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Belonging in College: Engagement and Retention at a Hispanic Serving Institution

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Approval of the Dissertation Committee

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Alana Joy Olschwang as fulfilling the scope and quality requirements for meriting the degree of Doctor of Philosophy in Education.

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Abstract

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The goal of this study was to examine retention for first-year students who attended a large, public Hispanic Serving Institution (HSI). The study examined the extent that belonging influenced involvement and engagement, and the relationship to retention. This was in the context of COVID with the pandemic, social and political unrest, and an emergency remote format for teaching impacting student experiences. The conceptual framework was influenced by theories including validation, belonging, mattering, sociocultural engagement, natural growth, and community cultural wealth. The study included secondary data analysis from the Fall 2019 National Survey of Student Engagement and institutional data for grade point average, units attempted, units earned, and retention from fall to fall. Specifically, this study proposed that students with high levels of belonging more likely to become involved and engaged. The survey items for each of the factors were highly rated and correlated. However, these factors were not significant predictors of retention. Instead, high school GPA predicted cumulative GPA which predicted retention. For Hispanic/Latino students, an interaction between belonging and engagement did predict cumulative GPA, but not for Black/African American students. Combining descriptive and inferential statistics and disaggregating subgroups revealed that the most significant challenge and best lever for success was passing more classes. The study may provide useful information for HSI campuses toward resource allocation efforts for student support and retention.

Keywords: Student success, Hispanic/Latino students, Black/African American students, retention, belonging, involvement, engagement, GPA, transition, sociocultural engagement, bandwidth recovery, COVID-19, validation.

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Chapter One

Supporting Transition, Achievement, and Success in Year 1

College holds the promise of personal development, academic achievement, positioning for career success, and the opportunity to create networks and lifelong friendships. Across the country, the number of students who have enrolled in college has increased over the last several decades, and nearly 75% of young adults attempt to complete a certificate or degree (U.S. Department of Education, 2011). Those who successfully complete a degree are significantly more likely to enjoy greater earnings, a positive earning slope across the career, a buffer against unemployment, stronger social engagement, and other opportunity (Long, 2014).

Economists estimate that by 2025, at least 60% of adults will need postsecondary credentials to meet the demands of the workforce, and currently only 40% do (Carnevale & Smith, 2018; Marisotis, 2015; Wang, 2015). This exceeds the current workforce by at least 5 million workers. According to the National Center for Education Statistics (2019), only 39% of first-time full-time undergraduates who started at four-year institutions were able to complete in 4-years, and 62% were able to complete in 6 years. Non-completers do not have the same economic and social mobility as degree completers. That is, degree completers are more likely to have greater earnings annually and across their lifetime, maintain employment, and be civically engaged. They are also more likely to progress along an effective path to a good job.

The general public also has a vested interest in degree completion from a tax spending point of view. According to the College Board (2015), $183.8 billion dollars was distributed through financial aid in 2014 academic year. This is a significant investment by the public in a system that has a success rate of less than 50% completion in the 4-year timeframe. This departure also comes at a cost to taxpayers when students default on loans, bringing additional

scrutiny and pressure for institutions to improve retention and completion rates (Goldrick-Rab, 2016; Schneider, 2010).

For decades, students who were first in their family to attend college or who were from marginalized racial, ethnic, and socio-economic groups, had lower completion rates as compared to historic majority groups. The preparation gap between Black/African American and White high school students has not changed between 2010 and 2017 (California Department of Education, 2017). The numbers really have not improved much in the last five decades. The completion rate is lower for Hispanic/Latino students (28%), Black/African American students (20%), and others who identify with underrepresented racial and ethnic groups. The 6-year completion rate for first-time, full-time undergraduate degree seekers is 60%, and underrepresented minority students perform less well in this timeframe (Hispanic/Latino, 54%; Black 41%). The United States cannot close the critical workforce gaps without closing the equity gaps in degree completion (Perna & Finney, 2014). Non-completers leave with debt, lost dreams, and potentially other negative psycho-social impacts for not having achieved their goal (Bryan, 2006; Kabalkin, 2021).

The next section will highlight the challenges associated with socio-economic status, educational structures, and other factors preventing students from achieving their goals and success (Carnoy, 1996). Retention and completion have been widely studied across disciplines for over fifty years and yet these completion rates barely budge, hence more needs to be done to research experiences of underrepresented and underserved students, especially within the settings of Hispanic Serving Institutions and settings (Hurtado & Carter, 1997; Strayhorn, 2019).

Significance of the Problem: Integration, ways of knowing, community

Student persistence, retention, and engagement has received much attention from higher education research across the last fifty years. Much of what is developed today stems from seminal work that originated through grand theories that were broadly applied across institutions. This includes the theory of student integration (Astin, 1984). The theory highlighted the ways that students interacted with the school environment and how the student and the environment both impact student success. The theory examined student behaviors and proposed that the amount of energy that a student invested in their academic experience resulted in learning and development, whereby integration included the expectation that a student adopt the values and behaviors of a student according to the culture and environment at the institution. Astin (1984) recognized that students would invest different amounts of energy in different things, and that the investment would vary on both qualitative and quantitative continuum. Therefore, it is imperative that colleges create environments that clarify what engagement is encouraged versus expected, facilitate student engagement and the opportunities to learn, and explain how these contribute to student success in different ways.

Expecting challenges and support while learning

Researchers quickly found that the first major theories of student retention did not account for many of the key issues around persistence that non-traditional students faced. The theory of integration has evolved over time to address more than dropout rates, from a perspective of fit, as well as academic and social aspects (Tinto, 1975). Tinto (2012) established the importance of completion, leveraged primarily through the classroom, and the importance of separating out a students' goals and the way the college has set up a program for a student to work toward the goals. Specifically, Tinto argued that completion is improved through pairing

high expectations with multi-dimensional support structures (e.g., academic, financial, social), combined with active learning. The focus of Tinto's work has evolved over the decades to adopt a student-centered approach and appeals to administrators for their responsibilities for effective organizational development. In the 2012 book, *Completing College*, Tinto acknowledged the importance of classroom focus given that most students are commuters who have responsibilities beyond attending college and developing their scholarly identity, and who may not have had the benefit of a family structure that prepared students to navigate college.

Several researchers have examined the type of support that institutions provide, and the extent that this aligns with students' needs (Kinzie & Kuh, 2016). If an environment does not provide a climate of support or that aligns with the levels and types of challenges students face, or if students do not receive the support, then the challenges may be too great to overcome (Patton, Renn, Guido, & Quaye, 2016). The challenges may include unexpected differences in the transition to a new campus, exposure to microaggressions or discrimination on campus, or other challenges (Harper, 2009). On the other hand, students may not share values and norms of the campus and don't strive to let go of the culture of their families and communities (Brooms, Clark, & Smith, 2018). This may result in students withdrawing instead of asking for help, using supports, or finding subgroups where they fit in (Cox, 2009; Hurtado, Carter, & Spuler, 1996).

Non-Traditional Student Challenges: Balancing Roles and Responsibilities

Bean and Metzner (1985) developed a conceptual model for nontraditional students. They highlighted the ways that nontraditional students interact with their academic and external environment, and how this impacts outcomes. Non-traditional students face challenges including fulfilling multiple roles and responsibilities. This may include emotional and financial strain in not being able to support their family as expected, especially when the family does not

understand the value of education in a long term (Guiffrida, 2005). The tension from family causes many to stop out or drop out, up to 25% in their first year (Johnson, 2017; Roksa & Velez, 2012; O'Connor, Perez, Jenkins, & Rothberg, 2016). Given the range of characteristics that may define a non-traditional student, this study focused on students who were first in their family to complete a degree. Several of the other characteristics were not well represented in the sample or did not align as well with the theoretical framework and conceptual model (e.g., few veterans and older students were in this sample, and most students were Pell eligible or in a close range).

Goodman and Pascarella (2016) established that acclimating to the college environment in the first year is critical for success. This can be more difficult for first generation students who often live off campus, and who are less involved in campus activities (Backels & Meashey, 1997). Some argue that students living off campus and with other responsibilities may be engaged in purposeful activities outside the classroom that link to those inside; and these can count, in connection to a quality undergraduate experiences and positive outcomes (Kezar & Kinzie, 2006).

Goldrick-Rab (2016) argued that first generation students often make decisions that are not entirely of their own choosing and that family frameworks impose significant constraints on choices that many retention models have not accounted for. However, Carter, Locks, & Winkle-Wagner (2013) found conflicting values between family systems and college, and the racial climate on campus have significant consequences, especially for racially minoritized students. Less is known about why students leave from Minority Serving Institutions (MSI) versus PWI (Torres, 2006). Some researchers argued that students leave because institutions adopt a deficit instead of an asset approach and do not value the strengths that first generation students bring (Melius, 2011).

In comparison to continuing generation students, first generation students may not understand that joining clubs, socializing with students outside of class, spending time discussing their experiences at a cultural resource center, and attending campus events are a part of the college and learning experience. This may be due, in part, to a lack of social capital, where there is a hidden curriculum that students aren't trained to see or understand. The climate of the campus that includes the experiences in and outside of class, may not be well connected for first generation students, building a barrier to connection with others, and retention (Cody, 2017).

A large number of studies have used qualitative and/or quantitative methods to study college completion over the last fifty years. Many offer recommendations include mentoring and a first-year experience program extending beyond orientation, peer and academic support structures, adequate financial aid, family inclusion, and a positive racial climate. Clearly, the previously held notion of assimilation and integration into a college culture does not provide an empowering framework, is not culturally sustaining, nor fit today's students. This section about non-traditional students was provided as a framework and leads to the focused aspect of being a non-traditional student that's most important for this study, first generation college student status.

Belonging, Role Models, and Creating Community

Many of the studies and theories developed between 1975-2000 assumed that a student was 'Traditional' and likely to live on campus, have chosen the institution after careful evaluation of fit, and to have completed transition and bridge programming (Kuh, 2008). Further, theories were developed largely around the experiences of White students at predominantly white institutions (PWIs) where students could easily find other faculty and students who looked like themselves, and who were taught from an early age how to easily integrate onto a campus with similar values and familiar norms (Guiffrida, 2006; Kreysa, 2006).

Finally, where some of the students may experience challenges with bandwidth given effort to attend to or worry over other responsibilities. Those students may also expend bandwidth worrying about giving a wrong answer, battling microaggressions in class, or managing feelings of not fitting in (Verschelden, 2017). Therefore, where faculty can help students decrease their worry and open more bandwidth for engagement, more learning is likely. How faculty do this may include showing students that they have something to offer each other (in the first weeks of class), and not expecting them to figure this out on their own (Barrett, 2011; Rendon, 1994). Hence, when faculty and staff embed culturally sustaining pedagogy, engagement and involvement are likely to increase.

The Power of Validation to Buffer Bias and Stereotype Threat

More and more large, urban, public institutions enroll mainly nontraditional students, and many have been designated as an HSI, a Hispanic Serving Institution. That is, HSI's enroll primarily Latino students as well as significant numbers of Black students, many of whom are first in their family to attend college and are largely from under-resourced communities. Many students who enter these institutions do well when faculty and staff recognize their assets and validate their abilities. Many students may not know others who have succeeded in college and question their place (Rendon, 1994). Hence, there are opportunities to making it more well known that there are many students like you at the institution and that the environment is supportive – and that many others like you have succeeded, and how this happens.

Key lines of research for student retention are now focused on Historically Black Colleges and Universities (HBCU), Native American Serving Institutions, HSIs, and Women's Colleges (Smith, 2020). Yet, some students who attend these institutions are not aware of their designation. The designation is important for students as well as faculty and staff, as students of

color experience campuses differently from White students (Carter, 2006; Eveland, 2020; Hilton, Wood, & Lewis, 2012; Perna & Thomas, 2006). Students who establish a high sense of belonging and receive guidance are more likely to adjust well to the transition to college and to persist (Baumeister & Leary, 2017; Lee, 2004; Palmer & Walker, 2019). Additionally, engaged students are more likely to become engaged employees, where there are benefits of attendance, motivation, satisfaction, civic engagement, and mentorship (Kruger & Peck, 2017). In other words, creating a sense of belonging and validating the assets these students bring to a university are paramount.

To close the equity gap in completion and the gap in workforce ready people in California as early as 2030, more universities will have to adopt models that support first generation students who are tied to their communities, commute, require financial support, and support in navigating how to be successful. To this end, this study will focus on theories of belonging, validation, and cultural capital. As a matter of policy, social justice, and accountability to the espoused missions of universities, significant changes must be made, and quickly. The next section will describe the study that was developed out of these lines of research, that privilege belonging and transition, and center the student in the model (Hausman, Schofield, & Woods, 2007). Specifically, measures of engagement and involvement are expected to relate directly to the extent that students fell that they can be themselves, are valued, and are a part of the community at their university. These factors are expected to influence engagement and thereby enhance learning, achievement, and retention.

Student Belonging, Involvement, Engagement and Retention

The aim for the study is to advance our understanding of how experiences impact learning and therefore retention, and ways an institution can better align resources and support

for the programs that work. The study also aims to test how a better understanding of key factors (belonging, involvement, and engagement), and their correlations and strength of relationship to retention, can provide a more nuanced understanding of what has worked well and why. Specifically, the study aims to achieve this with the National Survey of Student Engagement (NSSE) data from the spring of 2020, along with institutional records of student progress. The NSSE was build and then redesigned though a strong theoretical framework of student engagement drawing upon research across several disciplines and theory to practice in decades of use across campuses.

The NSSE has reliably connected involvement and engagement with student learning and positive outcomes, like retention (Kinzie, Gonyea, & McCormick, 2019). This can reveal factors that make up student involved, and differences in experiences for subgroups of students. The data will also be connected to institutional data to explore the ways that GPA and unit taking impacts retention in relation to the student experience. The information about the relationships between these variables can help the institution target communication about the first-year experience and show where and how engagement with students can be improved.

The study also aims to critically examine the extent that the seminal and supporting theories fit the needs of the students of a major urban metropolitan campus. Specifically, the extent that theories address sociocultural differences, assumptions about belonging, community, and family. It has been widely accepted that time on task is paramount for engagement and learning (Kuh, 2003). However, we also know that some students benefit more with tasks in certain contexts (Kim & Sax, 2007). Specifically, then, how robust are NSSE items to validly address the ways that involvement and engagement are influenced by culture, family, and community? There is a large and growing body of research around the persistence and retention

of college students, and this is increasingly moving away from reliance on grades and test scores for prediction (Reason, 2009). These cognitive factors were found to be less predictive for retention of students of color. Instead, a positive racial climate, strong faculty interactions, financial aid, and family support were determinants of persistence.

Therefore, this study may to contribute to what we know about Hispanic/Latino and Black/African American students who have been labeled as non-traditional and measured in retention models as holding multiple, interacting, 'risk factors' that have exponential impact in acting as barriers to student success. Shifting the framework from a deficit model to one that focuses on student assets including community cultural wealth, has potential to enhance student success, especially for those who enroll in public, regional, and Hispanic Serving Institutions. Theory and research have shown that measuring student engagement and involvement may reveal where students experience their institution differently based on historic structural racist practices and policies, and what institutions can do about it (Kuh, Kinzie, Schuh, & Whitt, 2006).

The study may support faculty and staff professional development, especially around the importance of Sense of Belonging early in the student career along with the need for validation and mattering. Ultimately, findings my lead to reallocating resources to create more intentionality and meaningful engagement that is culturally responsive, to support stronger learning experiences and greater retention. In a context where so many students leave college after their first year, this study focuses on the retention from first to second year, to unpack what works, why and for whom (Harper & Newman, 2016; Nora & Cabrera, 1996). Finally, this study must take into consideration the context of point in time, whereas the survey was distributed after the COVID-19 pandemic began, and in the context of significant social and political unrest across the nation.

Research Questions

1. Are there differences by race/ethnicity in reported levels of sense of belonging, student involvement, and institutional engagement for first-time full-time students?

2. What is the relationship between sense of belonging, student involvement, and institutional engagement for first-time full-time students?

   Hypothesis 1: Students with a strong sense of belonging will have stronger involvement than students who have a lower sense of belonging.

   Hypothesis 2: Students with a high sense of belonging will have stronger engagement than students who have a lower sense of belonging.

3. What is the relationship between sense of belonging, engagement, and retention for first-time full-time students?

   Hypothesis 1: Students with a strong sense of belonging, high levels of engagement, and strong student involvement are more likely to return.

   Hypothesis 2: The relationships between the variables will not be impacted by student demographics and entry scores.

Definition of Terms

Black/African American: Black people live on every continent across the globe, and African American refers to people who were born in the United States. People who immigrate to the United States from the Caribbean or Europe may identify as Black. A Black identity can also refer to the cultural aspects of one's identity, beyond historical origins. The two terms are used interchangeably, and inaccurately.

Engagement: energy, effort, and university intentionality to influence learning experiences of all students (Sedlacek, 2004).

Environment: The college environment includes the spaces across the classroom, in meetings for clubs or organizations and resource centers, and the informal spaces

where students may meet with each other or with staff or faculty. This includes creating smaller class settings to support interaction. This includes and extends beyond the physical space, to the social and cultural aspects as well (Astin, 1984; Deil Amen, 2010).

First Year Retention: a student's enrollment in coursework the fall after their first fall term.

Hispanic/Latino: Used to describe ethnicity, the term extends beyond race and includes those who have a Spanish-language background (Hispanic) and whose ancestors are from Latin America (Latino). This term also refers to culture. Where someone lives in the United States may also influence the preference for terminology as those who live on either coast are more likely to identify as Latino.

Involvement: The time, energy, and effort a student dedicates to the learning process once someone has taken an interest in the student, helped the student take advantage of the resources the system has to offer, and affirmed the student capacity to succeed (Astin, 1984).

Sense of belonging is a universal, basic human need to feel respected, valued, accepted, cared for, and that one matters. Belonging is influenced by one's identity and is related to mattering, achievement, retention, and success and includes cognitive and affective factors that impact how much someone feels a part of a campus (Strayhorn, 2012).

URM: Underrepresented minority is used to describe someone whose identifies with a racial or ethnic group including Black/African American, Hispanic/Latino, Native American, Alaskan Native, Native Hawaiian, or Pacific Islander. This category is used in federal reporting and other conventions and can also include Asian (Filipino, Hmong, and

Vietnamese only), and those who identify as two or more races, where one of the races includes one of the categories mentioned above. URM is not a term that people from any of these identities use for themselves and ignores the differences that exist among and between the racial and ethnic categories (which are, in any case, socially constructed labels). The term has more recently been renamed 'under-resourced' because the minoritized student groups are now a majority in many cases but the issues that they share have to do with lack of support based in political and sociocultural conditions, reproduction of power, and systemically racist practices. Hence, multigenerational inequality perpetuates social privilege for 'non-URM'.

Validation: positive affirmation of students as valuable members of their community, fostering development, creativity, positivity, and academic achievement (Rendon, 1994).

Chapter Two

Literature Review

While many studies have examined the relationships between involvement and engagement using seminal theoretical frameworks such as that of Tinto (1975) and Astin (1984) more recent research has included findings centered in the experiences of Black/African American and Hispanic/Latino students. The count of articles about Black/African American and Hispanic/Latino student retention and thriving has grown exponentially since 2003 (Palmer, Wood, Dancy, & Strayhorn, 2014). Tinto posited that family background and pre-entry attributes were significant in influencing participation in and outside of class, and with peers and faculty. However, many have noted that the model is suited to traditional students on residential campuses and asks students to turn away from their past (Bean & Metzner, 1985; Braxton, Jones, Hirschy, & Hartley, 2008; Tierney, 1999). In the context where students have work and other responsibilities, students are not seeking to integrate with the campus culture at the expense of their family's values and beliefs (Strayhorn, 2012). Therefore, sense of belonging was only more recently studied and identified as a psychosocial construct. The proposed study aims to extend existing literature by examining the relationships between engagement, involvement, and belonging for nontraditional students of color who were enrolled during a pandemic.

The literature review that follows will detail the seminal work that established our understanding of each dimension and the ways that our understanding has evolved. This includes centering engagement from a first-generation student of color perspective. The chapter follows the development of sense of belonging, belonging uncertainty, and the barriers that students encounter. Next, literature related to institutional engagement and student involvement will be explored with a focus on variables that are most salient for nontraditional students. In this

fashion, the proposed study will not aim to utilize the full set of ten engagement indicators included in the National Survey of Student Engagement. Instead, the proposed study will examine the subset that relates to the factors involved in establishing trust. These are critical in establishing the foundation from which academic challenge and deeper learning can happen.

With the theoretical lineage reviewed, the chapter will end with a conceptual framework. Because first generation students are more likely to drop out in their first year as compared to non-White students, the study will focus on the factors most strongly related to the retention as outlined in the research that accounts for cultural and other life issues (Hausman, Schofield, & Woods, 2007). There are gaps in what we know about how students experience college and especially in the context of a Hispanic Serving, predominantly commuter, institution. And yet, demographers point to this very context as a very likely future. Hence, the proposed study can provide important information about which factors are most critical for student retention, how much they account for differences across students, and how to create structures that are supportive for today's students, in a context that's likely to become the new norm, of tomorrow.

Acknowledge COVID context, Spring 2020.

The survey was distributed in the beginning months of the COVID pandemic, from the end of March 2020 through April 2020. Issues of belonging uncertainty were expected already, and these could be amplified in this context. That is, there is stress on students of the uncertainty of the pandemic, especially for the community where the institution was located, as it was identified as having high levels of the four factors most likely to catalyze on higher rates of the COVID-19 virus (EMSI, 2020). These included working in positions that were public facing, living in dense areas, having health issues/preexisting conditions, and living in an environment that was socioeconomically underserved. These conditions further underscore the need to further

consider the barriers to involvement and engagement (as noted in bandwidth recovery), and likelihood that students would complete their work with a sense of academic determination, to 'get it done' as a minimum bar, when engagement and involvement are not priorities (Schreiner, 2010).

The imperative for this study is emboldened by the pandemic brought on by COVID-19. Economists report that those who have been impacted the most are living in the bottom two quintiles, and that these same people are likely to be hardest hit with rising unemployment rates. In this recession, these losses are hard to make up (Lowe, 2020). Further, economists reported that students who graduate in a down economy never catch up to their counterparts, even across their lifespan (Moore & Chapman, 2020). Further, they reported, during the recession in 2010 the unemployment rate for people with high school degrees was much higher (10.29%) as compared to a bachelor's degree (4.71%), and earnings for those who complete college outpace those who start but don't finish by at least $20,000-$50,000 per year. In this context, the study holds a meaning that surpasses testing a model of retention, engagement, and momentum in a context of non-traditional students; there is moral, economic, civic, and long-term community psychological consequences to not figuring out how to better support our students. The impact of COVID-19 on the conceptual framework will be discussed more within the context of belonging.

Belonging

Baumeister and Leary (2017) established belonging as an important construct that linked to well-being. Further, the review that they published underscored belonging as a basic need. The idea that all students who enroll belong ran counter to the popular notion of 'good' schools. The culture of higher education, with rankings and selective admissions, has long held a competitive culture that "weeds out" weaker students. This culture perpetuates stereotype threat and serves as

a barrier to belonging. Therefore, universities must reframe the usual narrative and make sure that students hear that they belong, have capacity, and will be supported (Bryant, 2016; Smith, 2019). This serves as a precursor to moving through higher levels of achievement and thought, including learning and esteem (Laird, 2005; Maslow, 1943).

A sense of belonging has long been held as a critical component for well-being, a basic need to set the stage for learning to happen (Maslow, 1943). Maslow positioned belonging as a central component to his pyramid, where food and shelter served as the base and self-actualization as the apex. Therefore, belonging was deemed critical as a pre-cursor to social connectedness and group membership. This perspective does not resonate with collectivist cultures, that value education in service to the community; to bring back knowledge to make others stronger (Rendon, et. al, 2011). In fact, new research has emerged that puts Maslow's research in a new light. That is, the ubiquitous pyramid is turned upside down as researchers shared details about the time that Maslow spent with the Native American Blackfoot community (Ravilochan, 2021). The First Nations Perspective taught that belonging is realized through caring for one's community and basic needs are met by the community. The goal for collectivist cultures is not the apex of the pyramid (e.g., individual self-actualization), but the opportunity to contribute to the community and to help others. This has important implications for how services are structured in that student values and norms may lead them to only use resources in a framework that allows them to contribute and give back, in kind.

Validation, Expectations, and Belonging

Building on previous literature, Rendon (2004) addressed the connections across students' perception of acceptance and fit. She noted that first generation students were more likely to question their academic ability and chances for success, as compared to traditional

students. To counteract this issue, Rendon and Munoz (2011) advocated for validation; arguing that setting high expectations and supporting students to reach goals bolstered their confidence and learning. The authors found that validation worked well coming from instructors, classmates, staff, or others and when held as a critical process in the early stages of transition, it can buffer doubt. Validation can also bolster belonging when students come to college from varied backgrounds and recognize the differential preparation levels and the marginalized feelings that can stem from that finding (Maramba & Palmer, 2014).

The importance of sense of belonging was established by Hurtado and Carter (1997), and scholars commonly cite this as the foundational work in this field that moved forward the adaptation of Tinto's model (1993), especially for minority students (Hausmann, Schofield, & Woods, 2007; Museus, 2014). Rooted in sociological theory established by Durkheim (1956), the work examined the relationships between individuals and groups, and the factors that contributed to cohesion. The development of sense of belonging was a welcomed shift in studying the experiences of racial/ethnic minority students. Specifically, sense of belonging did not require integration, as Tinto's model had, but instead looked at how students could feel comfortable being themselves, valued for who they were and their contribution, and considered part of the community. Retaining cultural connections can increase retention, while pressure to give up connections and heritage significantly negatively prevents belonging (Museus & Maramba, 2010). Therefore, students maintained their familial roots and heritage and sought connection at their university.

After conducting studies that spanned institutions and mixed methodologies, Strayhorn (2018) integrated belonging theories and research into a robust theory. This was necessary given the state of research around belonging, whereas the relationship with engagement and

involvement was intertwined (Wolf-Wendel, Ward, & Kinzie, 2009). Very little research existed until around 2010 that positioned sense of belonging as a distinct concept that could be measured empirically and that could be enhanced or impeded (Kitchen, 2014). Strayhorn identified details about why students don't feel that they belong, through a series of mixed methods research. He recognized vulnerability and Strayhorn cited collaboration and a pivotal point for success, and that this begins with support in the classroom.

Strayhorn (2012) established the definition of a sense of belonging as inclusive of cognitive and affective dimensions. A strong sense of belonging was related to feelings of being a valued and an important part of a community. This construct is context dependent and driven and belonging in one context does not nest within others and is not necessarily connected. Finally, Strayhorn noted that a sense of belonging is linked to mattering, and therefore, to identity. Strayhorn conducted several quantitative and qualitative studies to examine the outcomes for students of color based on their belonging and their perceptions about the campus climate. He found that there was a significant relationship between sense of belonging and peer interactions for Black students. Interactions with diverse others was positively related to belonging.

Belonging Uncertainty and Bandwidth

Belonging Uncertainty explains the ways that student's sense of fit and achievement can be undermined, perpetuating disadvantage. That is, students who have been stigmatized are more uncertain about their relationships with others and therefore more sensitive to factors that can impede belonging (Walton & Cohen, 2011). Belonging at multiple levels precedes a student's decision to engage in a classroom, for example belonging in class, in major, in college (Wilson, 2015). Multiple examples such as, studies found that women were less likely to pursue math or

engineering majors due to stereotypes that women are not as able to do math as men (Brainard & Carlin, 1997; Good, Rattan, & Dweck, 2012).

There is yet another reason why students may not engage to the levels that universities expect, due to bandwidth. Verschelden (2017) builds on the work of Walton & Cohen (2007), specifically for first generation, marginalized students who have less social capital. She comments that belonging uncertainty is prevalent where students have multiple 'non-traditional' student characteristics. Black students who do not see faculty or many other students who look like them, for example, worry that they will not be successful or find friends. Other students who are gay or transgender, have parents who are not living at home or are in prison, or who have an invisible disability – these familial circumstances that act as 'secrets' serve as barriers to belonging. These distractions and worries for those who do not feel that they belong can increase withdrawal behaviors exponentially, and these thoughts act as belonging underminers (Green, Emery, Sanders, & Anderman, 2016). Explained in another way, students who have been marginalized in the past are unsure if they will be gain in the next classroom and spend energy in a "bandwidth tax" trying to understand if microaggressions or microinsults were intentional and how to react.

Belonging is a complex and important phenomenon. Traditional definitions have focused on peer interaction, involvement, and some social elements (Pernell, 2018). However more recent studies have shifted focus to psychosocial elements, like feelings of fit, perception of social support, and mattering to a community (Strayhorn, 2012). Belonging happens through connections with individuals and is a critical component to feeling a part of a collective (Kohnen, 2019; Tovar, Simon, & Lee, 2009). Researchers have found that a stronger sense of belonging has led to persistence, especially for ethnically minoritized students. Many institutions in recent

years have unpacked constructs in belonging, separately from engagement and involvement, and have designed and delivered reinforcing interventions.

This section has highlighted several theories and subthemes that are especially important for Hispanic/Latino and Black/African American students, and those who are first generation. There was no one approach to belonging that seemed to capture the full picture of how to create a sense of belonging, uphold culturally sustaining practices, and guard against undermining factors. This was termed ***bricolage*** or a weaving together of multiple theories to acknowledge the complexities that intersect with power and culture, and to address students' holistic development (Abes, 2009). The next section will review the ways that belonging in theory can show itself in practice – through the ways that institutions create engaging opportunities and how students choose to interact.

Institutional Engagement

Kuh (2008) summarized years of focused research on the ways that institutions create opportunities for intentional, meaningful engagement. The construct has remained an important variable as many others have tried and failed to create generalizable factors for student learning that are tied to retention, completion, and success. Engagement has been widely accepted as an indicator of institutional effectiveness through the link to knowledge and skill development in college through studies about active learning (Axelson & Flick, 2011). This is theorized to occur through dual forces produced by the effort and actions by student and the institution. Kuh examined and extended previous models to include institution (reciprocal exchange) and reflected widely accepted principles of good practice in the classroom (Chickering & Gamson, 1987; Kuh & Hu, 2001). The model included educational structures beyond the classroom and tested the theory that when students are encouraged and engage in meaningful activities, the

students are likely to learn more (Kezar & Kinzie, 2006). Therefore, the ways that universities structure opportunities for students, allocate resources, and provide services reflects their values and priorities (Carter & Fountaine, 2012). This section will describe the concept of engagement, the factors that influence engagement, and engagement's impact on retention and learning.

Supportive and Collaborative Environments Predicts Success

Because first generation students engage with colleges differently than continuing generation, researchers have questioned the weight placed on test scores and GPA to outrank other criteria as predictors for success (Flowers, 2004). Specifically, researchers found that relationships with others outside class, non-cognitive factors, and a supportive environment were more important than test scores for first generation students and those who identified as Hispanic/Latino, Black/African American, Native American, or Pacific Islander (Cokley, 2000; Kemp, 1990). This may be explained by the way that they experience environment. Faculty and staff can help students reclaim resources through new models that expand what we conceive of as 'first generation' to overcome discrimination and stereotyping (Palmer, 2019; Perna, 2004).

In 2008, Perna and Thomas adapted Bonfenbrenner's model on bioecological perspectives of human development (2005) to account for the different systems and forces at play upon the knowledge, skills, attitudes, and influencers that shape behavior for today's college students. The model highlighted how students who grew up in family systems that are collaborative and share values that are deeply and culturally engrained, are not likely to abandon these to integrate, assimilate, or accommodate the culture of the academy (as was advocated for in earlier models). When the students are the first generation to pursue a college education, there are many norms and expectations that come as a surprise. Further, these students may have additional pressures to succeed, on behalf of their family (Brooms, Clark, & Smith, 2018). These

relationships are complex, whereby the family may also be the support system that can keep students engaged and buffer against challenges.

The wide adoption of the engagement theory and assessment led to challenges in comparing studies, due in part to differential terminology (Wolf-Wendel, Ward, & Kinzie, 2009). For example, The Freshman Survey distributed by the Cooperative Institutional Research Program (CIRP) has been proposed as a widely accepted competing instrument (across the 50 years it has been distributed), however this tool focuses less on the engagement and interaction with the institution in favor of measuring student perceptions about learning (Kuh & Ewell, 2010). For this study, there's critical value in understanding relationship between student and the institution. Specifically, the value of differentiating engagement (the work of the institution) from involvement (the work by the student) is in identifying the unique contribution each makes to student learning and retention (Harper & Quaye, 2009).

Validate and Trust Essential to Open Doors for Learning

How, then, can students with competing priorities become engaged? Some students experience engagement primarily within the classroom – through collaborative and active learning, interaction with faculty, and discussions with diverse others (Kuh, 2008). However, many faculty members have not been trained to deliver pedagogy in this way, nor have they honed their abilities to provide opportunities for early success and validation (Rendon, 2011). As noted by Schreiner (2010), you must 'Maslow before you can Bloom'; that is, students will need to feel safe in a classroom and engage in basic learning before they can aspire to higher order, reflective, and integrative learning.

Faculty who can engender trust from students, communicate that they have high expectations, and bring elements of many students' cultures into the classroom, have been able to

address how students learn differently (Kahu & Nelson, 2017). Kahu and Nelson's study of transition led them to describe a Sociocultural theory of engagement. The authors position student differences not as deficits but as ways to connect and to bridge skills from previous experience to knowledge in a course; echoing Kuh's message that engagement is the way through which students acquire knowledge, skills, and experiences for personal and academic growth.

That is, engagement is more than just behavioral; it is influenced by the sociopolitical and cultural context (Mandernach, 2015). Fostering an environment where students can learn, actively, together is critical as it has been shown across studies and students as a powerful bridge to develop higher order thinking, processing, student involvement in effective learning strategies, and retention (Barkley, 2009; Braxton, Jones, Hirschy, & Hartley, 2008; Bowen, 2005; Milem & Berger, 2017). In an analysis across tools that measure engagement in higher education literature, Mandernach (2015) noted that researchers agree on the value of engagement and the relationship to retention and learning. However, there is less agreement about how to measure engagement and especially across different units of analysis. Mandernach highlights an important point, that engagement is more than a process, it is a product of the active learning and motivation that a student contributes; therefore, if either is zero, the product is zero. Sense of belonging is proposed as another variable in such an equation, that much have a value lest the engagement and retention be zero.

All students can learn, and lack of learning has less to do with student characteristics and more to do with the extent that a classroom and campus climate creates an opportunity for students to develop a sense of belonging. The resources available to support student learning are important, but not more important than the classroom climate (Rendon & Munoz, 2011). Hence,

student engagement hinges on the nature of the relationships that faculty and staff build through their interactions with students, not just in the frequency. Specifically, students were found to be more engaged when courses exhibited the following characteristics: opportunity to unpack deep meaning from material, built in activities that work with student strengths, and faculty who have worked to improve their teaching approach with a focus on student learning (Rendon, 2006).

Student Involvement

The focus of the research on student involvement is around the amount of time that a student dedicates, globally, to the activities associated with college (Pace, 1998). Astin (1984) studied students' perceptions of the value of their experience with several satisfaction measures. He found that interaction with peers and faculty was significantly related to satisfaction. From this, Astin proposed that the effectiveness of any practice or policy was directly related to the extent that it was able to drive student involvement. Clearly, both Astin (1984) and Kuh (2008) focus on how students spend time, and the connection between these choices, persistence, and learning.

Mattering or Marginality

While involvement is related to positive outcomes including satisfaction, academic achievement, retention, and loyalty, not all students enter college knowing this or knowing how to navigate this pathway (Scholssberg, 1989). Significant connections and relationships can grow from student involvement, especially when students become aware of the ways that they are meaningfully connected to and in community with others, and how it contributes to their belonging within the community (Rendon, 2006; Schlossberg, 1989). With belonging comes adjustment and intent to persist (Hausmann, Schofield, & Woods, 2007). However, when students enroll at a largely commuter campus with faculty who do not 'look like them' then

intentional action is required to introduce and explain the importance of interactions. By studying patterns of involvement, Schlossberg identified rituals that normalized feelings of marginality during transition and identified ways to enhance mattering in academic context.

Studies of Black student leaders who attended predominantly white institutions (PWIs) found that Black students spent more time using student services and participating in clubs than their White counterparts. It is possible that interaction in set spaces enabled Black students to find others who were like them in terms of interest, culture, and values. Impact of setting and structural diversity-where students can see others who look like them and relate to them have a significant support for retention and completion. However, Black students face challenges in finding others who share similar characteristics and beliefs, with low counts of Black students at PWI and HSI (Fleming, 2001; Harper, 2004).

Where institutions aim to create culturally inclusive spaces, this may not be enough. Recent studies have focused on how students interpret campus climate (BrcaLorenz, Kinzie, Hurtado & Sanchez, 2018). The interpretation is directly influenced by the experiences students have interacting with staff, students, and faculty. Specifically, the researchers found that interacting with others who have a background that reflects diversity was positively linked to reducing racial bias and increased cultural awareness. These experiences were then linked to greater cognitive development. Extending this line of research, was another study about student involvement and group learning. Priddle and BrckaLorenz (2020) reported that Black students valued being heard and feeling important while other students valued feeling smart. Students were asked questions including: my cultural background values community; I value the success of my community more than one person; I am the best in any group that I am in; when working in a group how important is being respected by others. These questions highlighted the ways that

assumptions and values color the questions that we ask and how individualistic, White, traditional tools and methodologies should be assessed in the context of new frameworks.

This finding reflects the value of collectivist cultures on recognizing the many assets that each member brings, to sharing stories, and in acknowledging the ways that we can rely on each other to learn together (Wilson, 2009). Further, Harper & Newman (2016) asserted that students from collectivist cultures require help to make sense of their new environment and may not instinctively flourish in Socratic seminars or when expected to ask questions of the faculty member. The Socratic and growth mindset that helps students succeed in college stands opposite the hierarchical respect structure of some cultures. Therefore, some students will need to reframe the behaviors around self as a learner, to normalize help seeking (Gonzalez, 2000; Lee, 2004; Rendon, 2006). Studies show that this adjustment that helps students see adversity as expected and temporary, often assisted through mentorship, can guard against challenges and setbacks derailing college experiences (Brady, Cohen, Jarvis, & Walton, 2020).

A space to support transition, adjustment and academic identity development has been cultural resource centers (Museus, 2008). This requires that students become aware of the cultural resource centers and that the centers have capacity to serve the varying needs of the student groups; whereby ‘all Black’ or ‘all Latino’ students are not a monolith.

Many studies focus only on student characteristics and success for students, not unpacking the nuances of environments that impact specific student groups (McIntosh, 2012). Several theories rooted in Psychology and Sociology provide support for why students are unable to develop a strong sense of belonging. Stereotype threat is a term that describes a feeling more often felt by people of color, first generation, and female students who have a harder time finding people who look like them in the educational setting (Steele & Aronson, 1995; Winkle-

Wagner & Locks, 2014). That is, institutions that have equitable structural diversity have set the stage for greater student involvement. Students often seek out the small numbers of faculty who help them navigate difference and social missteps in an environment that is not welcoming or culturally affirming (Ward, 2018). The lack of others who "look like me" results in feelings of not belonging, especially when these stereotypes existed in previous educational experiences (Walton & Cohen, 2007). The threat is further reinforced when students of color feel excluded by peers, and students of color have reported feeling that the lack of belonging is related to one's own performance. Further, studies have found that students report differences in student-faculty interaction that are related to gender, social class, race and ethnicity (Kim & Sax, 2007). Hence, more research needs to be done to continue to understand educationally effective practices that are rooted in belonging and then foster equitable student-faculty interaction.

Students can be involved and not engaged, whereby involvement will be related to learning, but engagement will have no impact on learning (Harper & Quaye, 2009). Students who live on campus and spend more time on campus are better positioned to access faculty/peers and to be more involved in relationships and social interactions (Pike, Kuh, & Gonyea, 2003). Even so, studies concluded that college impact on a student is a direct function of the involvement in both curricular and co-curricular, and the effort a student puts forth (Pascarella & Terenzini, 2005).

Conceptual Framework

The conceptual framework for this study represents the relationships among the sense of belonging, engagement, involvement, and retention. Belonging is an important priming factor that is required before a student is willing to dedicate time and energy beyond bare minimum levels of student involvement and institutional engagement, those that will lead to retention.

Other models have argued that a sense of belonging mediates the relationship between engagement and retention or achievement or have positioned belonging as the dependent variable (Kitchen, 2014). However, based on the recognition that the characteristics of 'non-traditional' students are quickly becoming the standard profile for many more college going students, and previous studies were largely focused on PWIs, this study centers the student experience and argues that belonging is a critical factor at the beginning of the first-year experience.

The framework was conceived in the context of the public urban metropolitan university that will be the site for this study, enrolling primarily Hispanic/Latino and Black/African American students. The linkages between these variables in this order honor the theories that underscore the need to address generational status of students (first-generation and continuing generation), the first-year experience, and retention after the first year. The first-year experience includes engagement (as measured by four NSSE indicators), a sense of belonging (as measured by NSSE items), the cumulative GPA at the end of the first year, along with numbers of units attempted and completed. The retention is measured as the enrollment for the student the third semester, from Fall to Fall.

Key variables and Factors for the Framework

Each of the variables described below was derived from research and theoretical literature and aligns with student involvement (quality of interactions, diverse discussions, learning strategies) and institutional engagement (effective teaching practices, supportive environment).

Quality of Interactions. are measured as supportive relationships with others that are experiences as positive and contribute to enhancing the student experience (Astin, 1977, Pascarella & Terenzini, 2005). Specifically, when interactions are of high quality, students are more likely to reach out to others for support and therefore to develop stronger social capital, critical thinking, and other positive gains (Kuh, Schuh, & Whitt, 1991). In an analysis across institutional types, students' backgrounds were related to interactions with others and the environment in complex ways, underscoring the importance of who students engage with on campus (Hu & Kuh, 2002).

Diverse Discussions. are a critical component to the college experience and have long been studied through the lens of peer effects and the importance of creating space for curiosity and exploration (Astin, 1984). These conversations in college are often at the point in students' lives where identity formation is in progress and the opportunities to interact with others who may be different from those in their institutions of origin or home communities can have lasting impacts on world views and beliefs (Bowman, 2010). Studies have shown that experiences with others who have diverse identities and backgrounds lead to positive outcomes (Gurin, Dey, Hurtado, & Gurin, 2002). These benefits were found to be stronger when more frequent interactions occurred (Bowman, 2010). These interactions have been studied under the context of reducing racial bias that White students have toward others (Denson & Chang, 2009).

Learning Strategies. Include the ways that students engage with their material through the learning process. This shifts away from students acting as an empty vessel that knowledge is put into and engages the student as a learner who analyzes material through multiple methods. These may include note taking, summarizing key points, and identifying patterns (Vermetten, Lodewijks, & Vermunt, 1999). These efforts can be taught and refined in classrooms and learning support to help students advance metacognitive skills and support deeper learning.

Effective Teaching Practices. include the ways that faculty choose to interact with students, structure the classroom environment, instruct, and describe their approach transparently. Faculty who practice effective teaching reportedly focus on providing clear goals, opportunities to practice with material, prompt feedback, and supportive communication; and all of this is organized in a way that makes sense to students, given their prior knowledge (BrckaLorenz, Ribera, Kinzie, & Cole, 2012).

Supportive Environment. includes interactions that students have in and outside the classroom, that support positive learning and development across cognitive, social, and physical aspects of an experience (Pascarella & Terenzini, 2005). More supportive institutions emphasize opportunities to make use of support that helps with well-being, social connections, religious practices, and strengthening learning.This multifactored approach is support in the research also as dimensions of wellness (Copeland & Levesque-Bristol, 2002). A supportive, wellness approach can serve as a buffer to challenges and encourages students to seek support to manage one's life and prevent crisis.

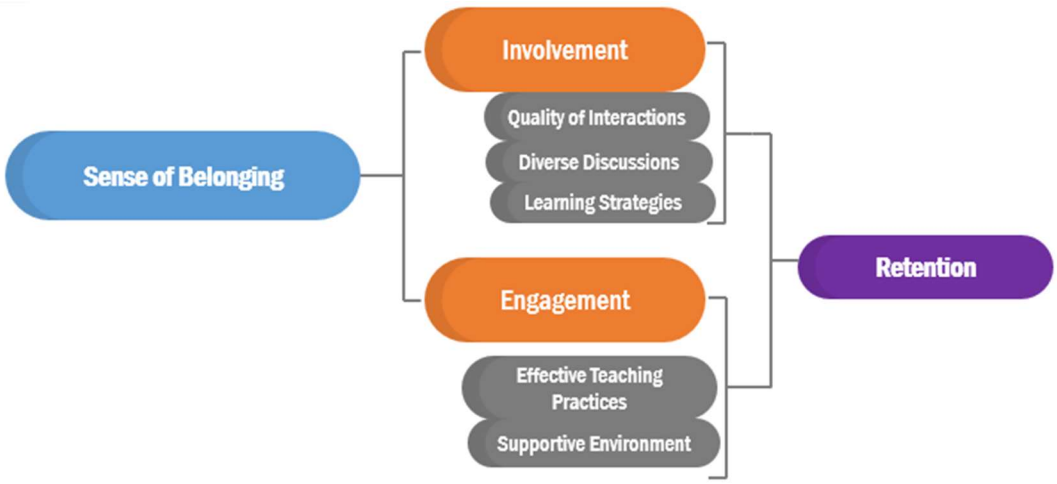
Recognizing Notably absent Engagement Indicators

The engagement indicators that were chosen to correspond to Maslow's hierarchy and Bloom's taxonomy. That is, students will need to feel safe and secure in a classroom, to

understand expectations before learning can begin. Once students understand how to communicate with each other and that the space is supportive, they can then engage in higher order and reflective learning, and to truly collaborate. Seemingly directly related, student faculty interactions were also left out. This intentional omission highlights the privileged lens of the variable, as first-generation students are often not afforded the flexible free time required to engage in high impact practices, unpaid internships, and other forms of interaction that undergird this indicator. Given the noted research theory that undergirds this study, the researcher chose to focus on the engagement indicators that serve as a foundation for learning, instead of diluting the study with all ten indicators at risk of not identifying the relationships between variables most central to learning and success for Black/African American and Hispanic/Latino students.

Figure 1

Conceptual Framework. An examination of the institutional factors that contribute to retention



Chapter Three

Methodology

While research about student retention and persistence has grown and developed over the past fifty years, there are still gaps in our understanding about how student involvement and institutional engagement impact Hispanic/Latino and Black/African American students differently. Further, belonging has only recently been studied as an independent construct in student success models (Strayhorn, 2019). To address some of these gaps, this study analyzed survey data from the 2020 National Survey of Student Engagement (NSSE) distribution, merged with institutional data about student admission profiles, demographic characteristics, and first year performance. The analysis was guided by the theories of mattering and community cultural wealth, belonging, and validation. The variables delineate the behaviors students engaged in, in the context of institutional choice and resources to support and guide students. The findings inform university stakeholders about who engaged, how this impacted retention, and where the institution can dedicate additional resources in the future to support student success.

Research Design

The research design for this study included a quantitative secondary data analysis, using descriptive statistics, t-tests, correlations, multiple linear regression, and path analysis. The analyses for this study combined data from two sources, including the 2020 Spring distribution of the NSSE (National Survey of Student Engagement) with first-time students who entered college as the Fall 2019 cohort, including institutional data about student characteristics, achievement, and progress. The study relied on records for the cohort that already existed, without the use of random assignment or manipulation. This approach was selected as it aligns with the research questions designed to examine relationships between variables and whether

differences among student groups on one variable are related to differences among individual scores on variables. The analysis examined the correlation between the independent variables (e.g., sense of belonging, student involvement, institutional engagement) and the dependent variable (retention) at the same time. The goal was to study(predict) the likelihood that retention will occur and under what circumstances.

As previously discussed, the key interest for first generation college students is the ability to transition well during the first year. First Generation College Student (FGCS) Status incorporates the extent that the student was prepared to navigate college, to understand how it is different from high school, how to ask for help, and other practices that have been linked to success (Hittepole, 2019). Researchers have found that students who are FGCS were more likely to drop out, and therefore is a key factor to include (Engle & Tinto, 2008). Additionally, the survey cohort will be split by those who were and were not retained to the census date of the third semester (Fall 2020). The generational status, GPA, unit load, and retention were sourced from the student information system and the engagement and belonging variables were sourced from the NSSE Survey. The unique identifier that linked the two data sets was removed once the connection was made.

This chapter outlines and explains the steps in the study including answering the research questions and examining the relationships between the variables of interest. The chapter includes the following four sections. First, I will describe the student sample of the population invited to complete the survey. Second, I will describe the instrument and additional data source. Third, I will report the reliability and validity of the instrument for the student sample of interest. The fourth section will detail how data were analyzed.

Sample Selection

The students who entered the institution as first-time students (e.g., not transferring from another institution) were invited to complete the NSSE survey. The institution is a four-year degree granting, public, regional, HSI (Hispanic Serving Institution) located in the western region of the United States. The institution enrolls over 15,000 undergraduate students. The response rate was recorded as 28% of the students who enrolled in Fall 2019 (711 respondents from the 2533 incoming first time students). This response rate was representative of the student cohort and deemed sufficient. As a note, the average response rate was 23% for large institutions (with enrollment greater than 10,000) and 30% for NSSE across all institutions distribution nationally (NSSE 2021). The sampling methodology included a census of all first-year students enrolled on the 21st day of the semester. The students received a request for participation distributed via email to their institutional account. Students received an invitation followed by four reminders. Additionally, social media fliers were posted to encourage participation. The invitation included an opportunity drawing for one of five small incentives ($25 gift card).

There are differences between the student composition at the institution for this study and the characteristics across the NSSE 2020 respondents. The analysis will include calculating the frequencies to determine the distribution of the participants across race, age, and other key variables. Regarding racial/ethnic categories, most respondents for the national survey were: White (57%), followed by Hispanic/Latino (16%), Black/African American (10%), Asian (7%), Multiracial (4%), and International (4%). Interestingly, the proportions for the national NSSE sample are not very different from the California population at large (Lumina, 2020). However, the composition of the sample from this major urban metropolitan university are different. In

comparison, the proposed study sample includes White (1%), followed by Hispanic/Latino (77%), Black/African American (11%), Asian (4%), and International (7%).

The respondent characteristics are representative of the first-year student cohort, where the full cohort was White (5%), followed by Hispanic/Latino (66%), Black/African American (11%), Asian (7%), and Foreign (5%). The estimate of the sampling error was computed to test for the quality and accuracy of the sample, and to guard against non-response bias, (Korkmaz & Gonyea, 2008).The estimate for the Hispanic/Latino students was within the preferred range (4%), considering the 1902 students in the cohort and 413 in the sample. The estimate for the Black/African American students was slightly greater than the range (11%), considering the 223 in the cohort and the 58 in the sample. Therefore, the findings for the Black/African American students must be interpreted more conservatively, considering the implications of potential non-response bias.

Across other characteristics, the respondents in the study were also different from the NSSE reported cohort. For example, nationally 66% were female and in the sample for this study, 74% were female. The national respondents included 44% first generation and 39% were living on campus. Comparatively, the respondents for the study were 88% first generation college students. Therefore, it may be that the students who completed the NSSE for this study interpreted the instrument in a different way. This underscored the need to validate the scale for the study.

The cleaning process includes a search for missing data, using the SPSS Missing Data Values Analysis program. This program identifies data that are missing at random and imputed the data. A total of 49 cases were not used, leaving 662 usable cases for the sample. This count of missing data is within the limits of what is likely inconsequential for data analysis (Schaffer,

1999). The subset of respondents was then refined further to limit those subgroups for race and ethnicity where fewer than 50 were present, effectively creating a two-group comparison between Black/African American and Hispanic/Latino students. Finally, analyses determined that while the count of students in the two identity categories will be uneven, the size differences are not expected to result in estimate errors (Howell, 1992).

In a study of NSSE benchmark scores, Pike (2013) found dependable means with groups of 50. Adopting this same methodology, this study limited conducting analyses for smaller subgroups. For the purposes of this study and in the context of supporting the largest groups on campus, this study proposes to focus on Black/African American and Hispanic/Latino students. The final analytic sample proposed (accounting for incomplete responses) includes 413 Hispanic/Latino students and 58 Black/African American Students.

Instrumentation

The study will use data from the 2020 administration of the National Survey of Student Engagement. (NSSE). The survey was administered by the Indiana Center for Survey Research, an independent organization, using both an online and paper format. The survey has a wide distribution across 601 institutions in both the United States and Canada, including 1.8 million students. The questions reflect good practices in undergraduate education and experience. The instrument was recently acknowledged for passing the 20th year of use, including a re-calibration and improvement process. The survey asked students questions about their college experience, including the amount of effort and extent of time dedicated to activities inside and outside of class, including clubs, research opportunities, interactions with peers and others across campus, and other practices that have been found as meaningfully linked to learning and retention (Kuh, 2012).

The NSSE underwent a significant re-evaluation in response to concerns and an updated version was released in 2013. This resulted in a change from 5 principles to a more rigorous and valid 4 themed scales with 10 underlying indicators. The revision was driven by concerns over vague response options (e.g., frequency, quantity, and intensity). The review by psychometric experts working with researchers in the fields of retention and engagement uncovered evidence that supported the revised structure (Rocconi, Dumford, & Butler, 2020). Hundreds of studies demonstrated that students learn more when engaged in college and confirmed that student engagement was a valid indicator of institutional excellence (Axelson & Flick, 2011). Further, the studies confirmed that student engagement characteristics are measured more easily and with greater consistency in the new version of NSSE (Corobova, 2015).

The NSSE was designed to measure four themes that have been associated with learning in the research literature. These themes included academic challenge, learning with peers, experiences with faculty, and the campus environment and have been validated in multiple studies (Carle, et. al., 2009; Pike, 2013). Each of these themes is further disaggregated into a set of ten engagement indicators, allowing campuses to examine the frequency with which students engage in very specific behaviors that have been attributed to promoting learning, persistence, and completion. Studies have further confirmed the value of using the survey for institutional assessment (Fosnacht & Gonyea, 2018). Given the context of the conceptual framework and the research questions, a subset of the full survey was proposed for use in this study.

Variables

The engagement indicators included in the analysis reflected the themes: campus environment, experience with faculty, and learning with peers. The items that correspond with the engagement indicators were coded as described in the NSSE 2020 Codebook: Core U.S.

Survey. The variable labels, survey items, and corresponding engagement indicators are mapped (see Table 1).. This followed recommendations to collapse items into categories and extract the most meaningful and clear use of the information, separating signal from noise (Chen, et. al, 2009).

The analysis included a set of student characteristics. The goal was to identify the racial and ethnic identity for each respondent, focusing on Hispanic/Latino (re_latino) and Black/African American (re_black) students. The analyses included qualities that have influenced a students' experience, including ordinal variables such as hours spent working (tmworkoff and tmworkon) or caretaking (tmcarehrs). A few additional demographics were included as these are traditionally noted as 'risk factors' that threaten completion and are part of the definition of a 'non-traditional student.' This included sex (genderid), age (recoded from birth year to 'age'), gender identity (sexorient17), first generation status (recoded from highest education level to firstgen), readiness for college level Math and English, and socio-economic status (e.g., Pell eligibility).

Finally, a few additional achievement measures were included from the student information system. The goal was to tie the student self-report responses with the achievement information in the first year. These ranged from high school GPA (HSGPA), first semester GPA (F19_GPA), the units attempted (F19_units_attempted) and units completed (F19_units_completed). Additionally, given the large number of first year students who entered needing support for college level Math and English, it was important to include grade point average to identify or rule out the influence in retention. That is, might student grades (as a proxy and control for performance) hold more weight in explaining variance for retention over student demographics, engagement, sense of belonging, and student involvement? The dependent

variable, retention, was coded for the third semester (F20_units_attempted recoded as 'retention').

Confirmatory Factor Analysis

Exploratory factor analysis was be computed for each of the NSSE engagement themes included in the research questions. This tested the extent that the items on the survey grouped together into the scales as created in the NSSE instrument for the sample. Given that the literature review emphasized the theories that students with different backgrounds experience and engage in college differently, it stands to reason that the study will include checks on the statistical application for the subgroups of interest (Rendon, 2006). Thus, there was a need to examine the extent that the survey factors remained intact for Black/African American and Hispanic/Latino students (Corbova, 2015; Pedhazur, 1982).

The confirmatory factor analysis was conducted and confirmed that the instrument met an acceptable level of fit with the expected factors for students at this institution (Kim & Meuller, 1978). The decision about the number of factors depended upon the KMO (where the value was >.05), and confirmed the sample wasn't too small. The screen plot was also evaluated to show that the numbers aligned with the eigenvalues. The analysis tested if an orthogonal or ordinal vector worked better and found the need for varimax rotation. In the end, the goal was achieved to demonstrate independent constructs.

Five different indices were evaluated, and factors were retained intact. First, each model was examined against the GFI (goodness of fit index) with the goal of a score that was 0.85 or higher (Hu & Butler, 1999). Next, a chi-square was computed with the goal of 0.90 or higher. Next, the analysis examined the RMSEA (root mean square error of approximation), with a goal

to find a value .06 or lower. Finally, the target p-value for test of close fit with a goal of finding .05 or higher. In the analysis the factor loadings fell between .40 and .80, ruling out multicollinearity (Kline, 2002). The factor analysis was included as an examination of the scales, to be sure that the scales had normal distribution.

Scale Reliability

The internal consistency was tested for the scales using the Cronbach's Alpha test for reliability. The goal was to establish Cronbach alpha levels that demonstrate moderately strong reliability (0.5-0.6) or ideally a strong reliability score equal or greater to 0.7 (Nunnaly, 1978). The reliability of the NSSE survey data was frequently updated by Indiana University and published on their website by year. After obtaining data for this study, both the samples for Black/African American and Hispanic/Latino students were found to have an acceptable reliability for the sense of belonging, student involvement, and institutional engagement, where α was greater than .80 on each of the six tests.

The NSSE staff did not distribute the data and reports on time in 2020. The team took time to run additional analyses to determine the extent that COVID-19 impacted the distribution. Although the survey was distributed during the COVID-19 pandemic, response rates across institutions were high, and the response rate across all campuses was 2% higher than the previous year. Analyses to test the impact of the disruption on the survey distribution revealed that it did not have a significant impact on the quality of the survey administration or on the reliability and validity of the scales.

Research Questions

1. Are there differences by race/ethnicity in reported levels of sense of belonging, student involvement, and institutional engagement?
2. What is the relationship between sense of belonging, student involvement, and institutional engagement?

Hypothesis 1: Students with a strong sense of belonging will have stronger involvement than students who have a lower sense of belonging.

Hypothesis 2: Students with a high sense of belonging will have stronger engagement than students who have a lower sense of belonging.

3. What is the relationship between sense of belonging, engagement, and retention?

Hypothesis 1: Students with a strong sense of belonging, high levels of engagement, and strong student involvement are more likely to return.

Hypothesis 2: The relationships between the variables will not be impacted by student demographics and entry scores.

Analysis

The study proposes a series of analyses to address each of the research questions. The statistical analyses for the study were conducted using the Statistical Package for the Social Sciences (SPSS) version 26 software. The statistical tests performed included descriptive statistics (e.g., frequency counts, correlations) and inferential statistics (e.g., linear regression, path analysis). The significance level for all tests was set at $p<.05$.

Table 1

Main Variable Index

Research Question	Statistical Test(s)	Independent Variable(s)	Dependent Variable
1	Frequency by race/ethnicity	Belonging, Student Involvement, Engagement	n/a
2	Frequency and Correlation	Belonging	Student Involvement, Engagement
3	Regression And Path Analysis	High School GPA, Belonging, *Student Involvement* (Quality of Interaction, Discussion with others, learning strategies), *Engagement* (Effective teaching, Supportive environment), Units completed, Cumulative GPA.	Retention

Research Question 1: Descriptive Analysis

The first analysis reviewed the mean and standard deviation for each of the factors for the two subgroups of students of interest (Black/African American and Hispanic/Latino students). The full sample was not detailed here, as the largest proportion of students identified as Hispanic/Latino and the full sample was not significantly different.

Research Question 2: Frequency and Correlation.

The study included an analysis to test the relationships between sense of belonging with the subset of the NSSE Engagement Indicators. The survey data was divided to study the students who reported a high versus a low sense of belonging, and then these two groups will be used to examine the average scores for the student involvement and engagement scales. This was then refined to examine the correlations across individual items within the sense of belonging scale and the items in the five themes for student involvement and institutional engagement:

discussions with diverse others, quality of interaction, supportive environment, learning strategies, and effective teaching practices.

Research Question 3: Regression Models.

Hierarchical linear regression was used to determine the relationship between the independent variables and the dependent variable, student success (as measured by retention from Fall 2019 to Fall 2020). The independent variables were determined based on the conceptual model, theoretical framework, and previous studies on related topics. The regression models commonly used student characteristics as control variables (e.g., gender, college going status, socioeconomic status) and then entered High School GPA, college preparation level, and engagement indicators. The model tested which predictors are the most meaningful and have the strongest relationship with retention, noting any differences for students by racial/ethnic identity.

Before the regression model was created, a series of tests were conducted to ensure that the data set satisfied the assumptions required for the analysis and to guard against biased or misleading findings and recommendations (Flatt & Jacobs, 2019). First, a scatterplot was created to test the relationship between the independent and dependent variables, ensuring the normality of the skew and kurtosis. Next, the data was checked for homoscedasticity by plotting the predicted values. Finally, outliers were checked based on large residuals.

The linear regression was created using multiple blocks, combining the institutional and engagement data. The first block in the model included control for student characteristics (e.g., High School GPA). This study holds that the factors measured through the NSSE study presuppose and override other factors, so this model will also include cumulative GPA and units

completed . That is, students must complete units in and overcome factors that serve as barriers (Carter, 2006; Delialioglu, 2012).

The second block for the analysis included sense of belonging. The study carefully considered the positioning of this variable. Some studies were criticized for compounding the impact of belonging on outcomes by positioning it both as an antecedent to motivation and a mediator between motivation and academic success (Wilson, 2015). Developmentally, there is a need to belong in a group, and connection to others has been linked to increased interest, goal setting, and achievement. Therefore, this model will position belonging in block two, after personal characteristics, and before engagement.

The third block for the analysis will include student involvement (e.g., quality interactions, discussions with diverse others, and learning strategies) and institutional engagement factors (e.g., supportive environment, effective teaching practices).

This study set out to examine the factors that are related to retention for Black/African American and Hispanic/Latino students, separating the two groups to identify factors that may be more culturally responsive and engaging for one group in comparison to the other (Bond, 2020; Museus & Quaye, 2009). Therefore, the model was run for all students and then separately for the two racial/ethnic subgroups, so that the differences by group were visible (Lord, 2019).

Limitations

The nature of the theoretical framework and the focus on the connections between sense of belonging and engagement and involvement in the first year yielded a narrowed look at the 10- factor set of engagement indicators, reducing it down to five. The theories supported the focus on the nature of interactions between and across faculty, staff, and students as well as teaching practices and the nature of the environment. The theory holds that students would

require a sense of safety and security along with belonging to gain higher order thinking and creativity. In the future, the relevance of the reflective and integrative learning, collaboration, higher order learning, and quantitative reasoning can be included and investigated.

Given the small sample sizes for groups other than Hispanic/Latino and Black/African American students, the research study was limited to these two groups. Future studies may benefit from a more robust and larger sample that includes more students in more racial/ethnic categories. Further, this study did not disaggregate or examine the differences within these racial and ethnic categories. Therefore, the findings for the group may not apply to all Hispanic/Latino or Black/African American students, as the group is not monolithic; differences are likely to exist for students with origins and culture from Mexico as compared to students whose identity aligns with Central or South American countries. Finally, because the study sample was restricted to only two groups and took place on a HSI where the sample was not largely reflective of the state or national NSSE sample, it's possible that the findings are not generalizable to other campuses.

Another important label that was not examined was low-income students. As Goward (2018) describes, first-generation is a less loaded and negative term as compared to low-income, and a student can be one without being the other. However, low-income students face different challenges and not openly addressing these hides the focus that we need to place on the growing cost of college coupled with the decreased federal and state support. Few colleges have dismantled their financial situation as well as Paul Quinn college under the leadership of Michael Sorrell, where they recognized that it made no sense to ask a poor student to take a risk with a loan when the student was only or less than 50% likely to complete a degree. While this study aimed to include income data, most students were at or just above the Pell eligibility based on

expected family contribution and too homogenous a group to show difference. Future studies that include more students, possibly multiple years or institutions, are needed.

Some studies have incorporated additional NSSE survey questions about student concerns in their first year, anticipated challenges, and how they spent their time. Additional analyses could include these features as additional considerations (while being mindful for the number of variables in the model and R square change), the model may include questions about hours spent working and participating in activities/arts on campus, service learning, research and studying. Also, useful could be dividing well informed students by what students know about resources available, use of resources, and how comfortable students were in asking for help at the beginning of the year and the end (using BCSSE) and at the end of their fourth year.

NSSE administrators completed analyses to test the impact of COVID on the instrument. Most institutions distributed 1-2 messages before 3/18/20 and analyses showed no significant difference in response rates (some increased a bit) or EI scores. However, the survey for the institution of study was open 3/23/2020-4/30/2020 and there is a chance that this may have impacted the responses, especially since the first-year student population at the institution of interest is significantly different from the nation. It is highly possible that the students experienced the survey differently in the COVID-19 context.

The challenges from xenophobia (e.g., Hispanic/Latino border politics, Muslim Ban), racism and movements to defund police (e.g., Black Lives Matter), encroachment on native land (e.g., Standing Rock), anti-Semitism (e.g., rise in white supremacist attention in the media), sexism (e.g., Me Too), and swells of Asian Hate (e.g., blame for the Corona Virus origin), the rapid cycle of significant social unrest and violent protests impacting marginalized communities has taken a significant toll on student bandwidth.

This was reported by students in their comments and feedback to faculty and staff. These events in close sequence have led some psychologists to draw parallels to the impacts of post-traumatic stress disorder and to approach those who have been impacted with a lens of trauma when providing support, advising, and coaching. These issues may have impacted student capacity to be involved on campus or to have the energy to engage in ways that they may otherwise have liked to.

According to the theory of empathy, people who identify with others are more likely to respond to what others are experiencing and feeling with like emotion (Baron-Cohen, 2011; Brunsteins, 2018). This may have further amplified the challenges presented across the last few years. Trauma based research has shown that trauma informed care through the presence of a sensitive, nurturing adult can mitigate negative effects on achievements and health (Bartlett & Steber, 2019). Additionally, campuses have been encouraged to amplify the visibility and increase availability of health and wellness staff (Collymore, 2021). Future surveys about engagement may be well positioned to ask more about the interactions between students and others on campus, specifically asking about the roles of mentors and mentoring circles, and the use of wellness resources.

Finally, because the data were collected through NSSE, a self-report survey, it is always possible that students were influenced by ideas of what they believed was socially acceptable. That is, the responses may be skewed by this and not reflect adequate thought or response to individual experiences. For example, students are told many times in their first year that belonging is very important and that they are encouraged to attend certain functions and workshops to ensure that they have a sense of

belonging; hence students may feel that they are ‘supposed’ to report a high level. Further, because the data were collected in the spring semester, it is also possible that the data do not reflect the experiences, should they be different, for students who left the institution after the first semester.

Chapter 4

Results

Research Questions

The questions in this study combined descriptive and inferential statistics to assess the extent that the levels of engagement and belonging that the students reported were related to their retention. The first questions included only survey data to analyze relationships between experiential variables and then question three tied these to student outcomes.

1. Are there differences by race/ethnicity in reported levels of sense of belonging, student involvement, and institutional engagement for first-time full-time students?

2. What is the relationship between sense of belonging, student involvement, and institutional engagement for first-time full-time students?

3. What is the relationship between sense of belonging, engagement, and retention for first-time full-time students?

General Characteristics of the Sample

The variables included the student characteristics (e.g., racial/ethnic identity, high school grade point average, generational status for their parent/guardian in college), how students were involved (e.g., quality of interactions, learning strategies, and discussions with diverse others), and how they were engaged by the institution (e.g., supportive environment and effective teaching practices), in addition to the sense of belonging, and their academic progress (e.g., units attempted and earned, cumulative grade point average, and retention). The subsamples of interest include those students who identified as Hispanic/Latino (n=413) and Black/African American (n=58), for a total subgroup of survey completers including 471 respondents. These respondents were mostly female (75%) and 16% identified with the LGBTQIQ+ community. Most students

reported that their parents or guardians had not completed college, and identified as first generation (FGCS, 91%). Most students identified as Pell eligible (77%). There were some small differences in the subgroups, most notably that more Hispanic/Latino students were FGCS (94%) as compared to Black/African American students (72%) and these details are included below (see Table 2).

An additional set of analyses were conducted to further describe the student sample and subgroups, focusing on their incoming test scores and level of preparation. Students reported an average age of 19 years old. The average high school GPA was 3.2, with SAT Reading scores in the 470's range and SAT math at an average of 450. There were not significant differences between Hispanic/Latino students and Black/African American students, however these average scores place students around the 20th percentile, whereas comparison to the cohort year across the state, students averaged a higher level, near the 50th percentile.

From the data in Table 1, the sample was determined to be sufficiently representative of the full cohort of incoming new first-time students. Specifically, the cohort of first time first year students although the sample included a slightly larger percentage of first generation and pell eligible students. The Cohort for Fall 2019 included 2533 first time students; Female (61%), First generation (71%), Pell Eligible (65%), First time student high school GPA (2.8). Students attempted about 13 courses, on average and on average, completed 12. The average Spring 2020 cumulative GPA was 2.9.

Table 2

Demographics and Characteristics by Subgroup

Variables	Hispanic/ Latino (*n*=413)		Black/African American (*n*=58)	
Sex	***n***	***%***	*n*	*%*
Female	307	74%	44	77%
Male	101	24%	13	23%
Identity				
Heterosexual/Cis	333	81%	47	85%
LGBTQIQ+	68	16%	8	15%
Generational Status				
First Generation	388	94%	42	72%
Continuing Generation	25	6%	16	28%
Socio-Economic Status				
Pell Eligible	320	77%	41	71%
Not Pell Eligible	93	23%	17	29%
	Average		***Average***	
High School GPA	3.24 (.37)		3.20 (.31)	
SAT-Reading	474 (65)		477 (72)	
SAT-Math	454 (65)		447 (67)	
Units attempted Spring 2020	13.46 ()2.0		13.36 (3.1)	
Units completed Spring 2020	11.71 (3.7)		12.09 (3.7)	
Year 1 Cumulative GPA	2.94 (.65)		2.93 (.78)	

Reliability Analysis

As noted in Chapter 3, the reliability statistics are reported by the Indiana Center for Survey Research for each of the benchmarks of effective practice, for each cohort. The reported Cronbach's alpha for the national distribution was above .80, except for learning strategies, which was recorded at .76. In the local sample, the reliability was tested for the subgroups Hispanic/Latino and Black/African American students. The Cronbach's Alpha was above .81 for each benchmark, and above .90 for supportive environment (see table 3). These scales demonstrated consistency, as noted in the table below and were found to have values comparable

to the national sample. Therefore, the high levels of reliability indicate that the questions in the survey, when used with similar samples, should produce similar results. Specifically, the findings note that survey scales will bring respondents to think of the same kind of information prompted by the survey items in future efforts.

Table 3

Comparison of reliability coefficients

Benchmarks	NSSE Reported Cronbach's Alpha	Observed Hispanic/Latino *n=413*	Observed Black/African American *n=58*
Student Involvement			
Quality of Interaction	.85	.89	.89
Discussion with Others	.87	.85	.84
Learning Strategies	.76	.81	.81
Engagement indicators			
Effective Teaching	.84	.88	.87
Supportive Environment	.88	.93	.92

Note: Observed values for sense of belonging were also of acceptable value for Hispanic/Latino (.89) and Black/African American (.84) students.

Factor Analysis

A confirmatory factor analysis was conducted to test whether the scales as created by the Indiana Center for Survey Research and used largely at Predominantly White Institutions (PWIs), yield the same factor scores for the diverse sample for this research study in the context of a Hispanic Serving Institution (HSI). The tests to confirm the scale use for Hispanic/Latino Students included the series of observations in the factor analysis procedures. The analysis found that after the 6th rotation, the scales were appropriate for both Hispanic/Latino and Black/African American students.

The analysis for the Hispanic/Latino and the Black/African American students independently confirmed the six-factor solution for each subgroup. This was supported statistically, because the Eigenvalues were greater than one and this was confirmed by scree

plots. The KMO measure of sampling adequacy was .896 for Hispanic/Latino subgroup, and .718 for the Black/African American subgroup, surpassing the threshold for a large enough sample (e.g., >0.5). The 6-factor solution is further confirmed through the Chi-square and was found significant indicating the 6 factors were adequate to explain the covariance among the variables. In the analysis, values were suppressed if <.4. Further, multicollinearity was ruled out after rotation (only 1 value was >.9).

There were interesting findings for the comparison of the size of the factor loadings, for the two subgroups. Across several factors, the loading for Black/African American students was less than the loading for Hispanic/Latino students, meaning the factor may not have as strong an influence on the variable but most of the ratings were close to 1. This included: feeling a part of the community (.86 vs .57); feeling valued by the institution (.82 vs .65); quality of interactions with student services staff (.90 vs. .77); discussions with people of a race different from your own (.79 vs. .50); discussions with people from an economic background different from your own (.86 vs. .77), faculty use examples to explain difficult points (.82 vs .52). The details in Table 4 include the values for each item within the scale.

Additionally, there were instances when the loading was less for the Hispanic/Latino subgroup as compared to the Black/African American subgroup: quality of interactions with advisors (.76 vs. .83); discussion with people who have a religious background different from your own (.86 vs. .92); encouraging contact with students from a different background (.77 vs. .84); and faculty provide prompt and detailed feedback (.75 vs. .84). The details for the loading for each of the subgroups is included in the appendix for reference.

Table 4

Factor Analysis for Variables across Two Subgroups (after rotation)

Item	Factor Loading	
	Latino	Black
Sense of Belonging		
I feel comfortable being myself at this institution	.80	.81
I feel valued by this institution.	.82	.65
I feel like part of the community at this institution.	.86	.57
Quality of Interactions		
Academic advisors	.76	.83
Faculty	.89	.83
Student services staff	.90	.77
Administrative staff	.87	.85
Discussions with Diverse Others		
People of a race or ethnicity other than your own	.79	.50
People from an economic background other than your own	.86	.77
People with religious beliefs other than your own	.86	.92
People with political views other than your own	.83	.80
Learning Strategies		
Identified key information from reading assignments	.59	.54
Reviewed your notes after class	.82	.84
Summarized what you learned in class or from course materials	.83	.78
Institutional Engagement Indicator		
Spending significant amounts of time studying and on academic work	.75	.76
Encouraging contact among students from different backgrounds	.77	.84
Providing opportunities to be involved socially	.83	.85
Providing support for your overall well-being	.83	.83
Helping you manage your non-academic responsibilities (work, family, etc.)	.75	.60
Attending campus activities and events (performing arts, athletic events, etc.)	.77	.80
Attending events that address important social, economic, or political issues	.77	.80
Effective Teaching Practices		
Clearly explained course goals and requirements	.75	.77
Taught course sessions in an organized way	.80	.85
Used examples or illustrations to explain difficult points	.82	.52
Provided feedback on a draft or work in progress	.77	.76
Provided prompt and detailed feedback on tests or completed assignments	.75	.84

Research Questions

The research study was guided by the research questions and the procedures are summarized in the table below. This section will review the findings for each of the proposed statistical tests and include details for additional analyses that were computed based on findings.

Research Question 1

Are there differences by race/ethnicity in reported levels of sense of belonging, student involvement, and institutional engagement for first-time students?

This section will examine the average scores for sense of belonging, engagement, and involvement with attention to where the mean scores are different for students who identify as Hispanic/Latino and Black/African American. The scale for sense of belonging included 4-points and the average rating for each of the three items in the scale was greater than 3. The responses for each of the sense of belonging items was skewed positive (see table 5). The ratings were similar across the full institutional sample, and both subgroups, except for feeling a part of the community, where Black/African American students reported a slightly lower mean (3.05 versus 3.156).

Table 5

Sense of Belonging Survey Items Mean and Standard Deviation Statistics

	Institution-wide Sample	*Hispanic/ Latino*	*Black/ African American*
Sense of belonging (myself)	*3.24 (.65)*	*3.26 (.67)*	*3.28 (.59)*
Sense of belonging (valued)	*3.14 (.65)*	*3.17 (.65)*	*3.14 (.63)*
Sense of belonging (community)	*3.13 (.65)*	*3.16 (.65)*	*3.05 (.71)*

Next, the average scores were examined for students by racial/ethnic category for each of the subscales for student involvement and institutional engagement. There were differences between racial/ethnic groups for three items (see table 6). First, the mean score for discussions

with diverse others was rated lower by Hispanic/Latino students as compared to Black/African American students (33.2 and 36.4, respectively). The mean score across two other items was rated lower by Black/African American students as compared to Hispanic/Latino students: effective teaching practices (34.1 and 40.7) and supportive environment (34.5 and 37.5). There was a stronger correlation for Black/African American students related to quality of interaction (.541). All items were significant except discussion with diverse others and effective teaching practices for Black/African American students. Therefore, it seems that there is a difference in student experiences, therefore this null hypothesis was rejected.

Table 6

NSSE Engagement Indicator correlation with sense of belonging across groups

	Institutional Sample M (SD)	*Hispanic/ Latino M (SD)*	*Black/ African American M (SD)*
	Mean (Standard Deviation) Correlation Coefficient		
Student Involvement			
Quality of Interaction	*43.6 (13.0)*	*43.7 (12.9)*	*43.4 (13.5)*
	*.362***	*.340***	*.541***
Discussions Diverse Others	*38.5 (16.2)*	*33.2 (16.5)*	*36.4 (12.9)*
	*.279***	*.299***	*.258*
Learning Strategies	*39.3 (13.4)*	*39.4 (13.4)*	*38.9 (13.1)*
	*.315***	*.340***	*.279**
Institutional Engagement			
Effective Teaching Practices	*40.0 (14.2)*	*40.7 (14.2)*	*34.1 (13.8)*
	*.401***	*.443***	*.140*
Supportive Environment	*37.2 (16.0)*	*37.5 (16.0)*	*34.5 (15.5)*
	*.467***	*.478***	*.395***

Note: ** Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed).

The findings may be influenced by the unequal sample sizes between the two racial/ethnic groups that were compared. Specifically, assuming α=.05 and β=.20, there's a greater chance of making a type II error versus a type I error with a small sample, (e.g., accepting

the null hypothesis when it is false). This could result in an error of omission or false negative. Further, the small sample size of the Black/African American subgroup increases the likelihood that variability produced by random sampling error could appear as a difference when it is not a real effect. The power analysis yielded some concerns for the findings above. In the first correlation (belonging, quality of interaction) the power statistic was 1.0 and this is too high. The next three items in the table yielded power statistics that were too low (in sequence: .50, .57, .18). The correlation between belonging and supportive environment had a power statistic of .89, which is over the .80 level of desirability. The analyses in the next sections took this into account and it's noted in the inferential statistics that the requirements of each test were fulfilled, whereby assumptions were met.

Research Question 2

What is the relationship between sense of belonging, student involvement, and institutional engagement?

Hypothesis 1: Students with a strong sense of belonging will have stronger involvement than students who have a lower sense of belonging.

Hypothesis 2: Students with a high sense of belonging will have stronger engagement than students who have a lower sense of belonging.

To determine if there was a relationship between the sense of belonging and the involvement and engagement scales, the ratings for sense of belonging were divided into high versus low. In the institution-wide sample, there were 8% of the respondents who disagreed or strongly disagreed with the statement, "I feel comfortable being myself at this institution" and 12% who disagreed or strongly disagreed with "I feel valued by the institution" and "I feel like part of the community at this institution" and this is in line with the reported national average for the 2019 distribution (Kinzie, BrcaLorenz & Lofton, 2020). The authors reported that, nationally,

90% of students reported feeling comfortable being themselves at their institution, 80% feel valued and 80% feel like a part of the community.

Given the focus on belonging, the next step was to identify if there was a meaningful difference for each of the two engagement factors, student involvement and institutional engagement, when belonging was low versus when it was high. For the scale, student involvement, the ratings were greater than they were for institutional engagement both when belonging was low and when it was high. There was a 7% increase in ratings for student involvement from those with a low belonging to those with a high sense of belonging; those with a greater sense of belonging also reported a higher level of involvement. For institutional engagement, the same pattern holds and those who reported higher levels of belonging also reported greater engagement, where the change from low to high belonging was 9% for the engagement rating.

Because a difference was detected, the next step included examining the scales for each of these engagement factors to see if we can gather additional information that can inform how to improve student experiences. The information in Table 7 below answers the research question affirming that there is a difference. The implications for the differences will be discussed in greater detail in Chapter 5.

Table 7

Relationship Between Belonging, Involvement, and Engagement (subscales).

Factor	Scale	Belonging *Low* *M* (SD)	Belonging *High* *M* (SD)	Mean Difference (delta)
Student Involvement	Quality Interactions	36 (13.16)**	45 (11.89)**	9
	Diverse Discussions	28 (15.32)**	35 (15.82)**	7
	Learning Strategies	33 (13.92)**	41 (12.96)**	8
Institutional Engagement	Effective Teaching	30 (13.45)**	43 (13.43)**	13
	Supportive Environment	26 (15.09)**	40 (14.74)**	14

Note: ** *p* -value is significant at the .01 level (2-tailed).

The supporting literature for the study indicated that students who were first in their family would have a different experience on the campus and that their ratings would be different from the continuing generation students. The only areas where first generation college students (n=482) seemed to differ from continuing generation (n=67) included quality of interactions and discussions with diverse others. The scale responses are included below in Table 8, where each scale had a maximum value of 60. These findings therefore indicate that yes, for some aspects of engagement, first generation students have an experience that's different from continuing generation students.

Table 8

NSSE Engagement Indicator scores for First and Continuing Generation Students

	First Generation	*Continuing Generation*
Discussions with Diverse Others	*33.40 (16.2)*	*37.80 (14.4)*
Quality of Interaction	*43.60 (12.9)*	*45.40 (10.6)*

Research Question 3

What is the relationship between sense of belonging, engagement, and retention?

> *Hypothesis 1: Students with a strong sense of belonging, high levels of engagement, and strong student involvement are more likely to return.*

Hypothesis 2: The relationships between the variables will not be impacted by student demographics and entry scores.

To address research question three, linear regression analysis was performed, first using retention as the dependent variable and then adding a second set of analyses where cumulative GPA was the dependent variable. The independent variables included high school GPA, generational status, belonging, involvement, engagement, units completed, and cumulative GPA. Assumptions were tested for the analysis by examining the normal probability plots and scatter plots of the residuals. The test did not reveal any assumption violation.

The regression analysis that included retention as the dependent variable entered predictors into the model across four blocks: (1) high school GPA and first-generation status, (2) block 1 and belonging, (3) block 2 and engagement, involvement, (4) block 3 and cumulative GPA with units completed for Spring 2020 (see table 5). The first block in the regression analysis provided an R^2 of .020, indicating that 2% of the variance in retention was explained by background variables, F (2,428)=4.473, p<0.05. The significance of the F statistic demonstrated that there is a relationship between the independent and dependent variables. However, within the equation, not all variables explained a meaningful or significant proportion of the variance. Only high school GPA was significant in this block (β=.143*) with p<0.05, indicating the higher the grade point average the more likely to retain. The second step only added another 2% of variance (R^2=.046) and sense of belonging, which was also a significant variable, in addition to HSGPA where F (3,427) = 6.853, p<0.01. In the third block, involvement and engagement were added increasing the variance accounted for to R^2=.052 with F (5,425) = 4.709**. Therefore, this combination of independent variables accounted for 31% of the variation in retention, demonstrating a weak effect size. However, the impact of each block is of concern; whereby only

5% of variance was accounted for until the units completed, and cumulative GPA were added. Therefore, the variables of focus for this study added very little.

Engagement Overshadowed by GPA. The first hypothesis was not supported since the belonging, involvement, and engagement in the regression equation, accounted for a small amount of variance (R^2=.052). The initial model was appended to include academic performance and progress variables, units earned that semester and cumulative GPA. This was in keeping with the academic literature, which holds that the engagement and belonging are important insomuch as they contribute to learning. It stands, then, that the independent variables should contribute to retention. This 4th block yielded R^2=.308 with F (7,423) = 26.959** and both units and HSGPA were significant (but in the final model, the other variables were no longer significant). These data are detailed in Table 9. Given this, the second hypothesis was not supported, as high school GPA overshadowed the independent variables of interest in the model.

Engagement and Retention: Related through Learning. Given the findings from the 4th block, a second regression was conducted, to study cumulative GPA as a dependent variable. Given that cumulative GPA was the most significant predictor for retention, and engagement and belonging are theorized to lead to learning, perhaps it was too much to expect a direct relationship between engagement, involvement, belonging, and retention. In this second regression analysis, also detailed as Academic Progress in Table 9, the same set of indicators were included in each block, but with greater variance explained. That is, the first block produced R^2=.176, such that high school GPA and continuing generation status accounted for nearly 18% of the variance in cumulative GPA, a small effect. The second step which added belonging, did not yield much additional variance R^2=.184.

Only high school GPA was significant in both models. The third model added involvement and engagement and again, only one additional percentage in variance. However, when units earned was added, the R^2=.536, a medium effect size. In this fourth step, only high school GPA and cumulative units were significant. The residual plots were examined and given the lack of patterns the assumption of heteroscedasticity was met. These findings did not include belonging as a significant variable and both involvement and engagement were not significant in either set of regressions. Therefore, the data cannot affirm the first hypothesis.

High School GPA: Not the Ultimate Predictor. The weak relationship between high school GPA and cumulative GPA was a surprising finding. For admissions, GPA and SAT have been used as primary screening criteria. While SAT scores have been removed from state admissions criteria as a required element, the High School GPA remains. In Table 9 we can see that there is a weak relationship between this and cumulative GPA for the first year. This may be explained by the attrition of those who are unsuccessful in maintaining a minimum GPA or who fail courses.

Units Earned and GPA: Closely related, COVID caveat. A few additional notes and analyses were conducted based on these findings. Units earned is related to cumulative GPA in that a unit cannot be earned in a course if the student earns a low grade or withdraws, thereby decreasing the GPA. One caveat is during COVID, where students were allowed to change a letter graded course into a pass/not pass scenario after the grade was given as an accommodation to the challenges of the pandemic and emergency remote teaching environment. Interestingly, there are students who did not earn units or earned smaller numbers of units and earned high GPAs.

However, the greater the units earned, the higher the cumulative GPA (R^2=.477). There was a difference, though, for Black/African American students. The relationship between high school GPA and cumulative GPA showed one percent less variance accounted for as compared to the full sample (R^2=.16) for units earned and cumulative GPA relationship. Instead of accounting for 48% of the variance like the overall sample, the units earned only accounted for 27%.

Table 9

Linear Regression Analysis: Predicting Student Retention, Units Taken, Cumulative GPA

	Academic Progress (Cum GPA)					*Retention*				
Predictor	R^2	ΔR^2	β	*F*	*p*	R^2	ΔR^2	β	*F*	*p*
Step 1	.176	.173		45.842	.000	.020	.016		4.473	.012
HSGPA			.413**					.143*		
FGCS			-.064					-.007		
Step 2	.184	.178		32.016	.000	.046	.039		6.853	.000
HSGPA			.414**					.144*		
FGCS			-.063					-.006		
Belonging			.085					.160**		
Step 3	.193	.184		20.341	.000	.052	.041		4.709	.000
HSGPA			.404**					.133*		
FGCS			-.062					-.011		
Belonging			.017					.143*		
Engagement			.076					.093		
Involvement			.062					-.067		
Step 4	.536	.530		81.655	.000	.308	.297		26.959	.000
HSGPA			.232**					-.066		
FGCS			-.031					.022		
Belonging			-.063					.094		
Engagement			.044					.056		
Involvement			.063					-.082		
Units Comp			.620**					.344**		
CumGPAS20			n/a					.257**		

*Note: CumGPA was only entered into the second column set, for Retention. ** p≤.01, *p≤.05.*

Murky Middle (GPA 2.0-2.5): Primed for Intervention. Perhaps looking across the full GPA range is too broad; many studies focus on students at a specific point across the GPA continuum. Another commonly cited area for concern and attention includes students who are in the GPA range of 2.0-2.5, otherwise known as the murky middle (Tyson, 2014). In a study of 60 institutions, researchers found that these students were not engaged in academic support programs and hold the greatest promise for intervention designed to increase retention. This was based on the research that compared 6-year graduation rates with first year cumulative GPA. For those students in the murky middle at the institution of interest, there is a very weak relationship between high school GPA and cumulative GPA as well as units earned and cumulative GPA for the students in the murky middle. Therefore, as an early measure, it will be difficult to predict who may be in this murky middle early on but may be something to attend to once students are identified at the end of their first year.

In the study about the murky middle, the author noted that 90% of the students who completed their first year with a GPA greater than 2.0 did return in their second year. This rate was higher for the institution of interest, at 93%. There is a lack of relationship between high school GPA and cumulative GPA. This issue points to further exploration needed in that students with, for example, a 2.7 might be getting B- on average, or getting A's and F's. the second group who are failing and not accumulating units are more likely to leave. This is the reason GPA analyses should be coupled with units earned for greater ability to identify students who may be in jeopardy. Additional analyses may provide insights about the courses that the students were unable to complete with credit. On average, the author reported, students in the murky middle spend 4.5-5.7 semesters in college before dropping out, and many times stay under the radar.

Early indicators: Not retained but no a red flag from GPA or SAT. Finally, an additional analysis was conducted to examine the institutional data for students who were and were not retained from Spring 2020 to Fall 2020. The details are included in Table 10 below. There was a difference in the High School GPA, and retained students entered with a 3.2 compared to non-retained who had an average of 3.03. The most significant difference was noted across the units earned, where those who were retained earned 12 units on average, but those who were not retained earned 3 units on average. This analysis further solidifies the importance of including units earned as an independent variable that can help identify students who could benefit from institutional support in the first semester and thereafter.

Table 10

Characteristics of students who were and were not retained

Averages	Retained (*n*=1936, 85%)	Not Retained (*n*=345, 15%)
High School GPA	3.20	3.03
Cumulative GPA Spring 2020	3.0	1.8
SAT – Reading	480	470
SAT-Math	460	460
Units attempted, Spring 2020	13	12
Units earned, Spring 2020	12	3

Note: Examination of the SAT scores is of questionable value, now that the state had determined not to use them, given the research that demonstrates historic embedded bias in the instrument and lack of equity in the test preparation by socio-economic status and geography.

Path Analysis and the Importance of Interactions

The model led to several findings beyond the regression analyses for the third Research Question. The model created for the path analysis is depicted in Figure 2, with the findings summarized in Table 11 below followed by the visual adjustments for the subgroups (see Figures

3,4). The information from the linear regression, along with the guiding theory, was used to create two interaction terms. First, belonging did not have a strong effect in the regression, however, an interaction was found with engagement. In this model, student involvement was dropped, as it did not add to the regression. An interaction was also found for the units completed and the cumulative GPA for Spring 2020.

The analysis also evaluated the path between high school GPA and belonging/engagement as a small effect size (<=.12), thereby highlighting that the high school record has no relationship with the extent that a student will engage in college. This conclusion held true across the sample and subgroups. Therefore, while high school GPA has a strong positive relationship in the sample and subgroups with college GPA and units completed, it does not have a relationship with the experiences, transition, or perceptions of college environment.

Figure 2

Path Analysis: Examining the variable relationships beyond regression

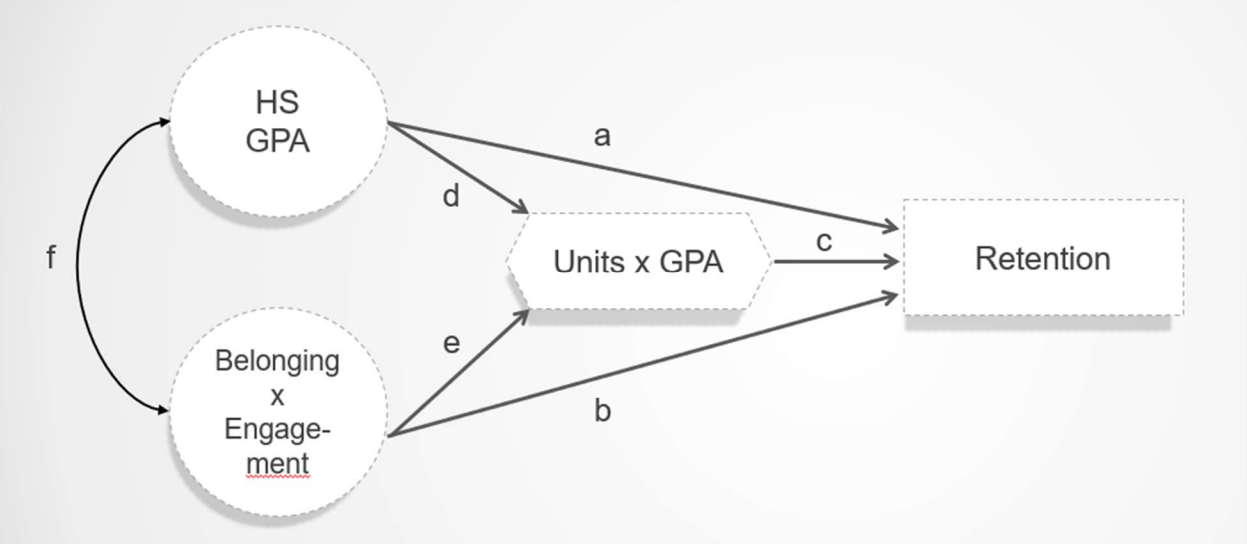


Table 11

Path Analysis for Retention: Standardized Coefficients Beta Comparison

Path	Institutional Sample	Hispanic/Latino Subsample	Black/ African American Subsample
a	.134*	.133*	.038
b	.159**	.183**	-.007
c	.485**	.428**	.142*
d	.377**	.382**	.456**
e	.147**	.162**	.098
f	.059	.076	-.011

Note: The error term for the variable 'unit*GPA' was .91 for the full sample, .90 for Hispanic/Latino subgroup and .88 for the Black/African American subgroup. The error term for retention for the full sample was .87, .89 for the Hispanic/Latino subgroup and .99 for the Black/African American subgroup. The error term was calculated as the square root of $(1-R^s)$.

Given that there were differences by racial/ethnic groups on the factor loadings and in the mean values for the independent variables, the path model was next tested for the subgroups. There were significant differences in the paths as noted in figures 3 and 4 below. Specifically, the strongest relationships remained between high school GPA and the units earned along with cumulative GPA. The strong relationship also held between units earned with GPA and retention. However, this relationship was weaker for Black/African American students than for Hispanic/Latino students. Also, the paths between the interaction (belonging *engagement) did not hold up for Black/African American students as it did for Hispanic/Latino (albeit a weaker path than the academic one). Interestingly, the interaction had a direct effect on retention as well as an indirect one through units and cumulative GPA. The analyses confirmed for both groups that there is not a relationship between high school GPA and the belonging and engagement.

Figure 3

Path analysis for Hispanic/Latino subgroup

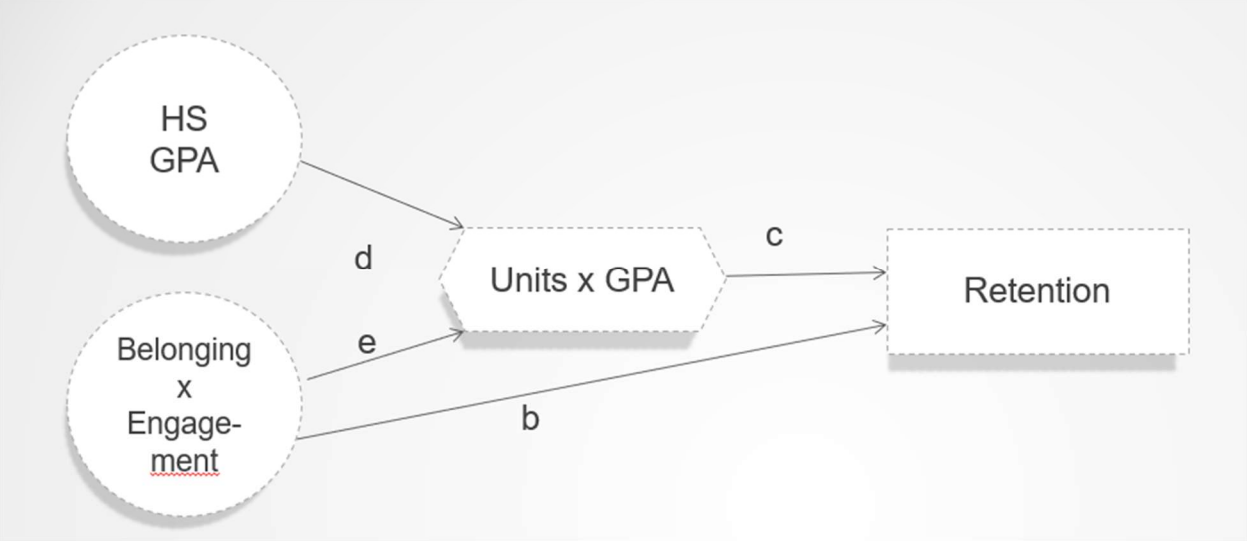
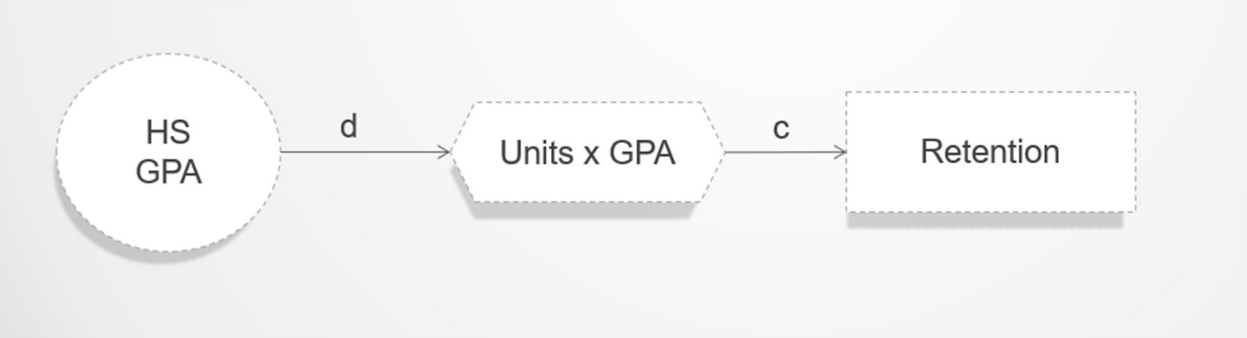


Figure 4

Path analysis for Black/African American subgroup



Cumulative GPA Tipping Point: <2.0

To carry this one step further, another set of analyses were conducted with a focus on satisfactory academic progress, and those whose cumulative GPA at the end of the first year is above or below 2.0. Specifically, the R^2 value was repeated for these two subgroups. The key finding of difference was not for high school GPA, first generation status, sense of belonging, or engagement indicators (these each had values less than or equal to 0.05). Instead, the key finding

was for the cumulative GPA at the end of the Spring semester. The R^2 value for 1908 students with a GPA > 2.0 was 0.029, indicating the GPA accounted for very little, or about 3% of the variance in retention. However, for the 384 students with a GPA less than 2.0, the R^2 value was 0.331, or about 33% of the variance in retention. This is a significant finding, as in the path analysis the strongest connection was noted for both Hispanic/Latino and Black/African American students to be that between cumulative GPA and retention. This analysis shows that there may be a caveat, and it's tempered by a GPA that is above the bar set for first year students for whether the student is making satisfactory academic progress; that bar is 1.5.

Backwards look: If retained, were students Engaged?

The two groups were also examined for differences, on average, for the engagement indicators. Retained students reported a higher level of student involvement as compared to non-retained students (e.g., 54.0 vs. 50.69). There was a larger difference between the two subgroups for institutional engagement (e.g., 42.0 vs. 36.39). There was not a large difference for the sense of belonging, where retained students' average score was 9, compared to 8.47 for non-retained students. The differences are not noted with statistical significance as the retained group is sixteen times the size of the other, and the statistical test would likely result in a type I error.

Readiness: Math and English Preparation

Another variable that has been examined in other studies about predicting retention for first year students is readiness in math and English, and how this translates to completing the courses required in the first year. These variables were not included as they are already under review and faculty were granted course redesign funds through both institutional and National Science Foundation funding, over the last several years. The first-year math courses do not pass 28% of enrolled students and the rate for English is 19%. Statistically speaking, (based on

standard deviation), there is cause for concern when the DFW rate exceeds 15%. Specifically, the institution was faced with significant challenges when the state removed remedial coursework in 2018. While the institution provides an early start and summer bridge, only about 1/5 of incoming students take advantage of this opportunity. The institution has very low percentages of students who successfully complete the required Math and English in the first year.

Chapter Five

Discussion

This study aimed to examine the impact of belonging and engagement on retention, for first generation students at an HSI. The study focused on a subset of the NSSE, including quality of interaction, diverse discussions, learning strategies, effective teaching practices and supportive environment. These subscales aligned with the conceptual model as essential elements for first generation student engagement factors that precede academic challenge and other cognitive factors in the connection to learning.

The study focused on students at the end of their first year. This point of transition is important because it's the place where largest attrition occurs at this institution. The study compared Hispanic/Latino with Black/African American students' scores on the NSSE survey to determine if they experienced the campus environment differently. With this information about how sense of belonging was shaped by the student interactions on campus, the administration could make decisions about where to invest and divest. Information about which programs and opportunities engage students, and growing those programs, can lead to improvement. Lastly, the study intended to inform policies and practices to bolster retention and completion, helping more students have positive experiences and outcomes for their careers and their families. This chapter will review the research study and results, implications for each of the research questions, and recommendations.

Study Overview

The research questions were designed to learn more about what institutions can do to support student retention through the academic and co-curricular programming. The literature for both research and practice has provided a strong base and evidence that the ten engagement

indicators in the NSSE survey include behaviors that, when students dedicate time and energy toward, are positively related to learning. The analyses were designed to examine whether the first-year students, many of whom were first generation and part of a historically marginalized racial/ethnic group, will persist as predicted. Because this was the first year that the NSSE survey included the belonging scale, I was also interested in examining the relationship between belonging, involvement, and engagement. Finally, the survey was administered during the pandemic and while nationally the NSSE team noted this did not impact the information, I aimed to consider a local lens.

The study findings answered the first two research questions affirmatively. In the first research question, findings confirmed that there is a difference in reported levels of belonging, involvement and engagement when comparing students who identify as Hispanic/Latino with those who identify as Black/African American. For the second, a low sense of belonging corresponded with lower levels of both engagement and involvement. Students who are less involved and less engaged also have lower sense of belonging (or it could be the other way around). Being mindful of the subscales, the differences in engagement for students with low versus high belonging, have to do with how supportive the environment is and extent that teaching practices are effective.

Finally, the third research question was only partially supported. The key variables predicted retention but didn't account for much variance. This was overshadowed by the high school GPA, number of units earned and cumulative GPA.

To receive a designation as a Hispanic Serving Institution (HSI), a college or university has only to demonstrate that greater or equal to 25% of students enrolled identify as Hispanic or Latino. That is, an institution is *Hispanic enrolling* not *serving*, unless it can demonstrate how it

is changing to enhance the learning and experiences of Hispanic/Latino students (Garcia, 2019). Published research has largely found that institutions are not necessarily changing their structures, policies, procedures, or pedagogy in line with the changes to the compositional diversity. Institutions must interrogate what it means to be an *effective* HSI with standards of excellence that differ from racially white institutions. This requires applying critical theory, decolonizing frameworks, and building structures for serving. The NSSE provides one tool to interrogate whether Hispanic/Latino students feel engaged, involved and a sense of belonging, and how this relates to retention.

If a university is Hispanic Serving, and has addressed the racially white norms and values that higher education is based on, is that institution more likely to better serve other student groups that identify with other minoritized identities? If courses and experiences are created in ways that promote equity and justice, are the practices culturally sustaining for Black, Asian, Native American, and other students? Studies examine the experiences of Black/African American Students at PWI's; is there a greater chance to experience belonging and engagement when the institution is not a PWI? Can a MSI (minority serving institution) close the gap better than a PWI and create an experience that works for students from different backgrounds, cultures, and racial/ethnic groups?

For this study, the answer was no. The two groups did in fact have different experiences as was noted in Chapter 4. Differences were found from the factor analysis loadings to the differences in mean scores by group, to the different correlations between engagement and belonging by group, and then finally to the path analysis. The key differences seem to be around quality interactions and diverse discussions. Borrowing from Brooms, Clark & Smith (2020), it's possible that the Black/African American students feel marginalized or victims of micro-macro

aggressions. That is, Black/African American students reported feeling less supported in the environment and that the teaching practices were less effective. This may have included micro or macro aggressions, misaligned values, or approaches that didn't work well for students with an identity that wasn't the same as many of the faculty and staff. Further study on this topic can parse this out and include larger samples to then be disaggregated in future years, focus groups, and studies for this identity group involving other experiential data and subject expert input.

Research Question 1

Most students across the institution provided high ratings for belonging. However, the ratings were lower for the single question in the belonging scale, "feeling like a part of the community." The extent that Black/African American students feel part of the community may not be as well explained by the factor, belonging, as it is for others. This same delta was found for discussions with diverse others. The Black/African American students also had a lower mean score for institutional engagement (e.g., effective teaching, supportive environment). These findings indicate that Black/African American students were not supported as well as others, felt less engaged, less part of the campus community, and were less likely to talk with people from other groups. This may be attributed to a variety of factors as noted in the literature. Students who have been stigmatized are more sensitive to factors impeding belonging (Strayhorn, 2012; Walton & Cohen, 2011). Future studies can include larger samples and survey instruments with scales that address culture, family, fit, and values.

For the theme of student involvement, the subscale "quality of interactions" was highly rated for both student identity groups. There may be some questions about inconsistencies whereby students reported high quality of interaction but lower scores about discussing things with diverse others. This may mean that students tend to stay with students who they can relate

to and who look like and share characteristics with them. This also corresponds with the literature – whereby students from these two racial/ethnic groups are more likely to come from origins of a collectivist culture, that's based in community and connections with people (Moody, 2020). These connections may be what creates strong bonds, apart from teaching and learning. The finding about lower ratings for diverse discussions are somewhat surprising. The campus in the case study prides itself on diversity across students, faculty, and staff, including housing a resource center by race/ethnicity, LGBTQ+, for women, dreamers, and parents (Table 7).

A few explanations may support the diversity concern but warrant further study. First, it's possible that students don't interact in a way that helps them share information to know if they are very different from each other when interactions are primarily in class (only about 5% live on campus). Most students are from the local region, and sharing a few common characteristics, might deem each other similar. Finally, there could be tension between the racial/ethnic groups, symptoms of deeper equity and inclusion issues, causing students to intentionally stay away from each other. From the literature, we may draw the conclusion that first generation students will be more likely to engage with people and programs once they feel seen, validated, and trust the institution and the actors within (Bourdieu, 1977; Camara, 2013; Roksa & Kinley, 2019; Yosso, Smith, Ceja, & Solórzano, 2009). It is through this engagement that students can develop self-efficacy and agency. Before we convert any of these possibilities into explanations or even hypotheses, more study is warranted.

There was a greater difference between the high and low ratings for institutional engagement as compared with student involvement, indicating there may be a greater range in experiences related to engagement, specifically for how effective the students rate teaching and the extent the environment is supportive. Therefore, students with a stronger sense of belonging

in the classroom may perceive teaching to be more effective and feel more supported (although we cannot be sure of directionality). This research question seems to align with research; belonging has been found to have a positive benefits and universities can develop interventions to develop stronger sense of belonging (Hausmann, et. al, 2007). Further, Strayhorn (2019) noted that these interventions and the campus culture must include a campus environment where students can relate to others. The NSSE Spring 2020 national findings and findings for this study included strong belonging ratings. This is interesting given students only spent one semester on campus and reported engagement in co-curricular activities was at an all-time low due to COVID emergency remote teaching infrastructure and distancing in Spring 2020.

Research Question 2

The involvement and engagement score averages were examined according to the sense of belonging score, divided into categories of high and low. Interestingly, the student involvement scores for both high and low levels of belonging were high, and there was less of a difference between these two categories when compared to the difference between the high and low scores for institutional engagement. These findings lead to questions about the barriers that students may be facing that are not apparent in these correlations. For example, as noted in question 1, students rated their quality of interactions highly, therefore the concerns could be with policy, procedures, and practices that are impeding student learning and progress, as well as the campus climate and culture. Another possibility is if the culture for the department, college, or university overall is very different from the one the student grew up with, this can create tension and less engagement. Students may also be less engaged because they don't know how to become engaged on campus or may have conflicting responsibilities, making engagement

difficult. In the context of the pandemic, students were not allowed to engage face to face and may have experienced fatigue in the remote environment.

Research Question 3

In the context of this case study, the model proposed that belonging and engagement would significantly predict first year retention, and this was only partially supported. That is, a regression analysis was insufficient to explain the relationships between variables. The regression model achieved a moderate effect of 30%, but the most significant variable was cumulative GPA (see table 11). When the regression was modified to use the cumulative GPA as a dependent variable (because NSSE data has been shown to increase learning), 20% of the variation in cumulative GPA was explained by belonging and engagement. This increased to over 50% when units completed was added to the regression. This is an important number as it demonstrates that the number of units completed is tied to GPA. This makes sense, because if the GPA is too low, the unit is failed.

Findings not aligned with previous research

The studies that informed this project found that engagement was a strong predictor for retention, but this was not the finding for this study. Further, other studies found that the social factors outrated the academic engagement in the impact on retention (e.g., quantitative reasoning, reflective and integrative learning). Another researcher also noted that learning strategies and quality of interactions were predictive of retention (Zhang, 2018). These findings were useful to direct resources for first year experiences for students at a public research university where previous studies had only looked at student characteristics. Finally, in an even more recent study that analyzed the relationship between engagement and academic performance, findings further underscored the value of student-staff interaction and supportive environment. Ogunsakin,

Moyo, Oludayo, & Olugbara (2021) mined student data using multiple correspondence analyses to establish the extent that engagement predicts retention and student success. As previously discussed, the impact of social factors is not a surprise, especially in the context of Maslow's hierarchy of needs, underscoring the importance of belonging as precursor to learning (Faisal, 2018). The fact that these did not hold up as expected was cause for further and additional analyses.

Hicks & Lerer (2003) tested the extent that engagement indicators affected the probability of leaving for non-traditional students (with a student sample that was largely commuting students). They found a strong positive relationship between a supportive environment and retention. Further, the study included measures of high school GPA coded into quartiles and found that the engagement had more impact on students with lower high school GPAs and that social factors were more important than academic factors for this population. More recently, Sarraf (2014) analyzed records from 12,976 students across 45 institutions of varied types and yielded similar results. These results were also not supported in this study, as noted in Table 12. Specifically, this study found that few students had a GPA below 2.5, and the majority who did, were retained.

Table 12

High School GPA by Retention

	n total	Range	*M* (SD)	*n with* <2.5
Retained	1936	2.2-4.3	3.2 (.37)	25
Not Retained	345	2.36-4.27	3.1 (.32)	8

Exploring interactions and indirect effects

The next set of analyses used what was found in the regression analysis to conduct a path model analysis. The model showed that high school GPA and cumulative GPA had larger effects

as compared to the belonging and engagement (Figure 2). Further, student involvement did not contribute significantly and the impact of belonging, and engagement was only important when the two factors were combined as an interaction. Additionally, the premise that first generation status would be a significant factor in the model did not hold up. Finally, the model that included the interaction had an effect for the full student sample and Hispanic/Latino students but not for Black/African American students, indicating that their engagement and belonging, while largely scored highly, wasn't connected to their cumulative GPA or retention (see Figures 3,4). Which begs the question, what is missing in the model?

In effect, the path analysis that supported the interaction term of belonging and engagement supports the research question, for Hispanic/Latino students. The fact that the interaction term remained in the model indicated the state of engagement depended on the sense of belonging. Hence, engagement on its own was not significant in the model, therefore the sense of belonging had a contribution as predicted from the review of the theoretical underpinning and conceptual model outlined in chapter 2. Of concern is the finding that institutional engagement held up for some but not all students. Specifically, the finding that Black/African American students' experiences with the effective teaching practices and supportive environment did not support their learning is an issue that requires further analysis.

In the next section of this discussion, key findings and implications will be discussed, considering what was found across the three research questions. First, this study called into question some long standing beliefs that have been supported by other research related to GPA and the NSSE (Cokley, 2000; Kemp, 1990; Kinzie, Gonyea, & McCormick, 2019). This study was a good reminder to check all assumptions in the sample for each study and to link survey data to student outcomes to validate if the theoretical framework is holding (e.g., are engaged

students more likely to return the next Fall and is it true for all students). The importance of testing the conceptual model is critically important. Theory is constantly evolving and changing; this study showed that it's critical to review quantitative and qualitative studies, of all sizes, and from across disciplines. From this approach, new insights can emerge, such as a weaving together of different theories. For example, the literature review showed that students with the personal and background characteristics of the sample are most likely from collectivist cultures and value culture and connection. Therefore, the instrumentation should capture these elements and the nuances of related theories. Finally, the fact that the survey took place during a pandemic is critical. This is especially so in hindsight, as the case study took place in a geographic area where the pandemic highlighted inequity and challenges that were already there. These key areas have implications for research and practice, and especially for resource allocation and decision support.

Theme I: New look at Longstanding Factors: NSSE and GPA

The variable GPA is an interesting one in this context. The institution in the case study holds an eligibility minimum and is considered a selective institution. However, the institution does not turn away anyone who meets that minimum eligibility. The average GPA for the entering class was above a 3.0, which means students could have done well in high school but may not have developed habits that met expectations for college. The students' transition into a new setting translated to struggle when they get to college. Therefore, GPA became a more heavily weighted factor given that the pandemic weighed heavily on student experience (e.g., mental exhaustion from fear/anxiety, concern for health of families, challenges in emergency remote learning online). However, the institution has reported a historic data point across at least the last five years whereby 25% of the first-year students do not make satisfactory academic

progress and are put on probation. This can be seen here, as retained students earned, on average, 12 units (a full-time unit load). However, the non-retained students were only able to successfully complete 3 units. Therefore, the first semester is an incredibly important timeframe that the institution must understand more completely.

Issues with too much emphasis on GPA

In the BCSSE (Beginning College Survey of Student Engagement) distributed in the semester before the NSSE, students noted that they expected to earn grades like what they had in high school. Yet, the cumulative GPA at the end of the first year was significantly lower. Students also noted in the BCSSE survey that they felt underprepared in quantitative skills and that they did not expect the academic challenge in their first year to be too great. Within the timeframe of this study, the state system worked across campuses to create a multi-factor admission scale, essentially doing away with the SAT given the inability to administer it during COVID. The challenge became in this emergency analysis, that schools could not with confidence hold that they had confidence in other admissions factors. While studies were conducted to test the potential impact of using Advanced Placement completion, math and English preparation, or engagement in student leadership or support (e.g., TRIO), these had not been thoroughly studied before. Therefore, the system was at a disadvantage to, with confidence, assure the public that criteria in addition to GPA was sound.

Practical implications exist around more support for students who enter with lower high school GPAs. Given that the relationship between high school GPA and cumulative GPA was strong, additional support for study habits, time management, early check-ins, and study hall are among some of the potential interventions to enhance and potentially embed in courses. In the situation where a student could benefit from learning support but does not make the connection,

this student will lose an opportunity where the community and institution could have stepped in (Ojeda, 2014; Ozmun, 2013). Future studies could also determine if students who attended summer bridge and early start and enrolled in a university 101 course did better than others. The University 101 course is intended to provide stronger transition through introduction to resources on campus, embedded engagement with the library and tutoring center, tours of campus, normalizing and encouraging help seeking, and establishing a relationship with a teacher as a support person. Moving away from program-itis and instead weaving together the key elements of the first-year experience designed to support student learning and development.

First generation students are more likely to be Black or Latino, and less likely to find others "like them" at the institution. This is especially important whereby Black and Latino students are more likely to enroll in less selective institutions; while these institutions do employ more Black and Latino faculty, they are often lecturers who do not have time to devote to mentoring and other support (Toldson, 2014). Further, Black students, especially men, are underrepresented in STEM fields – hence there are fewer faculty in these positions to serve as role models (Council of Graduate Schools, 2010). This may be interpreted in the context of the HSI, whereby Black/African American students were 10% of the undergraduate population. The campus had 9% tenured and tenure track faculty who identified as Black/African American. While this was greater than the national count at 5%, it made it possible that students had a difficult time finding faculty teaching who looked like them and could understand their experiences and interests, to relate to them (Jett, 2011). Juarez (2017) found that quality interactions with faculty were critical for Black students who were first generation, to overcome perceptions of mistrust and belonging. These perceptions and an increased sense of competence were realized when students experienced faculty as caring and approachable during a research

project. To be sure, belonging, involvement and engagement hold an important place in the student experience. Decades of literature and meta-analyses established that passing courses isn't all that there is to college; students need to develop friendships and mentorships, try new things, challenge themselves, and develop their identities.

Centering Student Goals: Family and Career

The study supported previous research in pushing for further examination of traditional models; that success mandates integration or adaptation to differing values of the institution to warrant success (Choy, 2002). Instead, researchers have noted that first generation students are more strongly motivated by learning that is directed toward achieving a better job, bolstering economic mobility, or to make a career change (Broekemier, 2002). The first-generation students come to the university with assets and differentiating the transition to college by centering these values and goals can support stronger ties between first generation students and their college (Kezar & Kitchen, 2020). However, this study didn't include robust motivation questions around learning or motivation type toward career, as these are not part of the NSSE model. Therefore, this link to career, could be a mediator that provides additional information in future models.

The current study also did not include extensive questions about family. That is, the commitments to family are reciprocal and there are commitments *from* family. In fact, a recent study quantified the statistically significant emotional support from family toward students' feelings of inclusion and belonging on campus (Roska & Kinsley, 2019). In their study of family impact on low-income students, the researchers found that emotional support positively impacted grades, successful credit accumulation and persistence more than financial support. The emotional support was found to promote students' psychological well-being and increase student engagement. From a students' point of view, we must pay attention to the ways that diverse

backgrounds (e.g., socioeconomic status, influence of family education levels, and capital that families possess), as indisputably influential on student decision making and achievement (Carnoy, 1996). Hence, in the student-centered conceptual model, family and institution exist behind, with, and around the student, each exerting influence on the student and potentially creating counter forces with each other in positive and negative ways. These additional areas around career and family may benefit future efforts.

While the numbers of students who are gaining access to and enrolling in college have increased, and the numbers of Hispanic/Latino people in the region is increasing, the number of college graduates is not commensurate. This disparity is limiting the social and economic mobility of those who need the support the most, and many are stuck in less desirable, low wage positions. Carnevale and Fasules (2017) reported that one in four Americans will be Hispanic by 2030. To address this now, many institutions have begun expanding parent centers (support for traditional students and their parents) to family centers, programs, and services. This enables colleges to reach out to students and their elders or those students who are parents themselves, or any sort of family arrangement, to show how the education fits into that existing system. With information shared early (in multiple languages) and in accessible formats in high schools and continuing through college, including culturally appropriate events, there's a better chance that students and their families will feel that they belong. When resource centers to represent various aspects of student identity, students are more likely to find a place of community that feels familiar.

Schools that bring these issues to the light and include equity, belonging, retention, and completion as focal points that are achieved through living the school's values, then completion can begin to feel like everyone's job and not just something that lives in reports. When data are

disaggregated, shared, and discussed by division and unit, and plans are made to reduce equity gaps and these are tied to resources and accountability, some change can happen (Smith, 2019). This is made more powerful by celebrating authentic and organic change and projects that support students and allocating resources to these types of efforts – especially when they include the people who brought the ideas to improve the situation of their own subgroups. This can also include studies like the one mentioned by Priddle and BrckaLorenz (2020) in uncovering what students value and how they have experienced individualism or community. Situated in the context of this study, training and development can be provided to tutors, peer mentors, adjunct, and tenured faculty to help them ask more questions and to consider multiple approaches that enhance what students experience.

Many studies have emerged that tested pilot programs and efforts on subsets of the student body, searching for the efforts that were most strongly associated with student achievement (Axelson & Flick, 2011; Kuh, O'Donnell, & Reed, 2013). This piecemeal approach has since been criticized as "solution-itis or program-it is" (Kezar & Kitchen, 2020; Moore, Schrager & Bracco 2017; Smith, 2019). Although many institutions support student success programs, first year experience opportunities, and other efforts, few can say empirically that the programs are producing the desired impact. This challenge is clear from the retention rates and underscores the difficulty in finding a solution. However, many institutions have failed to extend these pilots to meet the needs of larger numbers and different groups of students. Vincent Tinto has been frequently quoted for saying, access without support is not opportunity (2011). Essentially, student success has laid stagnant for too long and the legislature and the general public has increasingly pressed for solutions at scale, for higher education to sort out how to better support students and increase retention.

The introduction to this study began with citing the ethical and economic imperative of this study, whereby students who complete their degree in an economic downturn are set up to make less money than their peers and are unlikely to catch up. This is, of course, if equity gaps improve and each student is given a greater likelihood to improve. Beginning a degree but not completing it can create self-esteem and agency issues that extend beyond the enrollment period and that sour a person's interest in pursuit of life-long learning. Hence, improving completion rates for first generation students has an even greater imperative to change the lineage of a family and introduce college going and education as valued and achievable, setting an example for future generations (Brooms, Clark, & Smith, 2018). Because many of the students enrolled at the institution continue to live in the local area and stay close by, the lack of higher completion rates can impact the economic potential viability for the region.

Little has changed: What does "Student Centered Demand" of Institutions?

While the AACU, WASC, and other national organizations have touted that quality of education, drivers of success and effective change in higher education is seated in the shift to becoming a student ready college, institutions have a long way to go to achieve this (McNair, Albetine, Cooper, McDonald, & Major, 2016). We aren't quite ready to make good on the promise of the student at the center – we need first to look at the theories, ways that we engage students, and institutional structures with adequate resource that support student learning outcomes success (Carnivale & Strohl, 2013). Carter (2006) reported that a key to making progress in closing equity gaps around student success included examining the college experiences across racial/ethnic groups and increasing our understanding of how and why these result in differences in persistence. All these fifteen years later and thousands of publications, student access and retention has improved slightly, and we have tools like the NSSE survey to

examine student engagement and experiences, but the proof is in completion rates. The current time to degree, completion rate, and gap to fulfilling the need for a skilled, educated workforce shows that there is still much work to do.

Theme II: Transitions and Connections

The way that students are welcomed into a college campus, in the classroom and around campus, can impact student experiences significantly. Maturation of student retention and persistence theories have forced adaptation of early premises of integration and alignment of campus norms that were offered by Tinto, Astin, or Braxton, et. al. First Year Experience programs have evolved over time and include workshops focused on time and stress management as well as community building and appreciating diversity, these transitional supports advertised as a support system for students to transition well (Alexander & Gardner, 2009). However, mixed-method and longitudinal studies, have found that programs have an indirect effect on retention through increasing familiarity with campus resources, increasing community, and in building expectations (Cabrera et al., 2013; Suzuki et al., 2012). A small number of first year students complete the full set of planned support and many of them leave their institution (Becker, Horn, & Carroll, 2003). Campuses have been examining these programs for decades and disaggregating findings, adjusting resource allocation, and yet few have closed the equity gap (Pike & Kuh, 2005). However, limited research exists to show connections with belonging or significant benefits to students of color (Strayhorn, 2012).

While the first-year experience on the campus studied has been continuously improved and assessed, the research would be incomplete without considering that there may not be fidelity in implementing the support programs and other efforts as intended. Early intervention programs are at times poorly implemented and at others, poorly evaluated; and road to success

for many includes twists and turns (Braxton, Doyle, Hartley, Hirschy, Jones, & McLendon, 2014). This is made more difficult by the fact that a student who has not established trust or feels safe, will not ask for help or use resources (Jack, 2016; Lucas, 2001). This may be even more of a challenge on a commuter campus where students spend less informal time getting to know the campus and those who work there (Rendon, Garcia, & Person, 2004). Yet another complication may include lack of or miscommunication, when the student does not understand the benefit of a behavior or resource, and this goes unused (Burt, 2015; Arum, 2011). Therefore, are programs implemented as designed and has the design impacted the multiple student cohorts at scale?

Harper & Newman (2016) found that students from collectivist cultures do not flourish in Socratic seminars, that encourage students to question authority, pose alternative points of view, and speak out in front of others. This may impact student interpretation and ratings for Effective Teaching Practices and Quality of Interaction if they feel uncomfortable or as if they don't understand how to meet these new expectations. This can be especially difficult if the faculty have not established trust or provided validation for those students who have set examples in this environment of the expected behavior and norms for the classroom. In the context of the study, the institution prides itself on maintaining an average 29:1 ratio where most courses, especially writing intensive, hold even lower ratios.

Rethinking the Impetus of the Study in the Context of Culture and Capital

A key driver for the study was the focus on equity gaps in retention and completion. Given that these data did not support the existing models as expected, maybe the study led off with the wrong question. That is, focusing study on equity gaps can be in and of itself construed as biased and racist, centering whiteness. This holds the achievements of students to the standards developed in a framework that we know to be systematically racist, as the aspirational

goal (McNair, 2021). Essentially, this framework perpetuates the marginalization of students. The recommendation, then, is for institutions to identify what excellence and success means, and then set ambitious goals and strive to bring about change through anti-racist practices and structures so that all students can achieve these goals.

Survey Alternatives focused on Culture and Capital

Additional research is also available for studies that focus on other instruments that include elements of student engagement. The Culturally Engaging Campus Environment was developed to make overt the characteristics of culturally relevant and responsive practices that allow diverse student populations to thrive (Museus, 2014). The research also has demonstrated that the indicators correlate well with belonging, self-efficacy, and academic motivation. The author's theoretical framework began with Tinto's model of student departure and outlined the ways that it didn't work for all students. As has been discussed elsewhere, Museus criticized Tinto's theory for: the assumption that the student must sever ties with their cultural past, the students' connection with the institution, for the self-deterministic nature, and focus on the need for academic and social integration (Hurtado & Carter, 1997; Rendon, et. al. 2000; Tierney, 1992).

Museus (2014) recognized that the NSSE survey has a similar history to Tinto's model; given that there were decades of research and publications advancing the model, and at the same time, similar lack of consideration for the campus culture and the context it serves for the ways that different students engage with campus. The research presented through this study and others have also underscored the gap in the utility of NSSE where it categorizes several factors as institutional but stops short of including details needed to create the environments best suited for diverse students. Interestingly, Kuh and Love (2000) found in addressing these critiques that

students who come from a family whose culture is different from the dominant campus culture has a greater likelihood of leaving. Studies that followed this one, by Museus, countered Kuh and Love (2000) and found that only very extreme dissonance acted as a barrier to success and that students who find either an individual and/or a subculture that valued academic achievement, was more likely to succeed. There have been multiple studies that include NSSE data and bring in other elements to address institutional barriers, differences between groups of students from different races, and that point to climate and campus culture challenges (Kitchen, 2014; Mandernach, 2015; Zhang, 2018). These bring into question whether there is something missing in the NSSE survey to address the campus environment and culture more directly; the culture on campus and the cultural lens the student uses to understand their experience and engagement.

Impacts of Excluding Culture and Racist Structures on a Deep Sense of Belonging

Kabalkin (2021) conducted a study to examine exclusionary practices on campuses, to hear student stories and identify key themes to address to improve equity and belonging. These included: belonging and community; imposter syndrome and code switching; White saviorism; tokenism and taxation on BIPOC; stress due to finance and family; microaggression and racism; and mental health. Instead of taking a deficit approach and looking for risk factors, the researcher recommended focus on strengths, resilience, more representation across faculty and health care providers, a campus resource center with peer mentors, and training around equity and inclusion along with accountability for racism. Similar findings came from a study that examined these themes for a diverse student population and added a quantitative lement that measured their statistical power as support or barriers to retention (Kornbluth, Vierra, & Hernstadt, 2021). The institutional lack of representation was a barrier, and this was buffered by social, cultural, and

resistance capital. These studies provide evidence that institutions need to understand elements associated with race and culture and then measure relationships to success.

From a different lens, Nelson, Graham and Rudin (2021) studied how organizational structures allow for conversations on campus about race while maintaining structures that promote segregation and engage access to resources for White students through racially homogenized practices. Further, while diversity commitments may be prevalent in campus materials and promoted to enhance learning, vague goals and commitments guard against change. The authors discussed the danger of 'diversity scripts', where engagement with others is tokenized and doesn't critically examine the inequitable distribution of power. The researchers argue for the need to changing the diversity script away from actions that commodify transactions with diverse others in a way that taxes the marginalized students for the benefit of their better represented peers. Further, campus values of being friendly and welcoming can disguise the polarization that exists beyond campus walls that impact it and create a false claim for 'colorblindness' that further segregates students. The authors emphasize the need to dismantle the 'script of silence' by building a power analysis frame, where the institution intentionally develops systems toward this, and trains faculty, staff and students to address bias, exclusionary practices, and racist structures.

The nature of the research over the past decade has included more elements of educational activism and educational justice. Universities, especially minority serving, no longer look for students to assimilate to the culture of the institution. This has included methods that consider different ways of knowing and gathering student voice, to see how the campus is shaping student experience and shaped by students. There is room for future research on this topic to support mixed methods approaches, to integrate voices of students, and to examine the

way that culture is treated in the organizational structure, policies, procedures, pedagogy, and informal spaces.

The sample in this study demonstrated that when the student body includes mostly underserved students from historically underrepresented groups, the existing frameworks may not apply; whereas these frameworks have been tested on campuses where the underrepresented groups are a small fraction of the study body. Uncovering the barriers for student success are more critical now more than ever, as the pandemic has intensified the digital divide and challenges for first generation students.

Theme III: COVID-19 Pandemic Pressures that Highlight Longstanding Inequity

Connecting questions 1,2 and 3, it's interesting that student involvement had a higher mean value as compared to institutional engagement, and then washed out of the inferential analysis. Perhaps the quality of engagement and learning strategies were favorable, but there were not enough, or they were not learned at depth, to be able to impact learning. The next section will unpack diverse discussions, but it's also possible that this took on a different hue during the social/political unrest of 2020. Specifically, the local region posted protests, police shootings of Black/African American people, and hate crimes daily. It's possible that the students were flooded with difficult content through their own experiences within their families and communities and in the mainstream and social media. Therefore, whereas students might have otherwise engaged in discussion with diverse others, this was too highly charged for faculty who felt unequipped to address in their classroom and/or the content and disciplinary study could have been a refuge from the social/political/economic environment.

Reliability isn't validity: challenges when URM is majority and context changes

However, there could be more to learn about validity of the belonging questions for the institution studied. When students were asked about sense of belonging and community – the questions don't specify to which aspect of the campus or subcommunity. A student may feel belonging in a resource center associated with the student identity or in the advising center, but not in the classroom – hence the belonging may not associate with learning. Further, if a student has a strong sense of belonging and then fails one or more classes, the student may begin to question if they truly do belong at the institution. Studies have found that it the relationship between sense of belonging in the classroom and at the university was unclear (Freeman, Anderman, & Jensen, 2007). While belonging has been long studied in college, it only recently was recognized as an independent construct. However, the NSSE 3-item factor was introduced for the first time in this cycle.

Natural growth and concerted cultivation

The challenges that students from working-class and marginalized communities face beyond collectivist culture was further explained using the opposing lenses of concerted cultivation and natural growth established by Lareau (Wilson & Worsley, 2021). Middle class families have resources to buttress their children's education with supplemental instruction and extracurricular activities. These children grow up advantaged insomuch as they receive support, but in the context of this study, they also develop the habits and expectations of asking for help, questioning content, engaging in conversations with people for whom there's a power differential, and working with peers. On the other hand, students who are raised through a natural growth model of parenting are more likely to provide unstructured learning and encourage

exploration. This is argued to perpetuate a systemic disadvantage within the current educational system.

The survey was distributed during the COVID-19 pandemic, and technology barriers added another layer to existing challenges for student involvement. A study produced by the Pew Research Center (Rainie, 2020) noted significant differences in a digital divide when comparing students by their parent's income level. The lack of internet connection, computing devices, and support for effective teaching and learning online, has widened the existing equity gap in access to technology, ability to complete coursework, digital literacy, and digital fluency. The survey results indicated that students in lower income homes are more worried about falling behind. Specifically, lower income students were four times as likely to have to do their work on a cell phone, to leave home to access public Wi-Fi, and not to be able to complete work due to lack of a computer, as compared to upper income students.

Belonging validity during COVID

The scale for belonging was developed in line with research by Strayhorn (2019), which included both quantitative and qualitative studies including Black/African American students. However, an additional layer was added during the COVID context. Whereas students were unable to take courses on campus and to spend time in spaces, places, and offices that were designed to provide support, their expectation and understand of belonging may have been altered in Spring 2020. Further, what students were seeking in this context may have been different; such that students did not have the bandwidth as discussed earlier, to take part in occasions that would help them know that they were valued by the campus and that they could be themselves within the community.

Findings for retention in research question three and subsequent analyses must be interpreted in context of the COVID-19 pandemic. As noted earlier in this study, COVID-19 cases, hospitalizations, and deaths were greater in the area immediately surrounding the campus as compared to the state and nation overall. Therefore, the exogenous factors related to financial strains, commitments to long hours and/or multiple jobs, and/or caretaking, were reported by students to interfere with their plans for studying and continuing enrollment. Held up against the theory of bandwidth, it's possible that the student capacity was tapped in the timeframe of this study (Verschelden, 2107). That is, they simply did not have the bandwidth to do all that was needed to address economic, health, social, and academic demands. The retention rate from fall to spring was 87%, and this decreased to 84% for Fall 2020-Spring 2021. Outreach to students through retention specialists and resilience studies found that some students were unable to make satisfactory academic progress, some had financial hardships, and others were fatigued, exhausted, and decided to take a stop out in their enrollment.

Challenges to connecting and quality of interactions

In the context of COVID-19, the move to emergency remote instruction, and social-political unrest, there were many potential distractions for faculty and students. Faculty noted how much more difficult it was to connect with students and that they were unable to learn about students as easily. Students who lacked bandwidth and were unable to use a camera may have felt less included. Faculty as well reported that it was more difficult to connect to students in 'squares' and to create community or to use the same effective teaching practices (Tugend, 2020). At the same time, while faculty yearn to create community, noted that faculty and students felt isolated, depressed, and easily distracted by social media, or the ease of switching to multitasking (Berke, 2020). Faculty can adopt approaches like check ins and break out rooms,

but they are not as effective in a fully virtual environment as the face-to-face equivalent. Connecting with students in the spaces between lessons is harder to do. This may not counter but endorse theorists (Mandernach, 2015, Rendon & Munoz, 2011), but hold that students were not able to experience engagement in the same way in an emergency remote environment, thereby lacking the relationship with learning and retention.

The racial-ethnic disparities in the pandemic are the result of pre-pandemic reality; structural discrimination has led to limited access to resources and opportunity for people of color (Nunez-Smith, 2020). An examination of the impact of COVID 19 by race and ethnicity found that Black communities were disproportionately impacted by COVID-19 and reported significantly more cases and deaths (Artiga, Corallo, & Pham, 2020). The mental health needs and institutional support for students is different now, than it was pre-pandemic. With half of students surveyed in another report experiencing anxiety and three in five reporting basic needs, meeting student needs and establishing trust is paramount (Briggs. 2021). This may begin with acknowledging recent history while centering student perspectives. Beginning in this direction can pave the way for deeper reconciliation, healing, and justice for recent and distant issues.

Institutions can change practices to address and increase student bandwidth so that they can achieve social and economic mobility, and thrive (Verschelden, 2017). The idea of bandwidth tax and ways to recover this came out of economic studies, where people who live in poverty and have less social capital are not able to access all their cognitive resources because they are worried about having enough money for what's coming next (Mullainath & Shafir, 2013). COVID-19 has exacerbated this economic element of bandwidth, as reported by the California Student Aid Commission (2021). In a Spring 2020 survey with over 60,000 responses, the report cited student comments about uncertainty, stress on bandwidth from COVID-19,

falling behind, and impact on ability to pay for school. A full seventy percent of students lost some or all their income during the pandemic and most had to change their living arrangements.

NSSE is one of the most widely used college student surveys and the survey methodology and use national data are easy to find and use. The leaders also support webinars and host discussions about the key findings, new module findings, and case studies to expand use and research. However, more could be done to understand how applicable the instrument is to settings that are different from the initial sample and institutions that are PWI and elite. Where institutions serve a diverse, first generation, commuter campus, it seems the framework may not be as appropriate. Through the process of this research project, there was no loss for published peer reviewed studies and dissertations that leveraged this instrument in multiple ways. And yet, this vast body of knowledge seems diffuse. How do these studies impact the next module, the new look at the theoretical framework, or the testing of the validity for students as their needs and points of view evolve?

This study aimed to demonstrate the importance of linking survey data to student progress data when making statements about the connections of experiences with student success. To be sure, the series of analyses demonstrated that while students may report on a survey that they experienced a sense of belonging, were involved, and engaged, this does not necessarily translate into learning and retention. In the sample, students who reported high versus low sense of belonging did report different levels of engagement. However, these experiences did not translate into reliably predicting retention.

References

Abes, E. S. (2009). Theoretical borderlands: Using multiple theoretical perspectives to challenge inequitable power structures in student development theory. *Journal of college student development, 50*(2), 141-156.

Arum, R., & Roska, J. (2011). Academically adrift: Limited learning on college campuses. University of Chicago Press.

Astin, A. W. (1977). Four Critical Years. Effects of College on Beliefs, Attitudes, and Knowledge.

Astin A. W. (1984) Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*, 297–308.

Axelson, R. D., & Flick, A. (2011). Defining student engagement. *Change: The magazine of higher learning, 43*(1), 38-43.

Baumeister, R. F., & Leary, M. R. (2017). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. Interpersonal development, 57-89.

Bean, J. P., & Metzner, B. S. (1985). A Conceptual Model of Nontraditional Undergraduate Student Attrition. *Review of Educational Research, 55*(4), 485–540. https://doi.org/10.3102/00346543055004485

Berke, C. (2020). School has lost its connection. Both students and teachers are feeling it.

EdSurge. https://www.edsurge.com/news/2020-10-27-school-has-lost-its-connection-both-students-and-teachers-are-feeling-it

Bowman, N. A. (2010). College Diversity Experiences and Cognitive Development: A Meta-Analysis. *Review of Educational Research, 80*(1), 4–33. https://doi.org/10.3102/0034654309352495

Brainard, S. G., & Carlin, L. (1997, November). A longitudinal study of undergraduate women in engineering and science. In *Proceedings Frontiers in Education 1997 27th Annual Conference. Teaching and Learning in an Era of Change* (Vol. 1, pp. 134-143). IEEE.

Braxton, J. M., Jones, W. A., Hirschy, A. S., & Hartley III, H. V. (2008). The role of active learning in college student persistence. *New directions for teaching and learning, 2008*(115), 71-83.

BrckaLorenz, A., Ribera, T., Kinzie, J., & Cole, E. R. (2012). Examining effective faculty practice: Teaching clarity and student engagement. *To Improve the Academy, 31*(1), 148-159.

Bontrager, B., & Hossler, D. (2015). *Handbook of Strategic Enrollment Management.* John Wiley & Sons.

Bourdieu, P. (1977). The economics of linguistic exchanges. *Social science information, 16*(6), 645-668.

Broekemier, G. M. (2002). A comparison of two-year and four-year adult students: Motivations

to attend college and the importance of choice criteria. *Journal of Marketing for Higher Education, 12*(1), 31-48.

Brooms, D., Clark, J., & Smith, M. (2018). *Race, Resilience, and Naming One's Own Reality in the Transition to College. In Empowering Men of Color on Campus: Building Student Community in Higher Education*. Rutgers University Press. http://www.jstor.org/stable/j.ctt1vjqqp8.5

Bryan, T. J. (2006). Pathways to student success at Fayetteville State University. In F. W. Hale Jr. (Ed.), *How black colleges empower black students* (pp. 177-189). Stylus.

Bryant, N. (2016). *The Influence of the TRIO Student Support Services Program on First-Generation Students: An Exploratory Study.* University of Massachusetts, Boston. https://scholarworks.umb.edu/doctoral_dissertations/289/

Cabrera, N. L., Miner, D. D., & Milem, J. F. (2013). Can a summer bridge program impact first year persistence and performance? A case study of the New Start Program. *Research in Higher Education, 54*, 481-498.

Camara, W. (2013). Defining and measuring college and career readiness: A validation framework. *Educational Measurement: Issues and Practice, 32*(4), 16-27.

Carle, A. C., Jaffee, D., Vaughan, N. W., & Eder, D. (2009). Psychometric properties of three new national survey of student engagement-based engagement scales: An item response theory analysis. *Research in Higher Education, 50*(8), 775-794.

Carnevale, A. P. & Smith, N. (2018). Balancing Work and Learning: Implications for Low-Income Students. Center on Education and the Workforce, Georgetown University. http://hdl.handle.net/10919/87047

Carnoy, M. (1996). *Faded dreams*: *The politics and economics of race in America*. Cambridge University Press.

Carter, D. F. (2006). Key issues in the persistence of underrepresented minority students. *New Directions for Institutional Research,* 33–46. https://doi.org/10.1002/ir.178

Carter, D. F., Locks, A. M., & Winkle-Wagner, R. (2013). From When and Where I Enter: Theoretical and Empirical Considerations of Minority Students' Transition to College. In M. B. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research: Volume 28* (pp. 93–149). Dordrecht: Springer. https://doi.org/10.1007/978-94-007-5836-0_3

Carter, J. D., & Fountaine, T. P. (2012). An Analysis of White Student Engagement at Public HBCUs. *Educational Foundations, 26*, 49-66.

Chen, P. S. D., Gonyea, R. M., Sarraf, S. A., BrckaLorenz, A., Korkmaz, A., Lambert, A. D., & Williams, J. M. (2009). Analyzing and interpreting NSSE data. *New Directions for Institutional Research, 2009*(141), 35-54.

Chetty, R., Friedman, J. N., Saez, E., Turner, N., & Yagan, D. (2017) Mobility Report Cards: The Role of Colleges in Intergenerational Mobility. The Equality of Opportunity Project. http://www.equality-of opportunity.org/papers/coll_mrc_paper.pdf

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

Choi, Y. (2018). Student Employment and Persistence: Evidence of Effect Heterogeneity of Student Employment on College Dropout. *Research in Higher Education, 59*(1), 88-107.

Choy, S. (2002). Nontraditional Undergraduates: Findings from the Condition of Education National Center for Education Statistics.

Cody, P. V. (2017). A profile of UC Davis student organization leaders and their academic achievement. University of California, Davis. https://www.proquest.com/openview/03fd2b9bf7c88b5b92994df9285f5a11/1?pq-origsite=gscholar&cbl=18750

Cokley, K. (2000). An investigation of academic self-concept and its relationship to academic achievement in African American college students. *Journal of Black psychology, 26*(2), 148-164.

College Board. (2015). Trends in Higher Education. The College Board. https://www.collegeboard.org/?navId=trends-cb.

Copeland, K. J., & Levesque-Bristol, C. (2011). The retention dilemma: Effectively reaching the first-year university student. *Journal of College Student Retention: Research, Theory & Practice, 12*(4), 485-515.

de Brey, C., Snyder, T. D., Zhang, A., & Dillow, S. A. (2021). *Digest of Education Statistics*

2019. NCES 2021-009. National Center for Education Statistics.

Delialioğlu, Ö. (2012). Student engagement in blended learning environments with lecture-based and problem-based instructional approaches. *Journal of Educational Technology & Society, 15*(3), 310–322.

Denson, N., & Chang, M. J. (2009). Racial Diversity Matters: The Impact of Diversity-Related Student Engagement and Institutional Context. *American Educational Research Journal, 46*(2), 322–353. https://doi.org/10.3102/0002831208323278

DeVellis, R. (2011). *Scale Development*. Sage Publications, Inc. ISBN: 9781412980449.

Downey, D. B., & Condron, D. J. (2016). Fifty years since the Coleman Report: Rethinking the relationship between schools and inequality. *Sociology of Education, 89*(3), 207-220.

Durkheim, E. (1956). *Education and sociology*. Simon and Schuster.

Eccles, J. S. (2016). Engagement: Where to next? *Learning and Instruction*, 43, 71–75. https://doi.org/10.1016/j.learninstruc.2016.02.003

Engle, J., & Tinto, V. (2008). *Moving beyond access: College success for low-income, first-generation students*. Pell Institute for the Study of Opportunity in Higher Education.

Flatt, C. & Jacobs, R.L. (2019). Principle Assumptions of Regression Analysis: Testing, Techniques, and Statistical Reporting of Imperfect Data Sets. *Advances in Developing Human Resources. 21*(4):484-502. https://doi:10.1177/1523422319869915

Fleming, J. (2001). The impact of a historically Black college on African American students:

The case of LeMoyne-Owen College. *Urban Education, 36*(5), 597-610.

Flowers, L. A. (2004). Retaining African American students in higher education: Integrative review. *Journal of College Student Retention: Research, Theory & Practice*, 6(1), 23-35.

Fosnacht, K., & Gonyea, R. M. (2018). The Dependability of the Updated NSSE: A Generalizability Study. *Research & Practice in Assessment*, 13, 62-73.

Freeman, T. M., Anderman, L. H., & Jensen, J. M. (2007). Sense of Belonging in College Freshmen at the Classroom and Campus Levels. *The Journal of Experimental Education, 75*(3), 203–220. http://www.jstor.org/stable/20157456

Gearey & Sentz, (2020). Using Social Determinants of Health to Fight COVID-19 and get the Economy Back on Its Feet. https://economicmodeling.com/covid-19-health-risk-index-paper/

Green, M., Emery, A., Sanders, M., & Anderman, L. H. (2016). Another Path to Belonging: A Case Study of Middle School Students' Perspectives, *The Educational and Developmental Psychologist*, 33,85 – 96.

Geiger, R. (2014). *The History of American Higher Education: Learning and Culture from the Founding to World War II.* Princeton University Press.

Giri, I., & Chetty, P. (2017, Nov 05). *How to conduct path analysis*. Knowledge Tank; Project Guru. https://www.projectguru.in/conduct-path-analysis/

Goldrick-Rab, S. (2016). *Paying the Price: College Costs, Financial Aid, and the Betrayal of the*

American Dream. University of Chicago Press.

Good, C., Rattan, A. & Dweck, C. (2012). Why Do Women Opt Out? Sense of Belonging and Women's Representation in Mathematics. *Journal of Personality and Social Psychology.* 102, 700–717. https://doi:10.1037/a0026659.

Gurin, P., Dey, E., Hurtado, S., & Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes. *Harvard Educational Review, 72*(3), 330–367.

Harper, S. R. (2004). The measure of a man: Conceptualizations of masculinity among high-achieving African American male college students. *Berkeley Journal of Sociology*, 89-107.

Harper, S. R. (2009). Race-conscious student engagement practices and the equitable distribution of enriching educational experiences. *Liberal Education, 95*(4). https://works.bepress.com/sharper/30/

Harper, S. R., & Hurtado, S. (2007). Nine themes in campus racial climates and implications for institutional transformation. *New Directions for Student Services, 2007*(120), 7–24. https://doi.org/10.1002/ss.254

Harper, S., & Newman, C. (2016). Surprise, sensemaking, and success in the first college year: Black undergraduate men's academic adjustment experiences. *Teachers College Record, 118*(6), 1-30.

Harper, S. R., & Quaye, S. J. (2009). Beyond sameness, with engagement and outcomes for

all. *Student engagement in higher education*, 1-15.

Hausmann, L. R. M., Schofield, J. W., & Woods, R. L. (2007). Sense of belonging as a predictor of intentions to persist among African American and White first-year college students. *Research in Higher Education, 48*(7), 803–839.

Hernandez, P. R., Bloodhart, B., Barnes, R. T., Adams, A. S., Clinton, S. M., Pollack, I., &… Fischer, E. V. (2017). Promoting professional identity, motivation, and persistence: Benefits of an informal mentoring program for female undergraduate students. *PLoS ONE, 12*(11), 1–16. https://doi.org/10.1371/journal.pone.0187531

Hittepole, C. (2019). Nontraditional students: Supporting changing student populations. University of Denver. A guide for Chief Academic Officers and Chief Student Affairs Officers. https://www.naspa.org/images/uploads/main/Hittepole_NASPA_Memo.pdf

Hu, S., & Kuh, G. D. (2002). Being (dis) engaged in educationally purposeful activities: The influences of student and institutional characteristics. *Research in higher education, 43*(5), 555-575.

Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of education,* 324-345.

Hurtado, S., Carter, D.F. & Spuler, (1996). A. Latino student transition to college: Assessing difficulties and factors in successful college adjustment. *Research in Higher Education* 37, 135–157https://doi.org/10.1007/BF01730113

Jehangir, R. R., Stebleton, M. J., & Deenanath, V. (2015). An Exploration of Intersecting Identities of First-Generation, Low-Income Students. Research Reports on College Transitions No. 5. National Resource Center for the First-Year Experience and Students in Transition.

Jett, C. C. (2011). HBCUs propel African American male mathematics majors. *Journal of African American Studies,* 17, 189-205.

Johnson, S. (2017). Michelle Obama's Better Make Room Campaign Aims to Help Students Text Their Way to College. *EdSurge*. https://www.edsurge.com/news/2017-09-21-michelle-obama-s-better-make-room-campaign-aims-to-help-students-text-their-way-to-college

Juarez, D. R. (2017). *Creating an environment of success: community college faculty efforts to engage in quality faculty-student interactions to contribute to a first-generation student's perception of belonging* (Doctoral dissertation, Pepperdine University).

Kabalkin, N. (2021) Addressing Barriers to College Completion for BIPOC First Generation Students: Recommendations to Improve Students' Sense of Belonging and College Persistence Outcomes. Doctorate in Social Work (DSW) Dissertations. 157. https://repository.upenn.edu/edissertations_sp2/157

Kahu, E. R., & Nelson, K. (2018). Student engagement in the educational interface: understanding the mechanisms of student success. *Higher education research & development, 37*(1), 58-71.

Kemp, A. D. (1990). From matriculation to graduation: Focusing beyond minority retention. *Journal of Multicultural Counseling and Development, 18*(3), 144-49.

Kezar, A. J., & Kinzie, J. (2006). Examining the ways institutions create student engagement: The role of mission. *Journal of College Student Development, 47*(2), 149-172.

Kezar, A., & Kitchen, J. A. (2020). Supporting first-generation, low-income, and underrepresented students' transitions to college through comprehensive and integrated programs. *American Behavioral Scientist, 64*(3), 223-229.

Kinzie, J. BrcaLorenz, A., & Lofton, C. (2020). Do your students feel they belong? Webinar https://scholarworks.iu.edu/dspace/handle/2022/25967

Kinzie, J., McCormick, A. C., Gonyea, R. M., & Núñez, E. (2019). Documenting the value of higher education with student engagement data. Association of American Colleges and Universities Annual Meeting.

Kinzie, J., & Kuh, G. (2016). Review of student success frameworks to mobilize higher education. Center for Postsecondary Research. http://cpr. indiana. edu.

Kitchen, J. A. (2014). The Relationship of Student Involvement, Institutional Engagement, and Sense of Belonging among Students of Color at a Predominantly White Institution (Doctoral dissertation, The Ohio State University).

Korkmaz, A., & Gonyea, R. M. (2008). The effect of precollege engagement on the likelihood of response to the National Survey of Student Engagement. In annual meeting

of the Association for Institutional Research.

Kruger, K., & Peck, A. (2017). Disruption, change, and telling the story of student affairs: An introduction. In A. Peck (Ed.), Engagement and employability: Integrating career learning through co-curricular experiences in postsecondary education (pp. xi-xxxi). NASPA - Student Affairs in Higher Education.

Kuh, G. D., & Hu, S. (2001). The effects of student-faculty interaction in the 1990s. *The review of higher education, 24*(3), 309-332.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2011). Fostering student success in hard times. Change: *The magazine of higher learning, 43*(4), 13-19.

Kuh, G. D., Kinzie, J. L., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2006). What matters to student success: A review of the literature (Vol. 8). National Postsecondary Education Cooperative.

Kuh, G., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C., (2007). Piecing Together the Student Success Puzzle: Research, Propositions, and Recommendations. *ASHE Higher Education Report, 32*(5). Wiley

Kuh, G. D., O'Donnell, K., & Reed, S. D. (2013). Ensuring quality & taking high impact practices to scale. AAC & U, Association of American Colleges and Universities.

Lareau, A. (2002). Invisible inequality: Social class and childrearing in black families and white families. *American sociological review*, 747-776.

Lohfink, M. M., & Paulsen, M. B. (2005). Comparing the determinants of persistence for first-generation and continuing-generation students. *Journal of College Student Development, 46*(4), 409–428.

Long, B. (2014) Addressing the Academic Barriers to Higher Education. The Hamilton Project on Supporting Disadvantaged Youth. The Brookings Institute Report. https://www.brookings.edu/research/addressing-the-academic-barriers-to-higher-education/

Lord, S. M., Ohland, M. W., Layton, R. A., & Camacho, M. M. (2019). Beyond pipeline and pathways: Ecosystem metrics. *Journal of Engineering Education, 108*(1), 32-56.

Lowe, P. (2020). The recovery from a very uneven recession. Address to the Governor of the Reserve Bank of Australia, at Citi's 12th Annual Australia and New Zealand Investment Conference.

McIntosh, P. (2012). Reflections and Future Directions for Privileged Students. Special Issue: Systems of Privilege: Intersections, Awareness, and Applications (68) 194-206.

McNair, T.B. (2021). *Reimagining How We Define Equity Gaps: Decentering Whiteness and Privilege.* American Association of Colleges and Universities. https://www.aacu.org/blog/reimagining-how-we-define-equity-gaps-decentering-whiteness-and-privilege

McNair, T. B., Albertine, S., Cooper, M. A., McDonald, N., & Major Jr, T. (2016). *Becoming a*

student-ready college: A new culture of leadership for student success. John Wiley & Sons.

Mandernach, B. J. (2015). Assessment of student engagement in higher education: A synthesis of literature and assessment tools. *International Journal of Learning, Teaching and Educational Research, 12*(2). https://www.aajhss.org/index.php/ijlter/article/view/367

Manyanga, F., Sithole, A., & Hanson, S. M. (n.d.). Comparison of Student Retention Models in Undergraduate Education from the Past Eight Decades, 13.

Maramba, D. C., & Palmer, R. T. (2014). The impact of cultural validation on the college experiences of Southeast Asian American students. *Journal of College Student Development, 55*(6), 515-530.

Maramba, D. C., & Velasquez, P. (2012). Influences of the Campus Experience on the Ethnic Identity Development of Students of Color. *Education and Urban Society, 44*(3), 294–317. https://doi.org/10.1177/0013124510393239

Marisotis, J. (2015). *America Needs Talent: Attracting, Educating & Deploying the 21st-Century Workforce.* Rosetta Books.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370-96.

Moody, J. (2020). Diversity in college and why it matters. U.S. News and World Report. https://www.usnews.com/ education/best-colleges/articles/diversity-in-college-and-why-it-matters?utm_source=usn_tw

Moore, C., Schrager, C., & Bracco, K. R. (2017). *From Scatterplot to Roadmap: New Efforts to Improve Student Success in the California State University*. Education Insights Center.

Moore, R., & Chapman, K. (2020). When the Economy Slows, University Degrees Deliver Great Value. *CSUN Today*. https://csunshinetoday.csun.edu/community/when-economy-slows-university-degrees-deliver-great-value-csun-experts/

Moore, T. L., & Mendez, J. P. (2014). Civic Engagement and Organizational Learning Strategies for Student Success: Civic Engagement and Organizational Learning Strategies. *New Directions for Higher Education, 2014*(165), 31–40. https://doi.org/10.1002/he.20081

Museus, S. D. & Maramba, D. C. (2010). The impact of culture on Filipino American students' sense of belonging. *Review of Higher Education, 34*, 231-258.

Museus, S. D. (2014). The Culturally Engaging Campus Environments (CECE) Model: A New Theory of Success Among Racially Diverse College Student Populations. In M. B. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research* (Vol. 29, pp. 189–227). Dordrecht: Springer. https://doi.org/10.1007/978-94-017-8005-6_5

National Center for Education Statistics. (2019). Integrated Postsecondary Education Data System. https://nces.ed.gov/ipeds/

Nelson, I. A., Graham, H. J., Rudin, N. (2021). Saving Face While (Not) Talking about Race: How Undergraduates Inhabit Racialized Structures at an Elite and Predominantly White College, *Social Problems*. https://doi.org/10.1093/socpro/spab045

Nelson Laird, T. F. (2005). College Students? Experiences with Diversity and Their Effects on Academic Self-Confidence, Social Agency, and Disposition toward Critical Thinking. *Research in Higher Education, 46*(4), 365–387. https://doi.org/10.1007/s11162-005-2966-1

Nora, A., & Cabrera, A. F., (1996). The role of perceptions of prejudice and discrimination on the adjustment of minority students to college. *Journal of Higher Education, 67*(2), 119–148.

O'Connor, M., Perez, G., Jenkins, C., & Rothberg, L. (2016). Transforming First-Generation College Experience. *EAB Student Affairs Forum*.

Ojeda, L., Castillo, L. G., Meza, R. R., & Pina-Watson, B. (2014). Mexican Americans in higher education: Cultural adaptation and marginalization as predictors of college persistence intentions and life satisfaction. *Journal of Hispanic Higher Education, 13* (1), 3-14.

Oseguera, L., & Rhee, B. S. (2009). The Influence of Institutional Retention Climates on Student Persistence to Degree Completion: A Multilevel Approach. *Research in Higher Education, 50*(6), 546–569. https://doi.org/10.1007/s11162-009-9134-y

Palmer, R. T. (2019). Examining Effective Practices at Minority-Serving Institutions: Beyond a Deficit Framing of Leadership and Overview of Chapters. In Examining Effective Practices at Minority-Serving Institutions (pp. 1-10). Palgrave Macmillan, Cham.

Palmer, R. T., Wood, J. L., Dancy, T. E., & Strayhorn, T. L. (2014). Black Male Collegians:

Increasing Access, Retention, and Persistence in Higher Education: *ASHE Higher Education Report* 40: 3. John Wiley & Sons.

Pascarella, E. T., & Terenzini, P. T. (2005). How college affects students: A third decade of research (Vol. 2). Jossey-Bass.

Patton, L. D., Renn, K. A., Guido, F. M., & Quaye, S. J. (2016). *Student development in college: Theory, research, and practice.* John Wiley & Sons.

Perna, L. W. (2006). Studying college access and choice: A proposed conceptual model. *Higher Education* (pp. 99-157). Springer.

Perna, L. (2010). *Understanding the Working College Student: New Research and Its Implications for Policy and Practice.* Stylus Publishing.

Perna, L. W., & Finney, J. (2014). *The attainment agenda: State policy leadership in higher education.* Johns Hopkins University Press.

Perna, L. W., & Thomas, S. L. (2008). Theoretical perspectives on student success: Understanding the contributions of the disciplines. *ASHE-Higher Education Reader Report, 34*(1). Jossey-Bass.

Pike, G. R. (2013). NSSE benchmarks and institutional outcomes: A note on the importance of considering the intended uses of a measure in validity studies. *Research in Higher Education, 54*(2), 149-170.

Pike, G. R., Kuh, G. D., & Gonyea, R. M. (2003). The relationship between institutional mission

and students' involvement and educational outcomes. *Research in Higher Education, 44*(2), 241-261.

Ravilochan, T. (2021). *The Blackfoot Wisdom that Inspired Maslow's Hierarchy.* https://gatherfor.medium.com/maslow-got-it-wrong-ae45d6217a8c

Reason, R. D. (2009). An Examination of Persistence Research Through the Lens of a Comprehensive Conceptual Framework. *Journal of College Student Development, 50*(6), 659–682. https://doi.org/10.1353/csd.0.0098

Reese, L. (2018). Ten things you need to know about nontraditional students. Forward Online. https://foreword.mbsbooks.com/10-things-you-need-to-know-about-nontraditional-students#gsc.tab=0

Rendón, L. I. (1994). Validating culturally diverse students: Toward a new model of learning and student development. *Innovative Higher Education 19* (1): 33–51.

Rendón, L. I. (2006). *Reconceptualizing success for underserved students in higher education.*

Rendón, L. I., Jalomo, R. E., & Nora, A. (2000). Theoretical considerations in the study of minority student retention in higher education. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 127-156). Vanderbilt University Press.

Rendon, L. & Munoz, S. (2011) Revisiting validation theory: Theoretical foundations, applications, and extensions. *Enrollment Management Journal 12* (33).

Roksa, J., Kinsley, P. (2019) The Role of Family Support in Facilitating Academic Success of

Low-Income Students. *Res High Educ* 60, 415–436. https://doi-org.ccl.idm.oclc.org/10.1007/s11162-018-9517-z

Roksa, J., & Velez, M. (2012). A late start: Delayed entry, life course transitions and bachelor's degree completion. *Social forces, 90*(3), 769-794.

RTI International. (2019). First Generation College Students: Demographic Characteristics and Post-Secondary Enrollment. NASPA. https:firstgen.naspa.org/files/dmfile/FactSheet-01.pdf

Schneider, M. (2010). Finishing the First Lap: The Cost of First Year Student Attrition in America's Four-Year Colleges and Universities. *American Institutes for Research.*

Schlossberg, N. K. (1989). Marginality and mattering: Key issues in building community. *New directions for student services, 48*(1), 5-15.

Schreiner (2010). The "Thriving Quotient": A New Vision for Student Success. *About Campus 15*(2):2-10. DOI:10.1002/abc.20016

Sedlacek, W. E. (2004). *Beyond the big test: Noncognitive assessment in higher education*. Jossey-Bass, Wiley.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. Journal of personality and social psychology, 69(5), 797.

Strayhorn, T. L. (2012). Satisfaction and retention among African American men at two-year

community colleges. *Community College Journal of Research and Practice, 36*(5), 358-375.

Suzuki, A., Amrein-Beardsley, A., & Perry, N. J. (2012). A summer bridge program for underprepared first year students: Confidence, community, and re-enrollment. *Journal for First-Year Experience & Students in Transition, 24* (2), 85-106.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of educational research, 45*(1), 89-125.

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition.* University of Chicago Press.

Tinto, V., & Engstrom, C. (2008). Access without support is not opportunity. *Inside Higher Ed,* 9, 8-18.

Tinto, V. (2012). *Completing College: Rethinking Institutional Action*. University of Chicago Press.

Tovar, E., Simon, M. A., & Lee, H. B. (2009). Development and validation of the college mattering inventory with diverse urban college students. *Measurement and Evaluation in Counseling and Development, 42*(3), 154-178.

Tugend, A. (2020). *On the Verge of Burnout: COVID 19's Impact on Faculty Well Being and Career Plans.* The Chronicle of Higher Education.

Tyson, C. (2014). The 'Murky Middle'. *Inside Higher Ed*. 10.

https://www.insidehighered.com/news/2014/09/10/maximize-graduation-rates-colleges-should-focus-middle-range-students-research-shows

Vermetten, Y. J., Lodewijks, H. G., & Vermunt, J. D. (1999). Consistency and variability of learning strategies in different university courses. *Higher Education, 37*(1), 1-21.

Verschelden, C. (2017). Bandwidth recovery: Helping students reclaim cognitive resources lost to poverty, racism, and social marginalization. Stylus Publishing, LLC.

Walton, G. M., & Cohen, G. L. (2007). A question of belonging: race, social fit, and achievement. *Journal of personality and social psychology, 92*(1), 82.

Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science, 331*(6023), 1447-1451.

Wang, X. (2015). Pathway to a baccalaureate in STEM fields: Are community colleges a viable route and does early STEM momentum matter? *Educational Evaluation and Policy Analysis, 37*(3), 376-393.

Ward, J. V. (2018) Lessons in Resistance and Resilience. Diversity and Democracy, 21 (1).

Wilson, D., Jones, D., Bocell, F. et al (2015). Belonging and Academic Engagement Among Undergraduate STEM Students: A Multi-institutional Study. Research in Higher Education 56, 750–776. https://doi.org/10.1007/s11162-015-9367-x

Wilson, S. & Worsley, A. (2021). Unequal childhoods: a case study application of Lareau's

accomplishment of natural growth in British working-class and poor families. British Educational Research Journal 47(3), 770-786.

Winkle-Wagner, R., & Locks, A. M. (2014). Diversity and Inclusion on Campus: Supporting Racially and Ethnically Underrepresented Students. New York: Routledge.

Wolf-Wendel, L., Ward, K., & Kinzie, J. (2009). A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success. *Journal of College Student Development, 50*(4), 407-428.

Yosso, T., Smith, W., Ceja, M., & Solórzano, D. (2009). Critical race theory, racial microaggressions, and campus racial climate for Latina/o undergraduates. *Harvard Educational Review, 79*(4), 659-691.

Zhang, B. (2018). Predicting Student Retention Based on NSSE Data. Presentation at the Southern Association for Institutional Research Conference.

Appendices

Appendix A: NSSE Survey Instrument (U.S. English Version)

During the current school year, about how often have you done the following?

Response options: Very often, Often, Sometimes, Never

a. Asked questions or contributed to course discussions in other ways

b. Come to class without completing readings or assignments

c. Attended an art exhibit, play, or other arts performance (dance, music, etc.)

d. Asked another student to help you understand course material

e. Explained course material to one or more students

f. Prepared for exams by discussing or working through course material with other students

g. Worked with other students on course projects or assignments

h. Given a course presentation

2. During the current school year, about how often have you done the following?

Response options: Very often, Often, Sometimes, Never

a. Combined ideas from different courses when completing assignments

b. Connected your learning to societal problems or issues

c. Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments

d. Examined the strengths and weaknesses of your own views on a topic or issue

e. Tried to better understand someone else's views by imagining how an issue looks from their

perspective

f. Learned something that changed the way you understand an issue or concept

g. Connected ideas from your courses to your prior experiences and knowledge

3. During the current school year, about how often have you done the following?

Response options: Very often, Often, Sometimes, Never

a. Talked about career plans with a faculty member

b. Worked with a faculty member on activities other than coursework (committees, student groups, etc.)

c. Discussed course topics, ideas, or concepts with a faculty member outside of class

d. Discussed your academic performance with a faculty member

4. During the current school year, how much has your coursework emphasized the following?

Response options: Very much, Quite a bit, Some, Very little

a. Memorizing course material

b. Applying facts, theories, or methods to practical problems or new situations

c. Analyzing an idea, experience, or line of reasoning in depth by examining its parts

d. Evaluating a point of view, decision, or information source

e. Forming a new idea or understanding from various pieces of information

5. During the current school year, to what extent have your instructors done the following?

Response options: Very much, Quite a bit, Some, Very little

a. Clearly explained course goals and requirements

b. Taught course sessions in an organized way

c. Used examples or illustrations to explain difficult points

d. Provided feedback on a draft or work in progress

e. Provided prompt and detailed feedback on tests or completed assignments

6. During the current school year, about how often have you done the following?

Response options: Very often, Often, Sometimes, Never

a. Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)

b. Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)

c. Evaluated what others have concluded from numerical information

7. During the current school year, about how many papers, reports, or other writing tasks of the following lengths have you been assigned? (Include those not yet completed.)

Response options: None, 1-2, 3-5, 6-10, 11-15, 16-20, More than 20 papers

a. Up to 5 pages

b. Between 6 and 10 pages

c. 11 pages or more

8. During the current school year, about how often have you had discussions with people from the following groups?

Response options: Very often, Often, Sometimes, Never

a. People of a race or ethnicity other than your own

b. People from an economic background other than your own

c. People with religious beliefs other than your own

d. People with political views other than your own

9. During the current school year, about how often have you done the following?

Response options: Very often, Often, Sometimes, Never

a. Identified key information from reading assignments

b. Reviewed your notes after class

c. Summarized what you learned in class or from course materials

10. During the current school year, to what extent have your courses challenged you to do your best work?

Response options: 1=Not at all to 7=Very much

11. Which of the following have you done or do you plan to do before you graduate?

Response options: Done or in progress, Plan to do, Do not plan to do, Have not decided

a. Participate in an internship, co-op, field experience, student teaching, or clinical placement

b. Hold a formal leadership role in a student organization or group

c. Participate in a learning community or some other formal program where groups of students take two or more classes together

d. Participate in a study abroad program

e. Work with a faculty member on a research project

f. Complete a culminating senior experience (capstone course, senior project or thesis, comprehensive exam, portfolio, etc.)

12. About how many of your courses at this institution have included a community-based project (service-learning)?

Response options: All, Most, Some, None

13. Indicate the quality of your interactions with the following people at your institution.

Response options: 1=Poor to 7=Excellent, Not Applicable

a. Students

b. Academic advisors

c. Faculty

d. Student services staff (career services, student activities, housing, etc.)

e. Other administrative staff and offices (registrar, financial aid, etc.)

14. How much does your institution emphasize the following?

Response options: Very much, Quite a bit, Some, Very little

a. Spending significant amounts of time studying and on academic work

b. Providing support to help students succeed academically

c. Using learning support services (tutoring services, writing center, etc.)

d. Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)

e. Providing opportunities to be involved socially

f. Providing support for your overall well-being (recreation, health care, counseling, etc.)

g. Helping you manage your non-academic responsibilities (work, family, etc.)

h. Attending campus activities and events (performing arts, athletic events, etc.)

i. Attending events that address important social, economic, or political issues

15. To what extent do you agree or disagree with the following statements?

Response options: Strongly agree, Agree, Disagree, Strongly Disagree

a. I feel comfortable being myself at this institution.

b. I feel valued by this institution.

c. I feel like part of the community at this institution.

16. About how many hours do you spend in a typical 7-day week doing the following?

Response options: 0, 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, More than 30 (Hours per week)

a. Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)

b. Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)

c. Working for pay on campus

d. Working for pay off campus

e. Doing community service or volunteer work

f. Relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.)

g. Providing care for dependents (children, parents, etc.)

h. Commuting to campus (driving, walking, etc.)

17. Of the time you spend preparing for class in a typical 7-day week, about how much is on assigned reading?

Response options: Very little, Some, About half, Most, Almost all

18. How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?

Response options: Very much, Quite a bit, Some, Very little

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, etc.)

i. Solving complex real-world problems

j. Being an informed and active citizen

19. How would you evaluate your entire educational experience at this institution?

Response options: Excellent, Good, Fair, Poor

20. If you could start over again, would you go to the same institution you are now attending?

Response options: Definitely yes, Probably yes, Probably no, Definitely no

21. Do you intend to return to this institution next year? [Only non-seniors receive this question]

Response options: Yes, No, Not sure

22a. How many majors do you plan to complete? (Do not count minors.)

Response options: One, More than one

22b. [If answered "One"] Please enter your major or expected major: [Text box]

22c. [If answered "More than one"] Please enter up to two majors or expected majors (do not enter minors): [Text box]

23. What is your class level?

Response options: Freshman/first-year, Sophomore, Junior, Senior, Unclassified

24a. How many courses are you taking for credit this current academic term?

Response options: 0, 1, 2, 3, 4, 5, 6, 7 or more

24b. Of these, how many are taught mostly or entirely online (most or all interactions with instructors and students take place online)?

Response options: 0, 1, 2, 3, 4, 5, 6, 7 or more

25. What have most of your grades been up to now at this institution?

Response options: A, A-, B+, B, B-, C+, C, C- or lower

26. Did you begin college at this institution or elsewhere?

Response options: Started here, Started elsewhere

27. Since graduating from high school, which of the following types of schools have you attended other than the one you are now attending? (Select all that apply.)

Response options: Vocational or technical school, Community or junior college, 4-year college or university other than this one, None, Other

28. What is the highest level of education you ever expect to complete?

Response options: Some college but less than a bachelor's degree, Bachelor's degree (B.A., B.S., etc.), Master's degree (M.A., M.S., etc.), Doctoral or professional degree (Ph.D., J.D., M.D., etc.)

29. What is the highest level of education completed by either of your parents (or those who raised you)?

Response options: Did not finish high school, High school diploma or G.E.D., Attended college but did not complete degree, Associate's degree (A.A., A.S., etc.), Bachelor's degree (B.A., B.S., etc.), Master's degree (M.A., M.S., etc.), Doctoral or professional degree (Ph.D., J.D., M.D., etc.)

30. What is your gender identity?

Response options: Man; Woman; Another gender identity, please specify: __ ; I prefer not to respond

31. Enter your year of birth (e.g., 1994):

32a. Are you an international student?

Response options: Yes, No

32b. [If answered "yes"] What is your country of citizenship?

33. How would you describe yourself? (Select all that apply.)

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, I prefer not to respond

34. Are you a member of a social fraternity or sorority?

Response options: Yes, No

35. Which of the following best describes where you are living while attending college?

Response options: Campus housing (other than a fraternity or sorority house), Fraternity or sorority house, House, apartment, or other residence within walking distance to campus, House, apartment, or other residence farther than walking distance to campus, Not applicable: No campus, entirely online program, etc., Not applicable: Homeless or in transition

36. Are you a student-athlete on a team sponsored by your institution's athletics department?

Response options: Yes, No

37. Are you a current or former member of the U.S. Armed Forces, Reserves, or National Guard?

Response options: Yes, No

38a. Have you been diagnosed with any disability or impairment?

Response options: Yes, No, I prefer not to respond

38b. [If answered "yes"] Which of the following has been diagnosed? (Select all that apply.)

Response options: A sensory impairment (vision or hearing), A mobility impairment, A learning disability (e.g., ADHD, dyslexia), A mental health disorder, A disability or impairment not listed above

39. Which of the following best describes your sexual orientation?

Response options: Straight (heterosexual); Bisexual; Gay; Lesbian; Queer; Questioning or unsure; Another sexual orientation, please specify: __; I prefer not to respond

40. Prompt for Open-Ended Comments (Institutions select one of four questions for the end of the NSSE questionnaire.)

• If you have any additional comments or feedback that you'd like to share on the quality of your educational experience, please enter them below.

• What has been most satisfying about your experience so far at this institution, and what has been most disappointing?

• Please describe the most significant learning experience you have had so far at this institution.

• What one change would most improve the educational experience at this institution, and what one thing should not be changed?

Appendix B: Table 13

Detailed Variable Index

Variable Name	Items	label
Sense of Belonging (SB)	I feel comfortable being myself at this institution	Sbself
	I feel valued by this institution.	sbvalue
	I feel like part of the community at this institution.	sbcomm
Student Involvement (SI)	Indicate the quality of your interactions with the following people at your institution:	
Quality Interaction (QI)	Academic advisors	QIadvisor
	Faculty	QIfaculty
	Student services staff	QIstaff
	Administrative staff	QIadmin
Diverse Discussions (DD)	During the current school year, about how often have you had discussions with people from the following groups?	
	People of a race or ethnicity other than your own	DDrace
	People from an economic background other than your own	DDeconomic
	People with religious beliefs other than your own	DDreligion
	People with political views other than your own	DDpolitical
Learning Strategies (LS)	During the current school year, about how often have you done the following?	
	Identified key information from reading assignments	LSreading
	Reviewed your notes after class	LSnotes
	Summarized what you learned in class or from course materials	LSsummary
Institutional Engagement Indicator (EI)	How much does your institution emphasize the following?	

	Spending significant amounts of time studying and on academic work	empstudy
Supportive Environment (SE)	Providing support to help students succeed academically	SEacademic
	Using learning support services (tutoring services, writing center, etc.)	SElearnsup
	Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)	SEdiverse
	Providing opportunities to be involved socially	SEsocial
	Providing support for your overall well-being (recreation, health care, counseling, etc.)	SEwellness
	Helping you manage your non-academic responsibilities (work, family, etc.)	SEnonacad
	Attending campus activities and events (performing arts, athletic events, etc.)	SEactivities
	Attending events that address important social, economic, or political issues	SEevents
Effective Teaching (ET)	During the current school year, to what extent have your instructors done the following?	
	Clearly explained course goals and requirements	ETgoals
	Taught course sessions in an organized way	ETorganize
	Used examples or illustrations to explain difficult points	ETexample
	Provided feedback on a draft or work in progress	ETdraftfb
	Provided prompt and detailed feedback on tests or completed assignments	ETfeedback

Appendix C: Table 14

Variable to Theory Map and NSSE's connection to Learning

Variable Name	Theory and Authors
Sense of Belonging	Sense of Belonging (Strayhorn, 2008, 2012)
Student Involvement	
Quality Interaction	Validation (Rendon, 1994, 2006)
Diverse Discussions	Metacognition (Isaacson & Fjuita, 2006)
Learning Strategies	
Institutional Engagement	
Supportive Environment	Mattering (Schlossberg, 1995)
Effective Teaching	Community Cultural Wealth (Yosso, Palmer & Walker, 2019)

Appendix D: Table 15

Descriptive Statistics and Correlations (For Hispanic/Latino Student)

Variable	n	M	SD	1	2	3	4	5	6
1. Sense of Belonging	409	47.45	36.2						
2. Quality Interaction	395	43.79	12.66	34**	—				
3. Diverse Discussion	405	32.95	15.92	29**	.16**	—			
4. Learning Strategy	407	39.43	13.46	34**	.27*	.43**	—		
5. Supportive Environment	410	38.00	15.81	48**	.34**	.26**	.41**	—	
6. Effective Teaching	412	40.83	14.43	44**	.26**	.21**	.47**	.42**	—

Note: $^{**}p < .01$, $^{*}p < .05$. (2-tailed). Testing for relationships between sense of belonging (1), student involvement (quality of interaction (2), diverse discussions (3), and learning strategy (4)), institutional engagement (supportive environment (5) and effective teaching practices (6)). Student involvement includes QI, DD and LS. Institutional engagement includes SE and ET.

Appendix E: Table 16

Descriptive Statistics and Correlations for Variables (For Black/African American Student)

Variable	n	M	SD	1	2	3	4	5	6
1. Sense of Belonging [a]	57	47.95	33.8	—					
2. Quality Interaction	57	44.47	12.39	.54**	—				
3. Diverse Discussion	56	37.32	13.21	.26	.20	—			
4. Learning Strategy	57	39.42	12.99	.28*	.14	.47**	—		
5. Supportive Environment	58	36.26	15.70	.40**	.18	.29*	.45**	—	
6. Effective Teaching [c]	57	36.49	14.16	.14	.03	.32*	.51*	.35**	—

Note. **p < .01, *p < .05. (2-tailed).

Appendix F: Table 17

Factor Analysis of NSSE (SB, EI, SI) for Latino Students (1 of 2)

NSSE ITEM LABEL	Component Matrix					
	1	2	3	4	5	6
Sbself	.62				-.62	
sbvalue	.68				-.60	
sbcomm	.62				-.67	
Qiadvisor	.43	-.46	.48			
qifaculty	.47	-.46	.60			
Qistaff	.46	-.45	.65			
Qiadmin	.46	-.48	.61			
Ddrace	.41	.61				
Ddecon	.43	.65				
Ddreligion	.41	.63				
ddpolitical	.45	.60				
Lsinfo	.60					
Lsnotes	.53					-.59
lssum	.55					-.60
eiacademic	.64					
Eistudent	.69					
Eisocial	.71					
Eiwellbeing	.74					
Einonacad	.71					
Eiactivity	.69					
Eievents	.67					
Etgoals	.56			.49		
Etorg	.54			.54		
Etexample	.61			.54		
Etdraftfb	.59			.50		
Etfeedback	.62			.47		

Note. N = 413. The extraction method was Principal Component Analysis (above .40 are included).

Appendix G: Table 18

Factor Analysis of NSSE (SB, EI, SI) for Latino Students (2 of 2)

NSSE ITEM LABEL	Component Matrix					
	1	2	3	4	5	6
Sbself					.80	
sbvalue					.82	
sbcomm					.86	
Qiadvisor			.76			
qifaculty			.89			
Qistaff			.90			
Qiadmin			.87			
Ddrace				.79		
Ddecon				.86		
Ddreligion				.86		
ddpolitical				.83		
Lsinfo						.59
Lsnotes						.82
lssum						.83
eiacademic	.75					
Eistudent	.77					
Eisocial	.83					
Eiwellbeing	.83					
Einonacad	.75					
Eiactivity	.77					
Eievents	.77					
Etgoals		.75				
Etorg		.80				
Etexample		.82				
Etdraftfb		.77				
Etfeedback		.75				

Note. N = 413. The extraction method was Principal Component Analysis (above .40 are included). Rotation method: Varimax with Kaiser Normalization. Rotation converged in 6 iterations.

Appendix H: Table 19

Factor Analysis of NSSE (SB, EI, SI) for African American Students (1 of 2)

NSSE ITEM	Component Matrix					
LABEL	1	2	3	4	5	6
Sbself	.46	.47				.55
sbvalue	.68					
sbcomm	.46	.67				
Qiadvisor		.70				
qifaculty	.49	.56				
Qistaff		.66				
Qiadmin		.66				
Ddrace	.60			-.43		.46
Ddecon	.48			-.62		
Ddreligion	.42		.53	-.56		
ddpolitical	.42		.64			
Lsinfo	.71					
Lsnotes	.55				-.60	
lssum	.57					
eiacademic	.59					
Eistudent	.78					
Eisocial	.79					
Eiwellbeing	.71					
Einonacad	.72					
Eiactivity	.67					
Eievents	.49		-.58			
Etgoals						
Etorg	.42	-.47		.48		
Etexample	.60	-.40				
Etdraftfb	.46	-.42		.44		
Etfeedback	.52					

Note. N = 58. The extraction method was Principal Component Analysis (above .40 included).

Appendix I: Table 20

Factor Analysis of NSSE (SB, EI, SI) for African American Students (2 of 2)

NSSE ITEM LABEL	Component Matrix					
	1	2	3	4	5	6
Sbself						.81
sbvalue						.65
sbcomm		.62				.57
Qiadvisor		.83				
qifaculty		.83				
Qistaff		.77				
Qiadmin		.85				
Ddrace	.42			.50		.61
Ddecon				.77		
Ddreligion				.92		
ddpolitical				.80		
Lsinfo					.54	
Lsnotes					.84	
lssum					.78	
eiacademic	.76					
Eistudent	.84					
Eisocial	.85					
Eiwellbeing	.83					
Einonacad	.60					
Eiactivity	.80					
Eievents	.80					
Etgoals			.77			
Etorg			.85			
Etexample			.52		.63	
Etdraftfb			.76			
Etfeedback			.84			

Note. n = 58. The extraction method was principal axis factoring (above .40 included).

Rotation method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.