take part in internships are more satisfied than Latinos in them.

The race interaction effect between internship and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 815.9742 $p < 0.001$. All the race coefficients in this category were statistically significant and negative, indicating that Latino students who participated in an internship reported greater learning gains than their otherwise similar peers who participated in an internship. The specific coefficients for each race were: Asian b= -0.034 $p = 0.007$, Black $b = -0.027$ $p = 0.040$, White b= -0.045 p <0.001, Multiracial $b = -0.071$ $p < 0.001$. These results suggest that Asian, Black, White and Multiracial students who take part in

internships tend to have lower perceived learning gains when compared to Latino students in them.

The conditional effect between internship and race-ethnicity on self-reported GPA was statistically significant Wald x^2 (6) = 890.8798 $p < 0.001$. The coefficients for Asian (b= 0.113), White (b=0.172), and Multiracial (b = 0.056) were all statistically positively significant ($p <$ 0.001) which means that senior students from all of those races that participate in internships have higher self-reported GPA than Latino students. On the contrary, Black students (b= -0.096, p <0.001) who participate in internships have lower self-reported GPA than Latinos in them.

Senior Students: Study Abroad (AB) Model. This section describes the conditional effect of race and the relationship between study abroad, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race interaction term between study aboard and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 204.2231 $p < 0.001$. The coefficient for White was statistically significant and positive (b = 0.120, $p < 0.001$) indicating that White students who study abroad tend to be more satisfied with their education experience than Latino students. The coefficients for Asian (b = -0.213) and Black (b = -0.393) were statistically significant and negative ($p < 0.001$), which indicates that when students from those races study abroad they tend to be less satisfied than Latinos who take part in that educational experience. The coefficient for Multiracial was not statistically significant (p = 0.311).

The inclusion of a race interaction term between study abroad and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 201.6587 $p < 0.001$. All the racial coefficients were statistically significant and negative, indicating that Latino students who participated in study abroad reported greater learning gains than their peers. The specific

coefficients for each race were the following: Asian b = -0.068 p = 0.001, Black b = -0.099 p <0.001, White b = -0.071 p < 0.001, Multiracial b = -0.063 p < 0.05.

The conditional effect of study abroad and race-ethnicity on self-reported GPA was statistically significant Wald x^2 (6) = 218.2603 p < 0.001. The coefficient for Asian (b = 0.120 p < 0.001), White (b = 0.163 p < 0. 001), and Multiracial (b = 0.070 p < 0.05) were all statistically significant and positive, which means that Asian, White, and Multiracial students who study aboard tend to have higher self-reported GPA when compared to Latino students. On the other hand, the coefficient for Black was negative and statistically significant (b = -0.085 p < 0.001) suggesting that Black students that participate in study abroad reported lower self-reported GPA than Latino students.

Senior students: Capstone Course (CA) Model. This part of the results reports on the conditional effect of race and the relationship between capstone course participation, satisfaction, perceived learning gains, and self-reported GPA. The inclusion of a race interaction term between capstone course participation and race-ethnicity on satisfaction was statistically significant Wald x^2 (6) = 237.7805 p < 0.001, allowing for the interpretation of the capstone course and the racial-ethnicity coefficients. Thus, the coefficients for Asian (b= -0.206 p < 0.001) Black (b = - 0.380 p < 0.001) and Multiracial (b = -0.122 p < 0.001) were statistically significant and negative which means that Asian, Black, and Multiracial students who take part in capstone courses tend to be less satisfied than Latinos who participated in them. The coefficient for White students was not statistically significant (p = 0.177).

The race interaction term between capstone course participation and race-ethnicity on perceived learning gains was statistically significant Wald x^2 (6) = 788.2937, p < 0.001. The coefficients for White (b= -0.047) and Multiracial (b= -0.064) were negative indicating that

White and Multiracial students that engage in this HIP tend to have lower perceived learning gains than Latinos in it. The coefficients for Asian (p = 0.051) and for Black (p =0.648) were not statistically significant.

The conditional effect of race between capstone course participation and race-ethnicity on self-reported GPA was statistically significant Wald x^2 (6) = 394.6899 p < 0.001. The coefficients for Asian (b= 0.100, p <0.001), White (b= 0.140, p < 0.001) and Multiracial (b = 0.044, p < 0.05) were all positive and statistically significant. These results show that Asian, White, and Multiracial students who engage in capstone courses have higher self-reported GPA than Latino students in them. On the other hand, the coefficient for Black (b = -0.114, p <0.001) suggest that Black students who take part in this HIP have lower self-reported GPA than Latinos who take part in them.

Research question 3: Mediation Effect of Student Engagement Between HIPs and College Outcomes.

The third research question asked whether student engagement (e.g., student-faculty interaction, collaborative learning, discussion with diverse others) mediates the relationship between high-impact practices and college outcomes (e.g., satisfaction, perceived learning gains) for Latino students? Since the focus of this research question was on the mediating effect of student engagement for Latino students, the data were subset to only include Latino students. Like in previous research questions, this one was answered by cohort. So, I estimated an SEM model for first-year students and another model for senior students.

Mediation Effect First-Year Students

The model fit for first-year students was good χ^2 (1152) = 16939, p <.001, CFI = 0.987, RMSEA = 0.040, SRMR = 0.038. Next, I examined the paths that made up the direct and

indirect effect between first-year students' HIPs (learning communities, research with faculty, and service-learning) and the outcomes of interest (satisfaction, perceived learning gains, and self-reported GPA). Student engagement, which was represented by the latent constructs of Reflective & Integrative Learning (RI), Collaborative Learning (CL), Student-Faculty Interaction (SF), Quality of Interactions (QI), and Supportive Environment (SE), was hypothesized

to both directly influence the outcomes of interest as well as mediate the impact of HIPs on the outcomes of interest.

Mediation Between HIPs and Engagement on Satisfaction. The total effects of learning community participation (b = 0.268) research with faculty (b = 0.305), and service-learning (b = 0.243) on satisfaction were statistically significant. This effect was divided into direct and indirect effects.

The direct effects of research with faculty (b = 0.163, p =.035) and service-learning (b = 0.134, p < .001) on satisfaction with college were statistically significant and positive. However, the direct effect of learning community (b = 0.053, p =.214) on this outcome was not significant. Moreover, most engagement indicators (except for SF and CL) had a significant positive effect on satisfaction. The direct effects for the engagement indicators are described in table 10.

The total indirect effects (i.e., the sum of the effect through each engagement indicator) suggests that the relationship between learning communities (b = 0.215), research with faculty (b = 0.143), service learning (b= 0.108) and satisfaction were significantly mediated by student engagement. Thus, according to the indirect effects, HIPs positively influence student engagement which subsequently impacts satisfaction.

Mediation Between HIPs and Engagement on Perceived Learning Gains (PG). The total effect of learning community (b = 0. 169), research with faculty (b = 0.275) and service-

learning (b = 0.254) on PG was statistically significant. This effect was divided into direct and indirect effects. The direct effect of learning community on PG was statistically negatively significant and negative (b = - 0.058, p =0.003), but the direct effect of service-learning on it was statistically significant and positive (b = 0.122, p <0.001). On the other hand, the direct effect of research with faculty on PG was not statistically significant (b = .032, p = 0.337). Additionally, all engagement indicators had a significant positive effect on PG. The direct effects for the engagement indicators are featured in Table 11.

The total indirect effects indicate that the relationship between learning communities (b = 0.227), research with faculty (b = 0.242), service learning (b= 0.132), and PG were significantly mediated by student engagement. Thus, according to the indirect effects, HIPs positively influence student engagement which in turn impacts PG.

Mediation Between HIPs and Engagement on Self-reported GPA. The total effect of learning community participation (b= 0.122), and research with faculty (b= 0.109) on self-reported GPA was statistically significant (p <0.01). However, the total effect of service-learning on self-reported GPA was not statistically significant (b= 0.001, p =0.958). These effects were divided into direct and indirect effects.

The direct effect of learning community (b = 0.089) and research with faculty (b= 0.092) on self-reported GPA were statistically significant and positive (p <0.001), but the direct effect of service-learning on it was not statistically significant (b= -0.013, p =.291).

The total indirect effects indicate that the relationship between learning communities (b = 0.033), research with faculty (b = 0.017), service learning (b= 0.014), and self-reported GPA were significantly mediated by student engagement. Thus, according to the indirect effects, HIPs positively influence student engagement which in turn impacts self-reported GPA.

Table 11 Direct effects of engagement indicators on outcomes for first-year students

Variable (*b*)	Satisfaction	Perceived Learning Gains	Self-reported GPA
Reflective & Integrative Learning (RI)	0.111***	0.228***	0.063***
Collaborative Learning (CL)	0.006	0.052***	0.047***
Student-Faculty Interaction (SF)	-0.052	0.102***	-0.045***
Quality of Interactions (QI)	0.659***	0.159***	0.086***
Supportive Environment (SE)	0.493***	0.382***	0.026***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Mediation Effects for Senior Students.

The model fit for senior students was adequate χ^2 (1261) = 24872, p =.000, CFI = .984, RMSEA = 0.042, SRMR = 0.044. Next, I examined the paths that contained the direct and indirect effect between senior students' HIPs (learning communities, research with faculty, service learning, study abroad, internship, and capstone experiences) and the outcomes of interest (satisfaction, perceived learning gains, and self-reported GPA). Student engagement, which was represented by the latent constructs of Reflective & Integrative Learning (RI), Collaborative Learning (CL), Student-Faculty Interaction (SF), Quality of Interactions (QI), and Supportive Environment (SE), was hypothesized to directly influence the outcomes of interest as well as mediate the impact the effect of HIPs on the outcomes of interest.

Mediation Between HIPs and Engagement on Satisfaction. The total effect of learning communities (b = 0.248), research with faculty (b= 0.241), service learning (b= .397), study abroad (b= .052, p=.323), internship (b=0.226) and capstone experiences (b= 0.162) on satisfaction were statistically significant at p <0.001, except study abroad. The total effect can be decomposed into direct and indirect effect.

The direct effects on satisfaction were as follows: learning communities (b = 0.070, p=.032), research with faculty (b= 0.079, p=.020), service learning (b= 0.154, p<.001), study abroad (b=0.029, p=.430), internship (b=0.109, p< .001) and capstone experiences (b=0.083, p= .002). The direct effect of study abroad on satisfaction was not significant (p=0.430). Furthermore, all engagement indicators had a significant positive effect on satisfaction. The direct effects for the engagement indicators are described in Table 12.

The total indirect effects indicate that the relationship between learning communities (b = 0.178), research with faculty (b= 0.162), service learning (b= 0.242), internship (b=0.118) and

capstone experiences (*b*= 0.079) and satisfaction were significantly mediated by student engagement. The only exception was study abroad, which did not significantly mediate this relationship (*p* = 0.401). Thus, according to the indirect effects, most HIPs positively influence student engagement which subsequently impacts satisfaction.

Mediation Between HIPs and Engagement on Perceived Learning Gains (PG). The total effect of learning communities (*b* = 0.291), research with faculty (*b*= 0.207), service learning (*b*= 0.326), study abroad (*b*= 0.0700), internship (*b*= 0.173) and capstone experiences (*b*= 0.143) on PG were statistically positively significant. The total effect can be divided into direct and indirect effect.

The direct effects of learning communities (*b* = 0.083), research with faculty (*b*= 0.033, p=.051), service learning (*b*=0.118), internship (*b*= 0.045) and capstone experiences (*b*= 0.054) on PG were statistically significant (*p* <0.001). However, the direct effect of study abroad on PG was not significant (*b*= 0.003, *p* =0.878).

The total indirect effects indicate that the relationship between learning communities (*b* = 0.208), research with faculty (*b*= 0.174), service learning (*b*= 0.208), study abroad (*b*= 0.067), internship (*b*= 0.128) and capstone experiences (*b*= 0.090) and PG were significantly mediated by student engagement. Consequently, according to the indirect effects, HIPs positively influence student engagement which in turn influences PG.

Mediation Between HIPs and Engagement on Self-reported GPA. The total effect of learning communities (*b* = 0.072), research with faculty (*b*= 0.120), service learning (*b*= 0.054), study abroad (*b*= 0.096), internship (*b*= 0.136) and capstone experiences (*b*= 0.076) on self-reported GPA were statistically positively significant. The total effect can be separated into direct and indirect effects.

Table 12 Direct effects of engagement indicators on outcomes for senior students

Variable (*b*)	Satisfaction	Perceived Learning Gains	Self-reported GPA
Reflective & Integrative Learning (RI)	0.159***	0.257***	0.051***
Collaborative Learning (CL)	-0.142***	0.034***	-0.045***
Student-Faculty Interaction (SF)	-0.054*	0.011	-0.002
Quality of Interactions (QI)	0.868***	0.254***	0.075***
Supportive Environment (SE)	0.442***	0.376***	0.010

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The direct effects of learning communities (b = 0.062), research with faculty (b=0.107), service learning (b=0.036), study abroad (b= 0.093), internship (b= 0.128) and capstone experiences (b= 0.071) on self-reported GPA were statistically significant (p <0.001). Additionally, most engagement indicators had a significant effect on self-reported GPA.

The total indirect effects indicate that the relationship between research with faculty (b= 0.013, p=.045), service learning (b= 0.018, p<.001) and self-reported GPA were mediated by student engagement. However, the total indirect effects between learning communities (p=.092), study abroad (p=.433), internships (p=.076), and capstone experiences (p=.133) and self-reported GPA were not statistically significant. Hence, according to the indirect effects, only research with faculty, and service learning positively influence student engagement for senior Latinos which in turn influences self-reported GPA.

Chapter 5: Discussion

The present research study investigated how student engagement and HIPs affect college outcomes, especially for Latino students. This chapter summarizes the main findings, their relationship to Astin's IEO theoretical framework, and the existing literature on student engagement. The results of this study illustrate the intricate relationship between HIPs, student engagement, satisfaction, perceived learning gains, and self-reported GPA. This chapter presents a synopsis of the following findings a) General relationship between HIPs, student engagement, and outcomes, b) Conditional effect of race-ethnicity and c) the mediating effect of student engagement on the outcomes for Latino students. Finally, this section describes implications for practice based on the study's findings, limitations of the current study, and recommendations for future research.

HIPs, Student Engagement and Outcomes

According to Astin (1993), students who engage in purposeful educational activities such as HIPs, should have better outcomes in college. This segment reviews the findings that investigated Astin's (1993) I-E-O (input-environment-output) model. He hypothesized that what students bring to college and what they become exposed to by their institution, impacts students' success in college. Thus, this section summarizes the results of the structural models that examined the influence of HIPs on various student outcomes (e.g., satisfaction, perceived learning gains, self-reported GPA) while controlling for the characteristics students bring with them to college.

Aspects of Astin's (1993) IEO model explained the majority of the variance in the model for first-year students (51%) and senior students (53%) in the perceived learning gains outcome. NSSE uses perceived learning gains to measure how institutions contribute to students' general

knowledge, skills, and personal development. Empirical studies have associated this construct with higher student engagement (Bureau et al., 2014; Finley & McNair, 2013; Nelson Laird et al., 2007).

HIPs and Student Engagement

The relationship between HIPs and engagement indicators was significant and positive for first year students and for seniors. Additionally, for both cohorts, the largest effects (as measured by standardized coefficients) were in the student-faculty interactions (SF) indicator. To interpret the relative size of the effects, Mayhew's et al (Mayhew et al., 2016) recommendations on effect size interpretation in higher education research was utilized in which standardized regression coefficients of .06, .12, and .20 represent "small", "medium", and "large" effects, respectively. So, for first-year students, the HIPs that had the highest impact on SF were: learning communities (β=.114), research with faculty (β=.151), and service-learning (β=.196). For senior students the HIPs that had the highest impact on SF were learning communities (β=.240), research with faculty (β=.266), and service-learning (β=.207) had the largest influence of all HIPs. The student-faculty interaction aspect of engagement is an important finding because this facet of engagement has been associated with better academic outcomes and improved learning (Anaya & Cole 2001, Kim & Sax, 2009). Additionally, for first year students (β=.115) and for seniors (β=.201) participating in learning communities had a substantial effect on collaborative learning (CL). The positive effects of this HIP on the CL engagement indicator seems appropriate because CL measures the way students work together in various tasks, which is something students would do in the context of learning communities.

HIPs and College Outcomes

The relationship between HIPs and the college outcomes considered in this study (satisfaction with college, perceived learning gains, and self-reported GPA) was complex. Not all HIPs were associated with the considered outcomes. For instance, for first year students, research with faculty was not associated with college satisfaction (p=0.339) nor to perceived learning gains (p=0.330). These results run counter to previous empirical studies which have found that research with faculty is related to both satisfaction with college (Bauer & Bennett, 2003; Bowman & Holmes, 2018; Craney et al., 2011; Hu et al., 2008; Wolf, 2018) and perceived learning gains (Finley & McNair, 2013).

It appears that for senior students, most HIPs were related to the outcomes of the present study. However, findings suggested that study abroad is not linked with perceived learning gains (p= 0.207). This outcome does not agree with recent studies, which have found that studying abroad was positively associated with perceived learning gains (Gonyea, 2008; Valentine et al., 2021).

Conditional Effect of Race-Ethnicity

The present study also examined the premise made in literature that race-ethnicity has a conditional effect on the relationship between HIPs and student outcomes (Kuh, 2008). Some studies have found that HIPs have a compensatory effect for students from racial-ethnic minorities (Kinzie et al., 2008; Kuh, Cruce, et al., 2008). This means that students from racial-ethnic minorities would benefit more from HIP participation than other students. Hence, participating in HIP would, in principle, have a more substantial impact on students such as Latinos. This section summarizes the results of the data analysis regarding the compensatory effects of HIP.

Compensatory Effects of Race for Learning Communities. The findings suggest that Asian, Black, and Multiracial students (first year and seniors) who participated in learning communities tend to be less satisfied with their college experience than Latino students. These findings partially agree with the literature. While findings suggest that participating in learning communities does have a positive compensatory effect on Latinos' satisfaction with college, others (e.g., Zhao & Kuh, 2004) also found an added benefit for Latino students compared with White students that was not realized in this study.

Results were somewhat mixed for perceived learning gains. In the model for first year students, Black and Multiracial students who participated in learning communities have higher perceived learning gains than Latinos. Though, in the model for seniors, Asians, Black, White, and Multiracial in this HIP have lower perceived learning gains than Latinos. The reason for this difference could be that the effect of participating in learning communities might be stronger for students at the beginning of college rather than when they are about to graduate (Zhao & Kuh, 2004).

The findings for self-reported GPA were the same for first year and seniors' students. Asian and White students in learning communities had higher self-reported GPAs than Latinos, but Black students who took part in this HIP had lower self-reported GPA. These results are not fully aligned with the idea that participation in a HIP would be more beneficial for all racial-ethic minority students because White students had higher self-reported GPA than Latinos and Black students. The cause of this results might be that students from marginalized populations (e.g., Latinos) tend to come to college with inadequate academic preparation (Nora & Crisp, 2009).

Compensatory Effects of Race-Ethnicity for Service Learning. The results for students' satisfaction with college and service-learning participation were the same for first year

and senior students. So, for Asian, Black, and Multiracial students' participation in this HIP led to less satisfaction with their college experience than for Latinos. Additionally, contradicting the idea that HIPs provide a boost in outcomes for racial minorities, White students who took part in service learning were more satisfied than Latino students in them.

Findings for perceived learning gains also varied for different cohorts. Thus, first-year students who were Asian or White and that took part in service learning had higher perceived learning gains than Latinos. However, Blacks students had lower perceived learning gains than Latinos. In the model for senior students, Asian, White, and Multiracial students in service-learning reported lower perceived learning gains than Latino students who take part in it while results for seniors aligned with the compensatory effects for racial-ethnic minorities described in the literature. That is, racial minorities should benefit more than White students when taking part in HIPs (Kuh, 2008; Finley & McNair, 2013).

For seniors, results showed that Asian and White students who take part in service learning had higher self-reported GPA than Latino students, but Black students had lower self-reported GPA. Again, it seems that participating in service learning does not provide better outcomes for Latinos and Black students when compared to White students. This finding somewhat agrees with results by Mungo (Mungo, 2017)who found that for Latino students, there is no effect on their GPA when they participate in service learning. Also, it is important to notice that service learning was the HIP in which students in this sample participated at the most (60%).

Compensatory Effects of Race-Ethnicity for Research with Faculty. Results for the effect of race-ethnicity were mixed for research with faculty. It appears that Black students (first year and seniors) who conducted research with faculty tended to be less satisfied with college than Latinos who participated in this HIP. Also, Asian first year students who engaged in this

HIP were less satisfied with their college experience than Latinos. This study did not find an effect for Multiracial or White students. Still, previous research has found that working on research with faculty should increase students' satisfaction with college from all races (Bauer & Bennett, 2003; Bowman & Holmes, 2018; Craney et al., 2011; Hu et al., 2008; Wolf, 2018); however, results from this study did not demonstrate a relationship between research with a faculty and satisfaction.

First year Black students who worked on research with a faculty reported higher perceived learning gains than Latinos. This outcome agrees with recent research done by Valentine et. al. (2021) who found that Black students that engage in research with faculty have higher perceived learning gains than Latinos in the same HIP. Additionally, for senior students, White and Multiracial students who took part in research with faculty tended to have higher learning gains than Latinos. This outcome disagrees with the idea that minority students such as Latinos would receive stronger benefits from HIPs than non-minority students (e.g., White).

In terms of self-reported GPA, for first year and senior students' results were similar. Asian and White students who worked on research with faculty tended to have higher self-reported GPA than Latinos, but Black students had lower self- reported GPA when compared to Latinos. These outcomes disagree with results by Kim and Sax (2009), who found that Black students who engaged in research with faculty had higher college GPA than Latinos engaging in research with faculty.

Compensatory Effects of Race-Ethnicity for Internships. This is a HIP in which only seniors participate. Therefore, this brief summary of results only applies to them. It appears that Asian, Black, and Multiracial students who participate in internships are less satisfied than Latinos in them, but White students in internships are more satisfied than Latinos. This finding

does not align with the idea that HIPs would have a greater advantage for minority groups such as Latinos (Kinzie et al., 2008).

In terms of perceived learning gains, Asian, Black, White, and Multiracial students who took part in internships reported lower levels of such outcomes than Latinos. So, participating in internships would provide a stronger boost in perceived learning gains for them. However, a recent study by Valentine et al. (2021) reported participating in internships did not influence Latinos' perceived learning gains.

An interesting result was that Asian, White, and Multiracial students who took part in internships had higher self-reported GPA than Latino students, but Black students in this HIP had lower self-reported GPA. On the other hand, a study done by Parker et al. (Parker et al., 2016) found that race-ethnicity had no conditional effect on the relationship between internship and students' GPA.

Compensatory Effects of Race-Ethnicity for Study abroad. This HIP is only done by senior students so results in this section again apply only to this cohort. White students who study abroad tend to be more satisfied with their college experience than Latino students. However, Asian, and Black students who study abroad tend to be less satisfied than Latinos who take part in this educational experience.

Results for learning gains showed a marked effect for Latino students. Hence, students from all races-ethnicities (Asian, Black, White and Multiracial) who studied abroad, reported lower learning gains than Latinos in the same HIP. This outcome is consistent with Valentine and colleagues (2021) who found that Latino students seem to benefit the most in terms of learning gains when compared with students from other racial-ethnic groups.

Asian, White, and Multiracial students who study abroad tended to have higher self-reported GPA when compared to Latino students, except for Black students who report lower self-reported GPA. These results contradict the idea that students such as Latinos would benefit more from engaging in HIPs than White students. Additionally, it is worth mentioning that studying abroad was the HIP on which Latino students in this sample participated the least (8%).

Compensatory Effects of Race-Ethnicity for Capstone Courses. This is another HIP that is exclusively done by senior students, so this section includes only this cohort. Thus, Asian, Black, and Multiracial, students who take part in capstone courses were less satisfied with their college experience than Latinos who participated in them. This means that capstones would provide a significant boost in college satisfaction for Latinos.

Findings suggested that White and Multiracial students that engaged in this HIP tended to have lower perceived learning gains than Latinos in it. These results agree with recent research by Valentine et. al. (2021) who found that Latinos who take part in capstones had the highest perceived learning gains when compared to other racial groups.

Effect of Student Engagement on HIPs

The present research explored the hypothesis that student engagement mediates the relationship between HIP and the outcomes of interest in this study for Latino students. As stated by Pike and colleagues (2012) "Student engagement is a potentially powerful mediating factor in college effects research because the student engagement construct represents both what students do in college and the experiences institutions and academic disciplines make available for student" (p. 551). This section summarizes how HIPs affect satisfaction with college, perceived learning gains and self-reported GPA through its influence on student engagement. This relationship was explored separately for each cohort in the study (first year students and seniors).

Findings for first year students and seniors showed that most HIPs (learning communities, research with faculty, service learning) have a positive influence on student engagement which in turn affects students' satisfaction with college, perceived learning gains and self-reported GPA. The exception being study abroad for senior Latino students. Student engagement did not mediate the relationship between study abroad and satisfaction for Latinos. Another exception was self-reported GPA for senior Latino students, in which only research with faculty and service learning had significant indirect effects mediated through engagement. Still, these results are important because it means that HIP participation is not just crucial for improving outcomes like satisfaction, perceived gains, and self-reported GPA, but also key for improving engagement which also leads to improved outcomes.

There was an interesting result for first year students in learning communities and perceived learning gains. Specifically, while this HIP had a negative effect on perceived learning gains its total effect and indirect effect on perceived learning gains were positive. Thus, while learning communities' impact directly seems to have a negative relationship with perceived learning gains, when we break this relationship apart, learning communities have a positive total and indirect relationship.

A further interesting finding for seniors is that the total indirect effects of student engagement in the relationship between all HIPs and self-reported GPA are very small ($\beta < 0.010$). Thus, the influence of students' engagement on the relationship between HIPs and self-reported GPA is weak. Additionally, engagement does not have an effect on the relationship between learning communities, study abroad, internship, capstone courses and GPA. While these results may seem to imply that HIP participation does not lead to higher GPA, participation in

HIPs still fosters stronger engagement and has a net positive, direct impact, albeit modest, on GPA.

Implications for Practice

Attending college has widespread consequences that can produce profound changes in students' lives (Astin, 1993; Pascarella & Terenzini, 2005). Findings from the present study illustrate how HIPs and student engagement influence students' college experience. Consequently, college leadership and faculty in charge of developing and implementing HIPs should have a critical lens when thinking about such practices. They should be concerned with the types of HIPs implemented, students' experiences, and who benefits from these practices. Implications in this section derive from the results of the research questions and the literature behind the findings.

Encourage Student-Faculty Interactions

The importance of faculty in students' college experience cannot be denied; faculty are the people with whom students interact daily. According to Astin (1993), "the faculty represents the most significant aspect of the student's undergraduate development" (p. 410). Because of the central role of faculty in students' success during college, scholars have pointed to the need to promote student-faculty interactions inside and outside the classroom (Chickering and Gamson, 1987; Pascarella and Terenzini, 2005). The present study agrees with these scholars because findings suggested that student-faculty interactions significantly impact college outcomes for students. In fact, results suggest that from all engagement indicators included in this study, the student-faculty interaction indicator has the largest standardized coefficients on HIPs. Student-faculty interactions are a facet of student engagement that speaks to the opportunities of undergraduates to connect with faculty. This connection goes beyond discussing course work or

performance; it taps into the idea that students can talk to faculty about future career plans and work with them on activities that are not only part of college life but also go beyond academic work (e.g., student associations, committee work, career plans).

Empirical research has established that when students interact with faculty, they receive a host of educational benefits (Komarraju et al., 2010; Kuh & Hu, 2001; Pascarella & Terenzini, 2005). Additionally, the research regarding racial differences in how student-faculty interactions affect Latinos states that for such group of students, contact with faculty has a profound impact on their academic (e.g., grades) and affective (e.g., college satisfaction) outcomes in college (Anaya and Cole, 2001; Craft Defreitas & Bravo, 2012; Kim & Sax, 2009; Lundberg & Schreiner, 2004). Therefore, considering the results of the findings of the present study and the decades of research that support the worth of faculty-student interactions, university officials must bring forth ways to encourage this practice.

The classroom is a prominent space in which students and faculty can interact regularly. The lecture room is where students attend their classes, learn and interact with peers and faculty. Regardless, this formal and course-related way for students to interact with faculty is valuable, but it is also beneficial for students to interact with faculty outside the classroom (Kim and Sax, 2009; Pascarella and Terenzini, 2005). Universities can facilitate student-faculty interactions by creating areas in which faculty can casually interact with students. These spaces can be, for example, coffee rooms or study common rooms in which students and faculty can spend time together outside the classroom, or simply by making sure that there are sitting areas in the proximity of faculty's offices so that students and faculty can easily interact (Kuh, 2010). Additionally, Cuseo (Cuseo, 2015) suggests a series of practices that universities should consider promoting student-faculty interactions beyond the classroom, such as including faculty as part of

new student orientations, making sure faculty become mentors, and getting faculty involved with students' clubs. Irrespective of the activity, higher education administrators should discuss with faculty the significance of interacting with students inside and outside the classroom.

Student-faculty interactions can occur in person but also electronically. These days students can communicate with faculty using electronic educational platforms and via email. In large courses, students might feel intimidated to interact with faculty. Still, they might be more encouraged to do so using an electronic communication method "Email, asynchronous chats, and online office hours can provide crucial avenues of connection and information between students and faculty outside of class." (Pingree, 2012). As technology advances and changes, universities need to ensure that they provide faculty with the necessary access to platforms that make it easy to interact with students regularly.

In summary, student-faculty interactions provide undergraduate students with prospects for learning and growth. Opportunities for faculty and students to interact may take many forms (e.g., in-class, email), but the more students can have contact with faculty, the more they will benefit (Kim and Sax, 2009). Therefore, administrators need to make faculty aware of how fundamental their interactions are for students. Also, they should provide faculty and students with the necessary avenues for them to engage in meaningful interactions.

Ensure Quality in HIPs Implementation

Kuh (2008) established that it is insufficient to offer opportunities for students to participate in HIPs, but these educational activities need to be executed well. If HIPs are not implemented appropriately, then students would not benefit from participating in them. HIPs should be adapted to accommodate the needs of the population of each campus. Examining what works for the context of the university, for example, R1 universities might need to emphasize

research with faculty more than study abroad. Kuh (2008) describes the need to "scale up" HIPs, which means that institutions should make sure that all students can access these practices. Later, he added that HIPs should be "visible, credit-bearing, and funded so that they can count toward our degrees." (Kuh, 2013, p. 24).

It is also necessary to take notice of how HIPs are implemented for different cohorts. In the present study, research with faculty did not affect first-year students' college satisfaction nor their perceived learning gains. For seniors, studying abroad did not influence their learning gains. Both research with faculty and study abroad have shown to bring benefit for students (Ishiyama, 2001; Jonides et al., 1992; Pascarella & Terenzini, 2005; Rodenbusch et al., 2016), yet this was not the case for the present investigation. The problem might have been regarding implementation, how these practices were executed according to the context of each campus in this sample. According to Kuh and O'Donnell (2013), HIPs quality can vary among different campuses because of factors such as "overall design, expectations for student performance, nature of assignments and in-class and out-of-class activities, and frequency of feedback, among other factors." (p. 15). Thus, faculty and administrators must be aware of all of the above-mentioned issues that could affect the outcomes of HIPs.

In order for institutions to assess if HIPs are being implemented appropriately and evaluate their quality, they should use the criteria suggested by Kuh and O'Donnell (2013). They recommend that HIPs should meet the following conditions when executed 1) the expectations for student's performance should be high, 2) students should have to invest a significant amount of time and effort, 3) students' interactions with peers and faculty should have substance, 4) HIPs should include experiences with diversity, 5) there should be frequent and appreciated feedback, 6) HIP should include time for students to reflect about their learning experience, 7) students

should have the chance to learn through real-world experiences, 8) students should demonstrate publicly that they learned. If higher education institutions intend to provide students with the best chance to learn and develop during their college time without wasting resources. Then, it becomes imperative that criteria created by Kuh and O'Donnell are not overlooked.

The present study identified service-learning as the most beneficial HIP for first-year students. On the other hand, research with faculty seems to be the most impactful practice to support student outcomes for seniors. It is a positive outcome to find out which specific HIPs make the most impact on students' development. However, higher education administrators still should examine the context in which these practices are conducted. There should be an awareness of not only how these practices are being implemented but who has access and who is benefiting from participating in them.

Narrow down on equity and HIP that are targeted towards minorities such as Latinos

The positive effects of HIPs on students' development have brought up educators' interest in the equity of these practices, who benefits from them, and how (Kinzie et al., 2020; Stewart & Nicolazzo, 2018). Currently, efforts are being made by several institutions to assess the quality and equity of HIPs. Some examples of these efforts are Committing to Equity and Inclusive Excellence by the Association of American Colleges & Universities (AAC&U) and Taking Student Success to Scale (TS3) by the National Association of System Heads (NASH).

The present study contributes to the current efforts to understand who and how benefits from participating in HIPs. This research adds to existing literature regarding the differential impact of race-ethnicity on HIPs participation in particular Latino students (Kuh, 2003; Kuh, Schneider, et al., 2008). The effects of diverse HIPs on various racial groups, including Latinos, are mixed. Thus, campus leaders should make sure to pay attention to the impact of HIPs on their

campuses for their populations, paying close attention to racial-ethnic minorities. They should examine the proportion of students participating in each of their HIPs on their campuses and inspect the outcomes for racial-ethnic minorities and different cohorts.

Scholars have observed how HIPs have a remarkable positive impact on students from racial-ethnic minorities (Kuh, 2008; Finley & McNair, 2013). In other words, HIPs are supposed to have more substantial benefits for these students. However, this study showed that for Latinos, the impact of HIPs is not so straightforward. Latinos seem to obtain a compensatory effect in some HIPs and some outcomes but not in all of them. The present study suggests that learning communities and capstone courses provide Latinos with the most benefits. Despite Latinos not receiving an added boost beyond other racial ethnic groups, participating in HIPs generally had positive impacts for Latinos both in terms of increased engagement and college outcomes.

A concerning finding is that Latinos in this sample do not seem to receive much of a compensatory effect for participating in service-learning. Still, most of Latinos in this sample (60%) took part in this HIP. Service-learning is a HIP that brings students a series of educational benefits (Bureau, 2014; Ribera, 2017; Sweat, 2013). The reason for these results could be that the service learning programs in this sample did not serve the specific needs of Latino students. For instance, Cate and Russ-Eft (2018), state that Latinos would benefit from participating in initiatives that empower them, service-learning programs should be targeted to Latinos' identities and values. Hence, higher education leaders should closely observe Latino students' participation in service-learning. They should understand how this HIP works for them and how to make this HIP more effective so that Latinos can obtain the benefits they are supposed to receive.

One of the recommendations for Latinos to succeed in college is staying in close contact with faculty (Anaya and Cole, 2001; Excelencia in Education, 2020; Rendón, 1994). One of the

HIPs which promotes students' interactions with faculty is research (Zilvinskis et al. 2015). Research with faculty has been established as an educationally beneficial HIP for Latinos (Collins et al., 2017; Daniels et al., 2016). The present study observed that Latinos are not engaging in this practice enough; they had only a13% participation rate. Additionally, Latinos are not receiving compensatory effects on all college outcomes when they engage in research with faculty. Despite that the compensatory effect did not always show up but Latinos still had a net positive benefit from participating in HIPs. Given that this HIP is critical for Latinos, but they do not seem to participate as much in it or obtain full benefits, then faculty and administrators should find ways to identify how to recruit more students to work in research. This task might not be simple because students who work in research with faculty are those who are usually in STEM majors. Latinos are still underrepresented in college STEM majors in the United States (Fry et al., 2021) Latino students are the largest growing racial-ethnic minority in American colleges (Hussar et al., 2020). Latino students might have different racial backgrounds (e.g., Black, White, Mixed), and at the same time, they might belong to diverse ethnicities (e.g., Mexican, Spanish). If institutions are serious about Latino success in college, they need to examine the specific characteristics of this group in their campuses. Higher education officials should know the particular demographic characteristics of this group, and they need to assess the outcomes of their participation in HIP. This diverse group of students needs to have access to targeted culturally appropriate initiatives to succeed in college (Association of American Colleges and Universities, 2019).

Limitations

While this research contributed to the understanding of HIPs and student engagement, there are limitations to it. One limitation is the inability to include in the model background

characteristics that would provide a deeper insight into students' pre-college backgrounds. For example, the data for this study did not include measures of socioeconomic status (SES), so it was not possible to control for the effects of SES. Researchers have found that students with lower SES tend to be less engaged than their peers with higher SES (Rubin, 2012; Walpole, 2003).

A second limitation is that the data for this study includes only students' responses in numeric values (quantitative data). Students were given predetermined options to choose an answer. These types of data lack details found in qualitative data (observational data or interviews) which could bring more nuance to the information regarding the involvements of students in HIPs. Qualitative data would provide a broader picture of the lived experiences of students in HIPs. In other words, qualitative data would offer the opportunity to comprehend participants' experiences in-depth, to understand how they make sense of what they are experiencing (Jackson et al., 2007).

Finally, the present study did not explore the differences in outcomes in students who participated in HIPs versus those who did not. The focus of this research was to grasp the effect of HIPs, especially for Latinos. However, it would have been interesting to explore if Latinos who participate in HIPs obtain better college outcomes than those who do not.

Future Research

Given the general concerns about racial equity and access in higher education, there has been a drive to examine HIPs from a more critical lens (Harper, 2009; Patton et al., 2015; Stewart & Nicolazzo, 2018). Researchers have begun to explore the quality of implementation of HIPs and how racial-ethnic minority students are benefiting from them (Kinzie et al., 2020). These types of investigations are encouraging, but there is still research needed that narrows

down on the access that racial minorities have to HIPs, especially for Latino students. Research should focus on investigating whether Latinos have the same access across different types of institutions. Also, it would be valuable to understand what the barriers are that prevent Latino students from participating in certain HIPs.

There is a need for additional research that examines the relationship between the cultural aspects of being Latino, the undergraduate experience, and HIPs. Research has established that Latinos experience college differently and face unique challenges (Nora & Crisp, 2009; Arbona & Nora, 2007; Excelencia in Education, 2020). Still, there is a gap in the literature regarding how their culture affects their participation in particular HIPs. Additionally, the present study found that not all HIPs have the same effect for this group, so further research on the impact of being Latino, HIPs, and college outcomes is a must. Finally, more research is needed regarding the longitudinal effects of HIPs for Latino students. The present study focused only on cross-sectional data. Still, it would be valuable to have research that helps institutions to comprehend the relationship between pre-college characteristics HIPs participation and post-college outcomes, especially for a racial-ethnic minority group such as Latinos.

Conclusion

Students' involvement in meaningful educational experiences such as HIPs is still a significant tenant in higher education. The appeal of HIPs is that they require students to engage actively in their learning process. Undergraduates are afforded the opportunity to connect what they have learned in class to real-world experiences (Kuh, 2008). The present study relied on Asin's (1991) I-E-O model to examine the pathways that link HIPs, student engagement, and college outcomes. These pathways showed that undergraduate students who are engaged and participate in HIPs are more satisfied with college, have higher perceived learning gains, and

report higher GPAs. However, the influence of race-ethnicity on HIPs was more complex, especially for Latinos. Some HIPs were more beneficial for these students than others, which calls for a more in-depth look at how students from racial-ethnic minorities experience HIPs. Policymakers and institutional leaders must ensure that HIPs are assessed regularly and critically. They must make sure that these educational practices serve students from racial-ethnic minorities so that they can benefit from their participation in them as much as all other students do.

List of References

American Institute for Foreign Study. (2013). *Study abroad outcomes: A view from our alumni 1990-2010*. 40.

Anaya, G., & Cole, D. (2001). Latina/o student achievement: Exploring the influence of student-faculty interactions on college grades. *Journal of College Student Development, 42*(1).

Arana, R., & Blanchard, S. (2018). Loyalty to ethnic heritage and Hispanic college student engagement. *Journal of Hispanic Higher Education, 17*(4), 332–346. https://doi.org/10.1177/1538192717699519

Arbona, C., & Nora, A. (2007). The influence of academic and environmental factors on Hispanic college degree attainment. *Review of Higher Education, 30*(3), 247–269. https://doi.org/10.1353/rhe.2007.0001

Association of American Colleges and Universities. (2007). *College learning for the new global century*.

Association of American Colleges and Universities. (2019). *Supporting Latino students through data, practice and leadership*. AAC&U News Features. https://www.aacu.org/aacu-news/campus-model/supporting-latino-students-through-data-practice-and-leadership

Astin, A. W. (1970a). The methodology of research on college impact, part One. *Sociology of Education, 43*(3), 223. https://doi.org/10.2307/2112065

Astin, A. W. (1970b). The methodology of research on college impact, part two. *Sociology of Education, 43*(4), 437. https://doi.org/10.2307/2111842

Astin, A. W. (1991). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education* (1st ed.). American Council on Education.

Astin, A. W. (1993). *What matters in college? : four critical years revisited* (1st ed.). Jossey-Bass. https://doi.org/10.23072943781

Astin, A. W., & Sax, L. J. (1998). How undergraduates are affected by service participation. *Journal of College Student Development*, *39*(3), 251–263.

Astin, A. W., Vogelgesang, L., Ikeda, E., & Yee, J. (2000). *How service learning affects students*. *14*(10), i–104.

Athens, W. (2018). Perceptions of the persistent: Engagement and learning community in underrepresented populations. *Online Learning Journal*, *22*(2), 27–58. https://doi.org/10.24059/olj.v22i2.1368

Baker, S., & Pomerantz, N. (2000). Impact of Learning Communities on Retention at a Metropolitan University. *Journal of College Student Retention: Research, Theory & Practice*, *2*(2), 115–126. https://doi.org/10.2190/62p5-cq2u-ntuw-dm1c

Bauer, K. W., & Bennett, J. S. (2003). Alumni perceptions used to assess undergraduate research experience. *Journal of Higher Education*, *74*(2), 210–230. https://doi.org/10.1353/jhe.2003.0011

Binder, J. F., Baguley, T., Crook, C., & Miller, F. (2015). The academic value of internships: Benefits across disciplines and student backgrounds. *Contemporary Educational Psychology*, *41*, 73–82. https://doi.org/10.1016/j.cedpsych.2014.12.001

Black, H. T., & Duhon, D. L. (2006). Assessing the impact of business study abroad programs on cultural awareness and personal development. *Journal of Education for Business*, *81*(3), 140–144. https://doi.org/10.3200/JOEB.81.3.140-144

Bonet, G., & Walters, B. R. (2016). High impact practices: Student engagement and retention. *College Student Journal*, *50*(2).

Bowman, N. A., & Holmes, J. M. (2018). Getting off to a good start? First-year undergraduate research experiences and student outcomes. *Higher Education*, *76*(1), 17–33. https://doi.org/10.1007/s10734-017-0191-4

Brckalorenz, A., Garvey, J. C., Hurtado, S. S., & Latopolski, K. (2017). *High-impact practices and student – faculty interactions for gender-variant students*. *10*(4), 350–365.

Brooks, L., Cornelius, A., Greenfield, E., & Joseph, R. (1995). The relation of career-related work or internship experiences to career development of college seniors. *Journal of Vocational Behavior*, *46*(3), 332–349.

Brooks, R., Benton-Kupper, J., & Slayton, D. (2004). Curricular aims: Assessment of a university capstone course. *The Journal of General Education*, *53*(3), 275–287. https://doi.org/10.1353/jge.2005.0001

Brower, A. M., & Inkelas, K. K. (2010). Living-learning one high-impact educational practice. *Liberal Education*, *96*(2), 36–43.

Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford Press.

Brownell, J. E., & Swaner, L. E. (2009). Outcomes of high-impact educational practices: A literature review. *Diversity & Democracy*, *12*(2).

Brownell, J. E., & Swaner, L. E. (2010). *Five high impact practices: Research on learning, outcomes, completion and quality*. Association of American Colleges and Universities.

Brownell, S. E., Hekmat-scafe, D. S., Singla, V., Seawell, P. C., Imam, J. F. C., Eddy, S. L., Stearns, T., & Cyert, M. S. (2015). *A high-enrollment course-based undergraduate research experience improves student conceptions of scientific thinking and ability to interpret data*. *14*, 1–14. https://doi.org/10.1187/cbe.14-05-0092

Bruffee, K. A. (1999). Binge drinking as a substitute for a “community of learning.” *Chronicle of Higher Education*, *45*(22).

Bureau, D. A., Cole, J. S., & McCormick, A. C. (2014). Frequent Participation in Service Learning: Examining Institutional Differences and Individual Benefits. *New Directions for Institutional Research*, *2014*(162), 17–27. https://doi.org/10.1002/ir.20074

Byrne, B. M. (2013). Structural Equation Modeling With AMOS. In *Structural Equation Modeling With AMOS*. https://doi.org/10.4324/9781410600219

Callanan, G., & Benzing, C. (2004). Assessing the role of internships in the career-oriented employment of graduating college students. *Education + Training*, *46*(2), 82–89. https://doi.org/10.1108/00400910410525261

Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, *47*(1), 1–32. https://doi.org/10.1007/s11162-005-8150-9

Carlson, J. S., Burn, B. B., Useem, J., & Yachimowicz, D. (1991). *Study Abroad: The experience of American undergraduates*. https://doi.org/10.2307/2074752

Carter, D. F., Ro, H. K., Alcott, B., & Lattuca, L. R. (2015). Co-curricular connections: The role of undergraduate research experiences in promoting engineering students’ communication, teamwork, and leadership skills. *Research in Higher Education*, *57*(3), 363–393. https://doi.org/10.1007/s11162-015-9386-7

Cate, R. & Russ-Eft, D. (2018). A review of current methods to develop empowering service-learning programs for Latina/o college students. *Journal of Hispanic Higher Education*, *17*(3), 216–228. https://doi.org/10.1177/1538192717729735

Chang, M. J., Sharkness, J., Hurtado, S., & Newman, C. B. (2014). What matters in college for retaining aspiring scientists and engineers from underrepresented racial groups. *Journal of Research in Science Teaching*, *51*(5), 555–580. https://doi.org/10.1002/tea.21146

Chesbrough, R. D. (2011). College students and service: A mixed methods exploration of motivations, choices, and learning outcomes. *Journal of College Student Development*, *52*(6), 687–705. https://doi.org/10.1353/csd.2011.0071

Chickering, A. W., & Braskamp, L. (2009). Developing a Global Perspective for Personal and Social Responsibility. *Peer Review*, *11*(4), 27.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, 3–7.

Clarke III, I., Flaherty, T. B., Wright, N. D., & McMillen, R. M. (2009). Student intercultural proficiency from study abroad programs. *Journal of Marketing Education*, *31*(2), 173–181. https://doi.org/10.1177/0273475309335583

Coates, H., & McCormick, A. C. (2014). *Engaging University Students* (H. Coates & A. C. McCormick, Eds.). Springer Singapore. https://doi.org/10.1007/978-981-4585-63-7

Cochran, S. (2019). *A broader view: The impact of study abroad on graduation rates (Publication No.27735998)*. Concordia University Irvine.

Coco, M. (2000). Internships: Try it before you buy it arrangement. *SAM Advanced Management Journal*, *65*(2), 41–47.

Cole, J., Rocconi, L., & Gonyea, R. (2012). Accuracy of self-Reported Grades: Implications for Research. *Presentation at the Association for Institutional Research Conference*.

Collier, P. J. (2000). The effects of completing a capstone course on student identity. *Sociology of Education*, *73*(4), 285–299. https://doi.org/10.2307/2673235

Collins, T. W., Morales, X., Grineski, S. E., Morera, O. F., Shenberger, J., & Echegoyen, L. E. (2017). Undergraduate research participation is associated with improved student outcomes at a Hispanic-serving institution. *Journal of College Student Development*, *58*(4), 583–600. https://doi.org/10.1353/csd.2017.0044

Colton, D., & Covert, R. W. (2007). *Designing and constructing instruments for social sciences*. Jossey-Bass.

Conefrey, T. (2018). Supporting first-generation students' adjustment to college with high-impact practices. *Journal of College Student Retention: Research, Theory and Practice*, 1–22. https://doi.org/10.1177/1521025118807402

Covert, H. H. (2014). Stories of personal agency: undergraduate students' perceptions of developing intercultural competence during a semester abroad in Chile. *Journal of Studies in International Education*, *18*(2), 162–179. https://doi.org/10.1177/1028315313497590

Craft Defreitas, S., & Bravo, A. (2012). The influence of involvement with faculty and mentoring on the self- efficacy and academic achievement of African American and Latino college students. *Journal of the Scholarship of Teaching and Learning*, *12*(4), 1–11.

Craney, C., McKay, T., Mazzeo, A., Morris, J., Prigodich, C., & De Groot, R. (2011). Cross-discipline perceptions of the undergraduate research experience. *Journal of Higher Education*, *82*(1), 92–113. https://doi.org/10.1353/jhe.2011.0000

Crisp, G., Taggart, A., & Nora, A. (2015). Undergraduate Latina/o students: A systematic review of research identifying factors contributing to academic success outcomes. *Review of Educational Research*, *85*(2), 249–274. https://doi.org/10.3102/0034654314551064

Cubillos, J. H., & Ilvento, T. (2012). The impact of study abroad on students' self-efficacy perceptions. *Foreign Language Annals, 45*(4), 494–511. https://doi.org/10.1111/j.1944-9720.2013.12002.x

Daniels, H., Grineski, S. E., Collins, T. W., Morales, D. X., Morera, O., & Echegoyen, L. (2016). Factors influencing student gains from undergraduate research experiences at a Hispanic-serving institution. *CBE Life Sciences Education, 15*(3), 1–12. https://doi.org/10.1187/cbe.15-07-0163

Devon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., Savoy, S. M., & Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship, 39*(2), 155–164. https://doi.org/10.1111/j.1547-5069.2007.00161.x

Di Maggio, L. M. (2019a). An analysis of the connections between involvement in study abroad, other high-impact practices, and co-curricular activities. *Frontiers: The Interdisciplinary Journal of Study Abroad, 31*(1), 111–130. https://doi.org/10.36366/frontiers.v31i1.445

Di Maggio, L. M. (2019b). The connection of study abroad to students' positive feelings of institutional action. *Journal of College Student Retention: Research, Theory and Practice, 21*(3), 326–341. https://doi.org/10.1177/1521025117711127

Di Pietro, G. (2013). Do study abroad programs enhance the employability of graduates? *Education Finance and Policy, 10*(2), 223–243. https://doi.org/10.1162/EDFP_a_00159

Dwyer, M. M. (2004). More is better: The impact of study abroad program duration. *Frontiers: The Interdisciplinary Journal of Study Abroad, 10*(1), 151–164. https://doi.org/10.36366/frontiers.v10i1.139

Eagan, M. K., Hurtado, S., Chang, M. J., Garcia, G. A., Herrera, F. A., & Garibay, J. C. (2013). Making a difference in science education: The impact of undergraduate research programs. *American Educational Research Journal*, *50*(4), 683–713. https://doi.org/10.3102/0002831213482038

Engberg, M. E. (2013). The influence of study away experiences on global perspective-taking. *Journal of College Student Development*, *54*(5), 466–480. https://doi.org/10.1353/csd.2013.0073

Engberg, M. E., & Fox, K. (2011). Exploring the relationship between undergraduate service-learning experiences and global perspective-taking. *Journal of Student Affairs Research and Practice*, *48*(1), 85–105. https://doi.org/10.2202/1949-6605.6192

Engstrom, C., & Tinto, V. (2008). Access without support is not opportunity. *Change: The Magazine of Higher Learning*, *40*(1), 46–50. https://doi.org/10.3200/chng.40.1.46-50

Excelencia in Educacion. (2020). *What works for Latino students in higher education compenduim 2020*. https://www.edexcelencia.org/research/publications/2020-what-works-latino-students-higher-education

Eyler, J., Giles, D., Lynch, C., & Gray, C. (1997). Service-learning and the development of reflective judgment. *Annual Meeting of the American Educational Research Association*, 150.

Farrugia, C., & Witherell, S. (2017). *Gaining an employment edge : The impact of study abroad on 21st century skills & career prospects in the United States* (Issue October).

Fernald, P. S., & Goldstein, G. S. (2013). Advanced internship: A high-impact, low-cost, super-capstone course. *College Teaching*, *61*(1), 3–10. https://doi.org/10.1080/87567555.2012.698327

Fink, J. E., & Inkelas, K. K. (2015). A history of learning communities within American higher education. *New Directions for Student Services*, *2015*(149), 5–15. https://doi.org/10.1002/ss.20113

Finley, A., & McNair, T. (2013). *Assessing underserved students ' engagement in high-impact practices*. 1–68.

Fosnacht, K., & Gonyea, R. M. (2018). The dependability of the updated NSSE: A generalizability study. *Research & Practice in Assessment*, *13*, 62–74.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59–109. https://doi.org/10.3102/00346543074001059

Fry, R., Kennedy, B., Funk, C. (2021). *STEM jobs see uneven progress in increasing gender, racial and ethnic diversity*. Pew Research Center.

Furr, M. (2017). *Psychometrics: An introduction* (3rd ed.). Sage Publications.

Gabelnick, F., MacGregor, J., Matthews, R. S., & Smith, B. L. (1990). Learning communities: Creating connections among students, faculty, and disciplines. *New Directions for Teaching and Learning*, *41*.

Garvey, J. C., Brckalorenz, A., Latopolski, K., & Hurtado, S. S. (2018). High-impact practices and student–faculty interactions for students across sexual orientations. *Journal of College Student Development*, *59*(2), 210–226. https://doi.org/10.1353/csd.2018.0018

Gault, J., Leach, E., & Duey, M. (2010). Effects of business internships on job marketability: The employers' perspective. *Education and Training*, *52*(1), 76–88. https://doi.org/10.1108/00400911011017690

George, D., & Mallery, P. (2019). *IBM SPSS statistics 25 step by step: A simple guide and reference* (15th ed.). Routledge.

Geyer, A., Putz, J., & Misra, K. (2017). The effect of short-term study abroad experience on American students' leadership skills and career aspirations. *International Journal of Educational Management*, *31*(7), 1042–1053. https://doi.org/10.1108/IJEM-10-2016-0203

Gilbert, B. L., Banks, J., Houser, J. H. W., Rhodes, S. J., & Douglas Lees, N. (2014). Student development in an experiential learning program. *Journal of College Student Development*, *55*(7), 707–713. https://doi.org/10.1353/csd.2014.0072

Gliem, J. A., & Gliem, R. R. (2003). *Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales*.

Gomez, S., Lush, D., & Clements, M. (2004). Work placements enhance the academic performance of bioscience undergraduates. *Journal of Vocational Education and Training*, *56*(3), 373–385. https://doi.org/10.1080/13636820400200260

Gonyea, R. M., Kinzie, J., Kuh, G. D., & Laird, T. N. (2008). *High impact activities : What are they, why they work, and who benefits*. 1–9.

Greene, T. G., Marti, C. N., & McClenney, K. (2008). The effort—outcome gap: Differences for african american and hispanic community college students in student engagement and academic achievement. *The Journal of Higher Education*, *79*(5), 513–539. https://doi.org/10.1080/00221546.2008.11772115

Guarise, D., & Kostenblatt, J. (2018). *The impact of unpaid internships on career success of Liberal arts graduates*.

Hall, B., & O'Neal, T. (2016). The residential learning community as a platform for high-impact educational practices aimed at at-risk student success. *Journal of the Scholarship of Teaching and Learning, 16*(6), 42–55. https://doi.org/10.14434/josotl.v16i6.19585

Hamir, H. B. (2011). *Go abroad and graduate on-time: study abroad participation, degree completion, and time-to-degree (doctoral dissertation)*. University of Nebraska-Lincoln.

Hemer, K. M., Perez, R. J., & Harris, L. W. (2019). An Examination of factors that contribute to the development of perspective taking. *Journal of College and Character*, *20*(2), 144–162. https://doi.org/10.1080/2194587x.2019.1591283

Henscheid, J. M. (2008). Institutional efforts to move seniors through and beyond college. *New Directions for Higher Education*, *144*, 79–87. https://doi.org/10.1002/he.328

Henscheid, J. M., Skipper, T. L., & Young, D. G. (2019). Reflection, integration, application: Intentional design strategies for senior capstone experiences. *New Directions for Higher Education, 188*, 91–100. https://doi.org/10.1002/he.20349

Hoffman, M., Richmond, J., Morrow, J., & Salomone, K. (2002). Investigating "sense of belonging" in first-year college students. *Journal of College Student Retention: Research, Theory & Practice*, *4*(3), 227–256. https://doi.org/10.2190/dryc-cxq9-jq8v-ht4v

Hox, J. J., & Bechger, T. M. (1998). An introduction to structural equation models. *Family Science Review*, *11*, 354–373.

Hoyle, R. H. (2012). *Handbook of structual equation modeling*. The Guilford Press.

Hu, S., & McCormick, A. C. (2012). An engagement-based student typology and its relationship to college outcomes. *Research in Higher Education, 53*(7), 738–754. https://doi.org/10.1007/s11162-012-9254-7

Hu, S., Scheuch, K., Schwartz, R., Gayles, J. G., & Li, S. (2008). *Reinventing undergraduate education: Engaging college students in research and creative activities.* (Vol. 33, Issue 4). Jossey-Bass.

Huber, B. (2010). *Does participation in multiple high impact practices affect student success at Cal State Northridge?: Some preliminary insights*.

Hudson, T. D., & Tomás Morgan, R. (2019). Examining relationships between education abroad program design and college students' global learning. *Frontiers: The Interdisciplinary Journal of Study Abroad, 31*(2), 1–31. https://doi.org/10.36366/frontiers.v31i2.452

Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., & Mary, J. C. (2020). *The condition of education 2020 (NCES 2020-144)* (Vol. 5, Issue 1). https://doi.org/10.1023/A:1011045729706

Ingraham, E. C., & Peterson, D. L. (2004). Assessing the impact of study abroad on student learning at Michigan State University. *Frontiers: The Interdisciplinary Journal of Study Abroad, 10*(1), 83–100. https://doi.org/10.36366/frontiers.v10i1.134

Inkelas, K. K., Vogt, K. E., Longerbeam, S. D., Owen, J., & Johnson, D. (2006). Measuring Outcomes of Living-Learning Programs: Examining College Environments and Student Learning and Development. *The Journal of General Education, 55*(1), 40–76. https://doi.org/10.1353/jge.2006.0017

Inkelas, K. K., & Weisman, J. L. (2003). Different by design: An examination of student outcomes among participants in three types of living-learning programs. *Journal of College Student Development, 44*(3), 335–368. https://doi.org/10.1353/csd.2003.0027

Iowa State University. (n.d.). *Three dimensions of GPI*. Retrieved September 20, 2020, from https://www.gpi.hs.iastate.edu/dimensions.php

Ishiyama, J. (2001). Undergraduate research and the success of first-generation, low-income college students. *Council on Undergraduate Research Quarterly, September*, 36–41.

Ishiyama, J. (2002). Does early participation in undergraduate research benefit social science and humanities students? *College Student Journal*, *36*(3), 380. https://doi.org/Article

Jackson, R. L., Drummond, D. K., Camara, S. (2007). What is qualitative research? *Qualitative Research Reports in Communication,* 21-28.

Johnson, B., & Christensen, L. (2014). *Educational Research: Quantitative, qualitative , and mixed approaches* (5th ed.). SAGE.

Johnson, J. L. (2000). Learning communities and special efforts in the retention of university students: What works, what doesn't, and is the return worth the investment? *Journal of College Student Retention: Research, Theory & Practice*, *2*(3), 219–238. https://doi.org/10.2190/v0pa-bl4b-1x2l-w5vt

Jon, J. E., Shin, Y. J., & Fry, G. W. (2020). Understanding study abroad participants' career decisions and perspectives in US higher education. *Compare*, *50*(1), 53–70. https://doi.org/10.1080/03057925.2018.1502608

Jones, E. A. (2002). Transforming the curriculum: Preparing students for a changing world. In *ASHE Higher Education Report* (Vol. 29, Issue 3, pp. 3–125).

Jonides, J., von Hippel, W., Lerner, J. S., & Nagda, B. A. (1992). *Evaluation of minority retention programs: The undergraduate research opportunities program at the University of Michigan*.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31–36. https://doi.org/10.1007/BF02294054

Keen, C., & Hall, K. (2009). Engaging with difference matters: Longitudinal student outcomes of co-curricular service-learning programs. *Journal of Higher Education*, *80*(1), 59–79. https://doi.org/10.1353/jhe.0.0037

Keller, K. D. (2012). *Examining internships as a high-impact educational practice (Order No. 3513475).*

Kellogg, K. (1999). *Learning communities. Report no. EDO-HE-1999-1*.

Kerrigan, S., & Carpenter, R. (2013). Culminating a college education while fostering civic agency. *Peer Review*, *15*(4), 16–19.

Khine, M. (2013). *Applications of structural equation modeling in educational research and practice*. Sense Publishers.

Kilgo, C. A., Ezell Sheets, J. K., & Pascarella, E. T. (2013). Do high-impact practices actually have high impact on student learning? some initial findings. In *Paper presented at the annual conference of the Association for the Study of Higher Education, St. Louis, MO*.

Kilgo, C. A., Ezell Sheets, J. K., & Pascarella, E. T. (2015). The link between high-impact practices and student learning: some longitudinal evidence. *Higher Education*, *69*(4), 509–525. https://doi.org/10.1007/s10734-014-9788-z

Kilgo, C. A., Linley, J. L., Renn, K. A., & Woodford, M. R. (2019). High-impact for whom? The influence of environment and identity on lesbian, gay, bisexual, and queer college students' participation in high-impact practices. *Journal of College Student Development*, *60*(4), 421–436. https://doi.org/10.1353/csd.2019.0038

Kim, Y. K., & Sax, L. J. (2009). Student-faculty interaction in research universities: Differences by student gender, race, social class, and first-generation status. *Research in Higher Education*, *50*(5), 437–459. https://doi.org/10.1007/s11162-009-9127-x

Kinzie, J. (2012). High-impact practices: Promoting participation for all students. *Diversity & Democracy, 15*(3).

Kinzie, J. (2013). Taking stock of capstones and integrative learning. *Peer Review, 15*(4), 27–30.

Kinzie, J., McCormick, A. C., Goyea, R.M., Dugan, B., Silberstein, S. (2020). *Initial report on project assessing quality and equity in high-impact practices: Comprehensive report*. Indiana University Center for Postsecondary Research.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (fourth). The Guilford Press.

Knight, W. E. (2003). Learning communities and first-year programs: Lessons for planners. *Planning for Higher Education, 31*, 5–12.

Knouse, S. B., & Fontenot, G. (2008). Benefits of the business college internship: A research review. *Journal of Employment Counseling, 45*(2), 61–66. https://doi.org/10.1002/j.2161-1920.2008.tb00045.x

Kuh, G. D. (2001a). Assessing what really matters to student learning inside The National Survey of Student Engagement. *Change: The Magazine of Higher Learning, 33*(3), 10–17. https://doi.org/10.1080/00091380109601795

Kuh, G. D. (2001b). *The National Survey of Student Engagement: Conceptual framework and overview of psychometric properties*.

Kuh, G. D. (2003). What we're learning about student engagement from NSSE: Benchmarks for effective educational practices. *Change: The Magazine of Higher Learning, 35*(2), 24–32. https://doi.org/10.1080/00091380309604090

Kuh, G. D. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research*, *2009*(141), 5–20. https://doi.org/10.1002/ir.283

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education*, *79*(5), 540–563. https://doi.org/10.1353/jhe.0.0019

Kuh, G. D., Kinzie, J., & Buckley, J. A. (2006). What matters to student success : A review of the literature spearheading a dialog on student success. *Commissioned Report for the National Symposium on Postsecondary Student Success Spearheading a Dialog on Student Success*, *18*(July), 156.

Kuh, G. D., Kinzie, J., Cruce, T., Shoup, R., & Gonyea, R. M. (2007). *Connecting the dots: Multi-faceted analyses of the relationships between student engagement results from the NSSE, and the institutional practices and conditions that foster student success*.

Kuh, G. D., O'Donnell, K., & Schneider, C. G. (2017). HIPs at ten. *Change: The Magazine of Higher Learning*, *49*(5), 8–16. https://doi.org/10.1080/00091383.2017.1366805

Kuh, G. D., Schneider, C. G., & Association of American Colleges and Universitites. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Association of American Colleges and Universities.

Litke, R. a. (2002). Do all students "get it?": Comparing students ' reflections to course performance. *Michigan Journal of Community Service Learning*, 27–34.

Lockeman, K. S., & Pelco, L. E. (2013). The relationship between service-learning and degree completion. *Michigan Journal of Community Service Learning*, *20*(1), 18–30.

Lopatto, D. (2004). Survey of undergraduate research experiences (SURE): First findings. *Cell Biology Education*, *3*(4), 270–277. https://doi.org/10.1187/cbe.04-07-0045

Lopatto, D. (2007). Undergraduate research experiences support science career decisions and active learning. *CBE—Life Sciences Education*, *6*(4), 297–306. https://doi.org/10.1187/cbe.07-06-0039

Lopatto, D. (2009). *Science in solution: The impact of undergraduate research on student learning*. The Research Corporation.

Lott, J. L. (2013). Predictors of civic values: Understanding student-level and institutional-level effects. *Journal of College Student Development*, *54*(1), 1–16. https://doi.org/10.1353/csd.2013.0002

Luciano-Wong, S., & Crowe, D. (2019). Persistence and engagement among first-year Hispanic students. *Journal for Multicultural Education*, *13*(2), 169–183. https://doi.org/10.1108/JME-12-2017-0072

Lundberg, C. A., Kim, Y. K., Andrade, L. M., & Bahner, D. T. (2018). High expectations, strong support: Faculty behaviors predicting latina/o community college student learning. *Journal of College Student Development*, *59*(1), 55–70. https://doi.org/10.1353/csd.2018.0004

Lundberg, C. A., & Schreiner, L. A. (2004). Quality and frequency of faculty-student interaction as predictors of learning: An analysis by student race/ethnicity. *Journal of College Student Development*, *45*(5), 549–565. https://doi.org/10.1353/csd.2004.0061

Mansfield, R. (2011). The effect of placement experience upon final-year results for surveying degree programmes. *Studies in Higher Education*, *36*(8), 939–952. https://doi.org/10.1080/03075079.2010.486073

Margaryan, S., Saniter, N., Schumann, M., & Siedler, T. (2020). Do internships pay off?: The effects of student interships on earnings. *Journal of Human Resources*, 0418-9460R2. https://doi.org/10.3368/jhr.57.4.0418-9460r2

Mayhew, M. J., Seifert, T. A., Pascarella, E. T., Laird, T. F. N., & Blaich, C. F. (2012). Going deep into mechanisms for moral reasoning growth: How deep learning approaches affect moral reasoning development for first-year students. *Research in Higher Education*, *53*(1), 26–46. https://doi.org/10.1007/s11162-011-9226-3

Mayhew, M. J., Rockenbach, A. N., Bowman, N. A., Seifert, T.A., Wolniak, G.C., Pascarella, E. T., & Terenzini, P. T. (2016). *How College Affects Students: 21st Century Evidence that Higher Education Works*. Jossey-Bass.

McCormick, A. C., Gonyea, R. M., & Kinzie, J. (2013). Refreshing engagement: NSSE at 13. *Change: The Magazine of Higher Learning*, *45*(3), 6–15. https://doi.org/10.1080/00091383.2013.786985

McCormick, A. C., Kinzie, J., & Gonyea, R. M. (2013). Student engagement: Bridging research and practice to improve the quality of undergraduate education. In M. B. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research* (Vol. 28). Springer.

McCormick, A. C., Kinzie, J., & Gonyea, R. M. (2017). High-impact practices: Is the impact positive or negative for students of color? *Paper Presented at the Annual Meeting of the Association for the Study of Higher Education in Houston, Texas, November 11, 2017.*

McGill, P. T. (2012). Through the Voices of Students. *JGE: The Journal of General Education*, *61*(4), 488–504.

Merwin, J. C. (1969). Historical review of changing concepts of evaluation. In R. W. Tyler (Ed.), *Educational evaluation: New roles, new methods* (The sixty-, pp. 6–25). University of Chicago Press.

Metzger, C. a. (2006). Study abroad programming: A 21st century retention strategy? *College Student Affairs Journal*, *25*, 164–175.

Miller, A. L., Rocconi, L. M., & Dumford, A. D. (2018). Focus on the finish line: does high-impact practice participation influence career plans and early job attainment? *Higher Education*, *75*(3), 489–506. https://doi.org/10.1007/s10734-017-0151-z

Miller, A. L., Shimon, S. A., Dumford, A. D., & Rocconi, L. M. (n.d.). *NSSE Construct Validity Study*. National Survey of Student Engagement. Retrieved February 24, 2021, from https://nsse.indiana.edu/nsse/psychometric-portfolio/construct-validity.html

Miller, A. L., Williams, L. M., & Silberstein, S. M. (2019). Found my place: the importance of faculty relationships for seniors' sense of belonging. *Higher Education Research and Development*, *38*(3), 594–608. https://doi.org/10.1080/07294360.2018.1551333

Mitic, R. R. (2020). Global learning for local serving: establishing the links between study abroad and post-college volunteering. *Research in Higher Education*, *61*(5), 603–627. https://doi.org/10.1007/s11162-020-09604-w

Morrow, J. A., & Skolits, G. J. (2018). *The 12 steps of data cleaning*.

Murphy, D., Sahakyan, N., Yong-Yi, D., & Magnan, S. S. (2014). The impact of study abroad on the global engagement of university graduates. *Frontiers: The Interdisciplinary Journal of Study Abroad*, *24*(1), 1–24. https://doi.org/10.36366/frontiers.v24i1.333

National Survey of Student Engagement. (n.d.). *About NSSE: What does NSSE do?* Retrieved January 21, 2021, from https://nsse.indiana.edu/nsse/about-nsse/index.html

National Survey of Student Engagement (n.d.). *NSSE's psychometric portfolio*. Retrieved November 17, 2021 from https://nsse.indiana.edu/nsse/psychometric-portfolio/index.html

National Survey of Student Engagement. (n.d.). *Engagement indicators*. Retrieved February 24, 2021, from https://nsse.indiana.edu/nsse/survey-instruments/engagement-indicators.html

National Survey of Student Engagement. (n.d.-c). *NSSE survey instruments*. NSSE Survey Instruments. Retrieved November 10, 2020, from https://nsse.indiana.edu/nsse/survey-instruments/index.html

National Survey of Student Engagement. (2004). *Student engagement: Pathways to collegiate success- annual report 2004*.

National Survey of Student Engagement. (2005). *Exploring different dimensions of student engagement 2005 annual survey results*.

National Survey of Student Engagement. (2006). *Engaged learning: Fostering success for all students*. https://doi.org/10.5967/7y1k-s869

National Survey of Student Engagement. (2007). *Experiences that matter: Enhancing student learning and success-annual report 2007*.

National Survey of Student Engagement. (2009). Assessment for improvement: Tracking student engagement over time—annual results 2009. In *Higher Education Management*.

National Survey of Student Engagement. (2011). Fostering student engagement campuswide—annual results 2011. In *Higher Education Management*.

National Survey of Student Engagement. (2019). Engagement insights: Survey findings on the quality of undergraduate education. In *Annual Results*.

Nelson Laird, T. F., Bridges, B. K., Morelon-Quainoo, C. L., Williams, J. M., & Holmes, M. S. (2007). African American and Hispanic student engagement at minority serving and

predominantly white institutions. *Journal of College Student Development*, *48*(1), 39–56. https://doi.org/10.1353/csd.2007.0005

Nora, A., & Crisp, G. (2009). *Hispanics and higher education: An overview of research, theory, and practice*. *1990*, 317–353. https://doi.org/10.1007/978-1-4020-9628-0_8

Norris, E. M., & Gillespie, J. (2009). How study abroad shapes global careers: Evidence from the United States. *Journal of Studies in International Education*, *13*(3), 382–397. https://doi.org/10.1177/1028315308319740

Núñez, E. (2018). Ensuring high-quality learning for all. *Liberal Education*, *104*(1).

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. McGraw-Hill, Inc.

Olimpo, J. T., Fisher, G. R., & Dechenne-peters, S. E. (2016). *Development and evaluation of the tigriopus course-based undergraduate research experience : Impacts on students ' content knowledge , attitudes , and motivation in a majors introductory biology course*. 1–15. https://doi.org/10.1187/cbe.15-11-0228

Orahood, T., Kruze, L., & Pearson, D. E. (2004). The impact of study abroad on business students' career goals. *Frontiers: The Interdisciplinary Journal of Study Abroad*, *10*(1), 117–130. https://doi.org/10.36366/frontiers.v10i1.137

O'Rear, I., Sutton, R. L., & Rubin, D. L. (2012). *The effect of study abroad on college completion in a state university system*.

Otto, S., Evins, M. A., Boyer-Pennington, M., & Brinthaupt, T. M. (2015). Learning communities in higher education: Best practices. *Journal of Student Success and Retention*, *2*(1), 1–20.

Pace, C. R. (1980). Measuring the quality of student effort. *Current Issues in Higher Education*, 10–16.

Pace, C. R. (1990). The undergraduate: A report of their activities and progress in college in the 1980's. In *Center for the Study of Evaluation, UCLA Graduate School of Education*.

Pace, C. R. (1998). Recollections and reflections. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (pp. 1–34). https://doi.org/10.5840/thought1939141183

Padgett, R. D., Goodman, K. M., Johnson, M. P., Saichaie, K., Umbach, P. D., & Pascarella, E. T. (2010). The impact of college student socialization, social class, and race on need for cognition. *New Directions for Institutional Research*, *2010*(145), 99–111. https://doi.org/10.1002/ir.324

Padgett, R. D., & Kilgo, C. A. (2012). 2011 National Survey of Senior Capstone Experiences: Institutional Level Data on the Culminating Experience (Research Reports on College Transitions No. 3). In *National Resource Center for the First-Year Experience and Students in Transition*.

Parker, E. T., Kilgo, C. A., Ezell Sheets, J. K., & Pascarella, E. T. (2016). The differential effects of internship participation on end-of-fourth-year GPA by demographic and institutional characteristics. *Journal of College Student Development, 57*(1), 104–109. https://doi.org/10.1353/csd.2016.0012

Pascarella, E. T. (1985). College enviromenatal influences on learning and cognitive development: A critical review and synthesis. *Higher Education: Handbook of Theory and Research, 1*, 1–61.

Pascarella, E. T., Seifert, T. A., & Blaich, C. (2010). How effective are the NSSE benchmarks in predicting important educational outcomes? *Change: The Magazine of Higher Learning, 42*(1), 16–22. https://doi.org/10.1080/00091380903449060

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of Research*. Jossey-Bass.

Petersdotter, L., Niehoff, E., & Freund, P. A. (2017). International experience makes a difference: Effects of studying abroad on students' self-efficacy. *Personality and Individual Differences*, *107*, 174–178. https://doi.org/10.1016/j.paid.2016.11.040

Pike, G. R. (1999). The effects of residential learning communities and traditional residential living arrangements on educational gains during the first year of college. *Journal of College Student Development*, *40*(3), 269–284.

Pike, G. R., Kuh, G. D., & McCormick, A. C. (2010). An investigation of the contingent relationships between learning community participation and student engagement. *Research in Higher Education*, *52*(3), 300–322. https://doi.org/10.1007/s11162-010-9192-1

Pingree, A. (2012). Encouraged student-faculty interactions outside of class. *IDEA Paper No. 52: Considerations in Online Course Design, Creasman.*

Price, D. V. (2005). Learning Communities and Student Success in Postsecondary Education. *A Background Paper, December*, 24.

Provencher, A., & Kassel, R. (2019). High-impact practices and sophomore retention: Examining the effects of selection bias. *Journal of College Student Retention: Research, Theory and Practice*, *21*(2), 221–241. https://doi.org/10.1177/1521025117697728

Redman, P. (2013). Going beyond the requirement: The capstone experience. *Peer Review*, *15*(4), 12–15.

Rendon, L. I. (1994). Validating culturally diverse students: Toward a new model of learning and student development. *Innovative Higher Education*, *19*(1), 33–51. https://doi.org/10.1007/BF01191156

Rhodes, T. L., & Agre-Kippenhan, S. (2004). A multiplicity of learning: Capstones at Portland State University. *Assessment Update*, *16*(1).

Ribera, A. K., Miller, A. L., & Dumford, A. D. (2017). Sense of peer belonging and institutional acceptance in the first year: The role of high-impact practices. *Journal of College Student Development*, *58*(4), 545–563. https://doi.org/10.1353/csd.2017.0042

Rima, B., Rodriguez, C. C., & DePaola, T. (2019). Supplementing the 'college experience' with program-based learning communities. *Community College Journal of Research and Practice*, *43*(12), 840–853. https://doi.org/10.1080/10668926.2018.1542637

Rocconi, L. M. (2011). The Impact of Learning Communities on First Year Students' Growth and Development in College. *Research in Higher Education*, *52*(2), 178–193. https://doi.org/10.1007/s11162-010-9190-3

Rodenbusch, S. E., Hernandez, P. R., Simmons, S. L., Dolan, E. L., Services, H., Hughes, H., & Chase, C. (2016). *Early engagement in course-based research increases graduation rates and completion of Science , Engineering , and Mathematics Degrees*. *15*, 1–10. https://doi.org/10.1187/cbe.16-03-0117

Russell, S. H., Hancock, M. P., & McCullough, J. (2007). Benefits of undergraduate research experiences. *Science*, *316*(5824), 548–549. https://doi.org/10.1126/science.1140384

Ruth, A., Brewis, A., Blasco, D., & Wutich, A. (2019). Long-term benefits of short-term research-integrated study abroad. *Journal of Studies in International Education*, *23*(2), 265–280. https://doi.org/10.1177/1028315318786448

Sanahuja Vélez, G., & Ribes Giner, G. (2015). Effects of business internships on students, employers, and higher education institutions: A systematic review. *Journal of Employment Counseling*, *52*(3), 121–130. https://doi.org/10.1002/joec.12010

Sandoval-Lucero, E., Maes, J. B., & Chopra, R. V. (2011). Examining the retention of nontraditional latino(a) students in a career-based learning community. *Journal of Hispanic Higher Education*, *10*(4), 299–316. https://doi.org/10.1177/1538192711414909

Schack, J. O., Bentley, C., Nichols, A. H., & Pilar, W. del. (2019). *Broken mirrors II. Latino student representation at public colleges and universities*.

Schermer, C. T., & Gray, S. (2012). *The senior capstone : Transformative experiences in the liberal arts*.

Schneider, C. G. (2003). Liberal education and integrative learning. *Issues in Integrative Studies*, *8*(21), 1–8.

Schumacker, R. E., & Lomax, R. G. (2015). *A beginner's guide to structural equation modeling* (4th ed.). Routledge. https://doi.org/10.4324/9781315749105

Seifert, T. A., Gillig, B., Hanson, J. M., Pascarella, E. T., & Blaich, C. F. (2014). The conditional nature of high impact/good practices on student learning outcomes. *Journal of Higher Education*, *85*(4), 531–564. https://doi.org/10.1353/jhe.2014.0019

Seymour, E., Hunter, A. B., Laursen, S. L., & Deantoni, T. (2004). Establishing the benefits of research experiences for undergraduates in the sciences: First findings from a three-year study. *Science Education*, *88*(4), 493–534. https://doi.org/10.1002/sce.10131

Sill, D., Harvard, B. M., & Cooper, I. (2009). The disorienting dilemma: The senior capstone as a transformative experience. *Liberal Education*, *95*(3), 50–55.

Sweat, J., Jones, G., Han, S., & Wolfgram, S. (2013). How does high impact practice predict student engagement? A comparison of white and minority students. *International Journal for the Scholarship of Teaching and Learning*, *7*(2). https://doi.org/10.20429/ijsotl.2013.070217

Tabachnick, B. G., & Fidell, L. S. (2018). *Using multivariate statistics* (6th ed.). Pearson India.

Tafesse, W. (2020). The effect of social networking site use on college students' academic performance: the mediating role of student engagement. *Education and Information Technologies*, *25*(6), 4747–4763. https://doi.org/10.1007/s10639-020-10162-y

Tarrant, M. A., Rubin, D., & Stoner, L. (2015). The effects of studying abroad and studying sustainability on students' global perspectives. *Frontiers: The Interdisciplinary Journal of Study Abroad*, *26*(1), 68–82. https://doi.org/10.36366/frontiers.v26i1.358

Taylor, A. (2017). Service-learning programs and the knowledge economy: exploring the tensions. *Vocations and Learning*, *10*(3), 253–273. https://doi.org/10.1007/s12186-016-9170-7

Taylor, A., Yochim, L., & Raykov, M. (2019). Service-learning and first-generation university students: A conceptual exploration of the literature. *Journal of Experiential Education*, *42*(4), 349–363. https://doi.org/10.1177/1053825919863452

Taylor, K., Moore, W. S., MacGregor, J., & Lindblad, J. (2003). *Learning community research and assessment: What we know now*. The Evergreen State College, Washington Center for Improving the Quality of undergraduate Education.

Tinto, V. (1975). Dropout from Higher Education: A Theoretical Synthesis of Recent Research. *Review of Educational Research*, *45*(1), 89–125. https://doi.org/10.3102/00346543045001089

Tinto, V. (1986). Theories of student departure revisited. *Higher Education : Handbook of Theory and Research*, *11*, 359–384.

Tukibayeva, M., & Gonyea, R. M. (2014). High-impact practices and the first-year student. *New Directions for Institutional Research*, *2013*(160), 19–53. https://doi.org/10.1002/ir.20059

United States Census Bureau. (2019). Hispanic heritage month 2019. *PROFILE AMERICA FACTS FOR FEATURES: CB19-07*.

United States Census Bureau. (2020). *About the Hispanic population and it's origin*. https://www.census.gov/topics/population/hispanic-origin/about.html

U.S. Department of Education National Center for Education Statistics. (2019). *Table 326.10. Graduation rate from first institution attended for first-time, full-time bachelor's degree-seeking students at 4-year postsecondary institutions, by race/ethnicity, time to completion, sex, control of institution, and percentage of applicat*. Digest of Education Statistics. https://nces.ed.gov/programs/digest/d19/tables/dt19_326.10.asp

Valentine, J., Price, D., Yang, H. (2021). High-impact practices and gains in student learning: Evidence from Georgia, Montana, and Wisconsin. *Lumina Issue Paper*.

Weible, R., & McClure, R. (2011). An exploration of the benefits of student internships to marketing departments. *Marketing Education Review*, *21*(3), 229–240. https://doi.org/10.2753/mer1052-8008210303

Wick, D., Willis, T. Y., Rivera, J., Lueker, E., & Hernandez, M. (2019). Assets-based learning abroad: First-generation Latinx college students leveraging and increasing community cultural wealth in Costa Rica. *Frontiers: The Interdisciplinary Journal of Study Abroad*, *31*(2), 63–85. https://doi.org/10.36366/frontiers.v31i2.455

Wolf, L. W. (2018). Undergraduate research as engaged student learning. *New Directions for Teaching and Learning*, *2018*(154), 75–85. https://doi.org/10.1002/tl.20293

Wolniak, G. C., & Engberg, M. E. (2019). *Do " high-impact " college experiences affect early career outcomes ? 42*(3), 825–858.

Xu, M., De Silva, C., Neufeldt, E., & Dane, J. H. (2013). The impact of study abroad on academic success: An analysis of first-time students entering Old Dominion University, Virginia, 2000-2004. *Frontiers: The Interdisciplinary Journal of Study Abroad*, *23*, 90–103.

Yaffe, K., Bender, C., & Sechrest, L. (2014). How Does Undergraduate Research Experience Impact Career Trajectories and Level of Career Satisfaction: A Comparative Survey. *Journal of College Science Teaching*, *044*(01), 25–33. https://doi.org/10.2505/4/jcst14_044_01_25

Zhao, C.-M., & Kuh, G. D. (2004). Adding value: Learning communities and student engagement. *Research in Higher Education*, *45*(2), 115–138.

Zilvinskis, J. (2019). Measuring quality in high-impact practices. *Higher Education*, *78*(4), 687–709. https://doi.org/10.1007/s10734-019-00365-9

Zilvinskis, J., & McCormick, A. C. (2019). Do working students buy into HIPs? working for pay and participation in high-impact practices. *Journal of College Student Development*, *60*(5), 543–562. https://doi.org/10.1353/csd.2019.0049

Zilvinskis, J., Wang, R., & Dumford, A. D. (2015). *Latino STEM Students in undergraduate research*.

Vita

Noelia N. Pacheco Diaz is originally from Santiago, Chile. She earned a Bachelor's degree in English from the Universidad de Santiago de Chile. After that, she worked as an English teacher as a second language at Instituto Nacional de Capacitación Profesional (INACAP) and the British Institute. Later, Noelia obtained a Master of Arts in Spanish Literature and Linguistics

from Ohio University. Then, she worked as a Spanish lecturer at the Ohio State University. Noelia decided to enroll in the University of Tennessee, Knoxville, to pursue a Doctor of Philosophy degree in Educational Psychology and Research with a concentration in Evaluation, Statistics, and Measurement. Her main research interests are related to higher education assessment and particularly to how systematic evaluation of educational programs can increase their effectiveness and quality. Currently, Noelia is working as a Graduate Research Assistant at the Office of Assessment & Strategic Initiatives for Student Life.