2023

The Role of Validation Experiences and Sense of Belonging in Academic Self-Concept and Intent to Persist Among Four-Year College Students

Sarah Slates
Bryn Mawr College

The Role of Validation Experiences and Sense of Belonging in Academic Self-Concept and Intent to Persist Among Four-Year College Students

By Sarah E. Slates

2023

Submitted to the Faculty of Bryn Mawr College
in partial fulfillment of the requirements for
the degree of Doctor of Philosophy
in the Department of Social Work and Social Research

Doctoral Committee:

Janet Shapiro, Co-Advisor
Thomas Vartanian, Co-Advisor
Cindy Sousa
Alison Cook-Sather

ORCID iD: 0000-0003-0864-4532

Abstract

Research indicates that historically underrepresented college students are more likely to report alienating campus climates which can contribute to decreased sense of belonging and wellbeing. In turn, a lack of a sense of belonging and poor mental health may lead to decreased academic engagement and increased likelihood of attrition. Theoretical and empirical literature on critical race theory (CRT), validation, and sense of belonging identifies key factors across individual and institutional levels that influence student wellbeing and academic outcomes without relying on a deficit-based framework. Using an interactional, ecological conceptual framework drawing together CRT, validation theory, and sense of belonging my study further explores the relationships between academic validation, interpersonal validation, and sense of belonging and academic self-concept and persistence outcomes. Three years of survey data, 2015-2017, from four-year institutions were drawn from the Diverse Learning Environments (DLE) survey administered by the Higher Education Research Institute (HERI). The primary independent variables include academic validation, interpersonal validation, and sense of belonging. The outcome variables are academic self-concept and intent to persist operationalized as whether a student has considered dropping out of their program and whether they plan to attend a graduate program. Covariates include student demographics, identity, and enrollment; student and institutional engagement; and institutional characteristics and climate variables. The primary method of analysis was ordinary least squares (OLS) and logistic regression models. Subgroup analyses were conducted to determine any overall differences among groups and specific differences in the effects of primary predictors. Analyses were conducted using IBM SPSS 26. Across

all outcomes, primary independent variables or focal factors and student demographic, identity, and enrollment variables explained the greatest variation in academic self-concept scores and persistence. However, important student and institutional engagement and institutional characteristics and climate factors were also identified. The subgroup analyses did not identify consistently meaningful or significant differences in the effects of the primary predictors. Implications focus on theory, policies, and practices to enhance the implicit or hidden curriculum.

Keywords: critical race theory, validation theory, sense of belonging

Dedication

I dedicate this dissertation to my family, especially my parents and grandparents. This is *our* accomplishment.

Acknowledgements

I could not have undertaken this journey without the support of mentors, colleagues, friends, and family. I'm extremely grateful to my dissertation co-chairs, Dean Janet Shapiro and Professor Tom Vartanian, as well as my supervising committee members Professors Cindy Sousa and Sydne Record. Dean Shapiro, I am especially thankful for your generous mentorship which provided essential affirmation.

During the writing of this dissertation I received funding through the L. Diane Bernard Award, which provided important financial support for this project.

I would like to express my gratitude to Professor Alison Cook-Sather whose research on sense of belonging and equity in higher education was inspirational and instrumental in shaping my own work in this area. Professor Cook-Sather, thank you for sharing time, insights, and important professional opportunities with me.

My deepest gratitude to my colleagues in the PhD program. Your friendship, insights, and advice have been essential to my ability to keep going. A special thank you to Lauren Montemuro-Rode and her family for offering a loving place to land when I most needed it. Many thanks also to Carmen Moedano. I'm grateful for your encouragement and for our shared dedication to fellow first-generation students.

I would like to recognize my staff colleagues at the GSSWSR for their ongoing support and encouragement. Working full-time while pursuing a PhD is no easy task, but our team made it possible. A special thank you to members of our student support

services team throughout my tenure, who are also dear friends and fellow PhD candidates, including Carolyn Solo, Mary Florence Sullivan, and John Edwards.

I also extend my sincere thanks to Pat Macpherson for her friendship, guidance, and mantras - pea shooters at a battleship!

I'd like to acknowledge the support of Dr. Jim McGinley who not only provided expert guidance, but the encouragement and mentorship required to complete this work.

I am deeply indebted to my family for the love, support, and encouragement they have consistently provided through the highs and lows of this experience. Words can't express my appreciation for my parents, David and Marcia, and my husband, Josh. Sylas, thank you for sleeping through the night sooner rather than later, so I could dedicate the early morning hours to finishing my dissertation.

Lastly, I would be remiss if I didn't extend my heartfelt gratitude to the many master's program students and alumni who have shared this journey with me. Working with you provided essential grounding and inspiration throughout this process.

Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

Organization of the Dissertation

In Chapter 1, I introduce the current study and describe the purpose of the study, significance to social work, and relevant background including historical and contemporary contextualization.

In Chapter 2, I review the relevant literature including psychological and sociological approaches to understanding student well-being and persistence. I also detail my conceptual framework grounded using an interactional, ecological approach grounded in critical race theory (CRT), validation theory, and sense of belonging. After overviewing the theoretical and conceptual literature related to my research, I turn to describing the results of recent empirical work connected to my topic.

Chapter 3 provides a description of my methodology including the Diverse Learning Environment (DLE) survey instrument, sample, research questions, variables used, and analytic methods. I conclude this chapter with a reflexivity statement focused on my personal and professional experiences related to my research focus.

Chapter 4 presents the results of my study including descriptive statistics, brief summaries of model building and interpretation strategies, and Pearson correlations. Results are organized by outcome and the sequential model building strategy (Models 1-5) in the following order, academic self-concept, consider dropping out of college, and

planning to attend graduate school. Assumption checks and summaries are included at the end of each results section.

In Chapter 5, I offer a discussion of key findings organized by research question focus starting with academic self-concept followed by persistence related outcomes. I highlight implications for theory, practice, and policy related to both academic self-concept and persistence. I then describe the primary limitations of the current study and conclude with a discussion of future research opportunities.

Chapter 6 concludes the dissertation and provides a summary of prior chapters and highlights key takeaways.

Purpose of the Study

Theoretical and empirical literature on critical race theory (CRT), validation, and sense of belonging identifies key factors across individual and institutional levels that influence student wellbeing and academic outcomes without relying on a deficit-based framework. Literature on validation and sense of belonging suggest the inclusion of factors related to student identity and student engagement with the institution. Sense of belonging and CRT support consideration of institutional or environmental factors including institutional characteristics and climate. Instead of positing students' wellbeing and persistence as a result of primarily student- or institutional-level factors, I propose an interactional model that considers 1) student-level factors, 2) student and institutional engagement, and 3) institutional characteristics and climate for analyzing the relationships between validation, belonging, and academic self-concept and intent to persist.

Sense of belonging has been identified as a key concept for understanding students', particularly historically underrepresented students', wellbeing and persistence outcomes and has been explored extensively using both quantitative and qualitative methods (Cook-Sather et al., 2018; Johnson, 2012; Strayhorn, 2019). In contrast, factors that are closely linked to belonging, such as validation, are less understood and have only recently been explored on a larger scale using quantitative methods (Rendón Linares & Muñoz, 2011). My aim is to further this line of research by exploring the relationships between sense of belonging, academic validation, and interpersonal validation and their impacts on academic self-concept and intent to persist within the context of student-level factors, student and institutional engagement, and institutional characteristics and climate. I examined these relationships for the entire sample of four-year college students and student subgroups including first-generation (FG), LGBTQ+, and students of color. Results of this research will be used to inform implications for higher education administrators, educators, and researchers to advance equity in access to higher education.

Significance to Social Work

A cornerstone of social work research and practice is the person-in-environment (PIE) perspective (Kondrat, 2013). Broadly, PIE reflects the idea that an individual's behavior cannot be understood outside of their various environmental contexts. More specifically, Kondrat (2013) explains "there is a reciprocity to the person-environment relationship, such that the individual can impact the various elements of the environment, just as the environment can exert a conducive or inhibiting influence on the individual" (p. 1). A social work PIE approach is essential for exploring inequity in higher education

as it creates opportunities for assessment and intervention at the individual and environmental levels but also at the intersection of individual and environmental interactions (Kondrat, 2013).

Another key contribution of social work is a strengths-based approach which views individuals, groups, and communities as resilient and resourceful in adverse circumstances (Corcoran, 2018). A strengths-based approach encourages researchers and practitioners to challenge deficit models which identify weaknesses and limitations primarily within individuals versus the environment. Both PIE and strengths-based perspectives align with my conceptual framework drawing from CRT, validation, and sense of belonging.

Beyond alignment in conceptualization, inequality in access to higher education and professional opportunity is of key interest to social workers, social work educators, and researchers as a core value of the profession is social justice which requires social workers to strive for access, equality, and meaningful participation for all (National Association of Social Workers [NASW], 2021). Degree completion is of particular interest to schools of social work as an increasing number of social work jobs require an advanced degree and licensure (Torpey, 2018). In addition, social work's emphasis on social justice may be especially appealing to historically underrepresented students who are more likely to report altruistic motivations when selecting a degree program (Simmons et al., 2018). Scholars caution that if completion gaps are not better understood, college-going may be associated with decreasing mobility, widening the gap between more and less privileged students, and may begin to resemble a caste system instead of a ladder (Jack, 2019; Mettler, 2014).

Background

The purpose of my dissertation research is to further explore the relationships between validation, sense of belonging, and student outcomes including academic self-concept, a measure of confidence, motivation, and perception of academic ability, and intent to persist within the context of individual- and institutional-level factors. These contextual factors include student demographics, identity, and enrollment variables; student and institutional engagement variables; and institutional characteristics and climate variables. A deeper understanding of these relationships has implications for enhancing inclusion and equity in higher education and beyond (Hurtado et al., 2011; Hurtado et al., 2015).

The historical dynamics of inclusion and exclusion in higher education connect directly to contemporary dynamics and campus climates (Anderson & Span, 2016; Nash, 2021). Discussion of this historical context not only provides important background for understanding current issues but also aligns with a critical approach (Cabrera, 2018; Ledesma & Calderon, 2015; López et al., 2018). Ledesma and Calderon (2015) challenge ahistoricism in higher education research stating, “postsecondary institutions should not be decoupled from the context, history, and sociocultural realities that produced inequities and disparities in the first place" (p. 215). Similarly, Mwangi et al. (2018) argue that any study of higher education must be considered within a broader societal context. While an in-depth historical review is beyond the scope of my dissertation, I overview key moments in the development of the U.S. higher education particularly in relation to ongoing issues of access and equity.

The first higher education institutions in the U.S., founded in the mid-1600s, were private and focused on leadership and religious training of wealthy, White men (Hanson et al., 2020). Similarly, the public institutions founded later in the 1800s were racially exclusive and admitted only students considered White (Hanson et al., 2020). Historically, women were excluded from higher education as they were considered intellectually inferior (Langdon, 2001; Nash, 2021). The first women's colleges were founded in the late 1830s (Langdon, 2001). The first public institutions were established by the Morrill Acts of 1862 and 1890. The former established land-grant colleges which combined liberal arts education with professional training in natural sciences, teaching, and agriculture (Mettler, 2014). The latter Morrill Act facilitated the creation of historically Black colleges and universities (HBCUs) (Hanson et al., 2020; Mettler, 2014). HBCUs provided educational and training opportunities for Black students during the era of separate but equal legal doctrine upheld by Plessy versus Ferguson (Bradley, 2021). During this time, Black Americans could not legally access the same public spheres as White Americans, including higher education, as long as an allegedly equal alternative was provided by the state (Bradley, 2021). HBCUs provided, and continue to provide, invaluable and affirming educational opportunities (Winkle-Wagner & Mccoy, 2018). However, Nash (2021) explains that, through the creation of HBCUs, the second Morrill Act also provided a legal structure to support continued segregation in public education particularly in the South.

Importantly, at the time of their development, the Morrill Acts were not presented as higher education policy. Instead, these Acts were framed as federal land policy (Nash, 2021). The land-grant institutions established by the Acts were funded through the sale of

so-called public, unoccupied lands (Mccoy et al., 2021; Nash, 2021). In reality, nearly 250 Native American tribes, bands, and communities were dispossessed of eleven million acres of land through the Acts (McCoy et al., 2021). In addition to settler colonialism, U.S. higher education institutions also have deeply rooted connections to slavery (Anderson & Span, 2016; Brophy, 2018). Brophy (2018) describes these links as both intellectual and financial. Historically, high profile scholars developed and promoted political and legal theories that would be used to justify slavery and segregation. Financially, institutions benefited from the labor, ownership, and trade of enslaved people. Nash (2021) argues that exclusion is not an aside or unfortunate consequence of the development of higher education. Instead, this system is built on slavery and settler colonialism and is rooted in oppression.

Higher education received increased political attention in the 1940s through the 1950s. Mettler (2014) refers to the mid-20th century as a golden age of educational opportunity. Notably during this period, Brown versus Board of Education of Topeka overturned the separate but equal legal doctrine previously upheld by Plessy versus Ferguson (Bradley, 2021). However, this important ruling did not mean that Black citizens immediately had equitable access to higher education opportunities. Significant policy initiatives during this period such as the Servicemen's Readjustment Act or G.I. Bill and the National Defense Act continued to primarily benefit White men though many low income, working-class White men and their families benefitted from newly available educational opportunities (Mettler, 2014; U.S. Senate, 2022). In the first seven years after the Act was implemented over eight million veterans received some form of educational benefit – college, vocational training, or on-the-job training (National Archives, 2022).

The National Defense Education Act focused on strengthening what is now referred to as the Science, Technology, Engineering, and Mathematics (STEM) pipeline during the Cold War era (U.S. Senate, 2022). One of the primary outcomes of this Act was the legitimization of federal funding for higher education in the form of low-cost loans (Mettler, 2014; U.S. Senate, 2022). Moving forward to the 1970s, Pell Grants were first extended, and Mettler (2014) explains that, unlike the G.I. Bill, these grants were fully available to women.

During this same period, from the 1960s through the 1970s, initiatives were enacted to address race- and gender-based inequality in higher education. Former President John F. Kennedy issued an executive order aimed at counteracting the legacy of discrimination in hiring practices among government contractors. He coined the phrase affirmative action, which is defined as the "practice of actively recruiting and enacting policies that consider an applicant's racial or gender minority status to improve the inclusion of historically and contemporarily underrepresented groups" (Bradley, 2021, p. 4). Bradley (2021) explains that affirmative action policies were later applied to higher education in 1964 when congress adopted Title VI of the Civil Rights Act. As a result, the U.S. Secretary of Health, Education, and Welfare was required to enforce integration in public higher education institutions that had previously been legally segregated. In addition, the ongoing Civil Rights Movement pressured colleges and universities to adopt more inclusive admission and educational policies and practices (Warikoo & Allen, 2020). In response, many colleges and universities voluntarily implemented affirmative action policies to signal inclusion and reduce racial inequalities (Warikoo & Allen, 2020).

As will be discussed, affirmative action policies were and remain controversial and have received increasing challenges since the 1990s (Baker, 2019; Bradley, 2021; Liu, 2020).

Title IX required educational institutions to address gender-based disparities related to academics and athletics and was later used to address sexual harassment along with legislation passed later in the 1990s such as the Clery Act and the Campus Sexual Assault Victim's Bill of Rights (Gronert, 2019). Like affirmative action policies, Title IX and sexual violence on campus have been the subjects of public controversy (O'Boyle & Jo-Yun Li, 2019; Phillips & Chagnon, 2020).

Mettler (2014) contrasts the policy initiatives of the mid-20th century with more recent policies, or lack thereof, and suggests that public higher education no longer garners the political interest it once did. Instead, Mettler (2014) argues that higher education has become increasingly privatized, and students and their families have been left with an increasing cost burden. While direct financial support to students through aid such as Pell Grants has remained relatively stable over time, federal, state, and local government funding has decreased (Hanson et al., 2020). These budgetary trends often mean increased tuition, higher debt, and more barriers to higher education access (Hanson et al., 2020). Jack (2019) argues that colleges and universities sought to fill this gap with their own financial aid packages because the standard combination of scholarships and loans was still prohibitively expensive for many low-income families. Jack (2019) writes "these revolutionary policies increased access to many universities, especially elite ones. The effects were felt right away: student bodies began to look differently" (p. 7). However, Jack (2019) cautions that access does not mean inclusion, and while student bodies became increasingly more diverse in terms of race, class, and

gender, this did not immediately translate to increasing equality. In fact, like Mettler (2014), Jack (2019) posits that the opposite is occurring. By pushing historically underrepresented students to the margins, a process which Jack (2019) calls structural exclusion, colleges and universities reproduce and exacerbate existing inequalities. A holistic solution will require institutions of higher education taking a close, critical look at the inclusiveness of their communities as well as pushing the government to address deeply embedded inequalities across levels of education (Jack, 2019). Other scholars argue that this work will also require closely examining the exclusionary history of higher education and its legacy still felt on campuses today (Anderson & Span, 2016; McCoy et al., 2021). Examples currently playing out on colleges campuses include, but are not limited to, affirmative action bans, calls to uncover and make reparations for historical connections to slavery and settler colonialism, controversy over gender-selective admissions policies, and sexual violence on college campuses.

There are nine states that have implemented race-based affirmative action bans: Arizona, California, Florida, Michigan, Nebraska, New Hampshire, Oklahoma, Texas, and Washington (Baker, 2019). Liu (2020) examines the five states that most recently adopted bans inclusive of Arizona, Michigan, Nebraska, New Hampshire, and Oklahoma. In most of these states the bans were associated with a decrease in the enrollment of historically underrepresented students (Liu, 2020). Baker (2019) argues that affirmative action bans are associated with a climate of scarcity and racial threat or the idea that White students will have limited access to selective colleges and universities. Two high-profile examples of challenges to affirmative action are Fisher I and II in which Abigail Fisher's attorneys argued she had been unconstitutionally denied admission to the

University of Texas due to the University's consideration of race in the admissions process. Ultimately, the Supreme Court ruled in favor of University of Texas (Bradley, 2021). Not only do bans impact the enrollment of historically underrepresented students (Liu, 2020), but they also spark intense public debates that impact campus climates. In the same general time frame, public debates around higher education's connections to slavery emerged during the 2000s (Brophy, 2018).

Yale was one of the first institutions to publish a study of their historical connections to slavery (Brophy, 2018). Between 2014 and 2016, students at over 80 colleges and universities made formal requests that their institutions uncover and acknowledge their histories and transform practices and policies to better serve students from historically underrepresented groups (Anderson & Span, 2016). Student, staff, and faculty advocacy has resulted in resignations of campus administrators, renaming of campus spaces, and demands for reparations (Anderson & Span, 2016). In many cases these efforts toward racial and social justice were also connected to the broader, ongoing Black Lives Matter movement (Forsgren, 2017; Mwangi et al., 2018). Forsgren (2017) recognizes the long tradition of Black and Brown student activism but specifically notes the police murder of an unarmed civilian, Michael Brown in 2014, as an event that galvanized students and movements across campuses nationwide. Black Lives Matter increased campus dialogue about racial justice and contributed to college administrators' prioritization of campus climate (Mwangi et al., 2018). Similarly, scholars, students, and community members have requested that institutions examine their connections to settler colonialism and the appropriation of Native American lands and take steps to address

these harms (McCoy et al., 2021). Intense advocacy and public debate have also taken place around issues of gender identity and college admissions.

Weber (2016) writes that gender-selective women's colleges have become ground zero for ongoing, and often polarizing, debates about gender identity and inclusion on campus. In 2014, Mills became the first women's college to change their admissions policies and consider transwomen applicants (Weber, 2016). Mount Holyoke adopted one of the most expansive admissions policies, considering transwomen, transmen, and non-binary applicants (Weber, 2016). In higher education, with women now making up the majority of undergraduate students, conversations about gender inclusivity have shifted to include transgender and gender non-conforming students. At the same time, the fact that women make up a numerical majority of undergraduate students does not necessarily mean campuses are welcoming and safe environments for women students.

Pritchard et al. (2019) write that gender-based violence and sexual assault are deeply entrenched on college campuses. In 2006, Tarana Burke created what would become a viral hashtag and broader social movement - #MeToo (Gronert, 2019). MeToo sought to center survivor's experiences and inspired movements against sexual violence on campus. This framing was critical as media attention often portrayed victims of sexual violence on campus as at fault for their assault, for example, due to heavy drinking and partying (O'Boyle & Jo-Yun Li, 2019). In response to growing attention and demands for action, the Obama administration expanded Title IX guidance related to sexual violence on campus intended to enhance protections for survivors and developed prevention programs (Gronert, 2019). However, Phillips and Chagnon (2020) explain that survivor centered narratives about sexual violence on campus were soon countered with a

backlash claiming expanded protections contributed to so-called witch hunts and false accusations. In 2017 and 2018, the Trump administration revised Title IX guidance which constrained prior protections for survivors (Gronert, 2019). Scholars argue that the #MeToo movement and Title IX guidance and subsequent controversy have impacted college campuses in a variety of ways. First, Gronert (2019) explains that Title IX protections have been used to disproportionately target men of color while resources designed to support survivors on campus best serve middle-class White women. Further, given the mandatory reporting guidance under Title IX, many faculty, staff, and students feel less comfortable discussing experiences of sexual violence (Rosche, 2018). More specifically, a mandated reporter, or any faculty or staff member, must report sexual violence disclosed by a student whether or not the assault occurred recently, the student needs or is interested in services and support, or the student wishes to report the assault (Rosche, 2018).

College and university campuses are often considered a microcosm of broader society (Morin et al., 2018). Many of the debates and dynamics discussed above were intensified during the Trump administration. During the campaign, election, and administration of former President Donald Trump, colleges and universities experienced an increase in polarization, hostility, and negative campus climates (Franklin & Medina, 2018; Logan et al., 2017; Morin et al., 2018). For example, when the Trump administration announced that it would end Deferred Action for Childhood Arrivals (DACA), which provided important access to education, health care, and other legal systems, many students with undocumented legal status experienced fear and felt unwelcome on their college campuses (Benuto et al., 2018; Franklin & Medina, 2018).

Anti-immigrant, Latinx/Chicanx, Black, and LGBTQIA+ and misogynistic rhetoric and policies contributed to increasingly hostile campus climates for many students (Franklin & Medina, 2018; Logan et al., 2017). Students, especially Black and Brown students, experienced increased burnout, stress, and racial battle fatigue but also responded with activism and demands for social justice (Logan et al., 2018).

Key themes emerge from this brief overview that are relevant to my dissertation research. First, at each point of expanded access to higher education, there are primary beneficiaries and those that are relatively excluded from these benefits. In the examples discussed, these groupings reflect larger societal dynamics related to power, privilege, and oppression. In other words, people who were White and particularly White men benefited from what Mettler (2014) referred to as the golden age of educational opportunity. Secondly, the dynamics of inclusion and exclusion operate at multiple levels within and beyond a given institution. For example, beyond institutions of higher education, federal funding policies can reduce or amplify barriers to college access (Hanson et al., 2020; Mettler, 2014). Internally, colleges and universities can further address financial barriers through institution specific financial aid policies and practices (Jack, 2019). However, as Jack (2019) cautions, initial access does not always mean ongoing inclusion. Students' lived experiences of campus climate are further shaped by discourses about race, gender, class, and other social categories on campus and beyond. The multiple discourses discussed in this section related to affirmative action, reparations and racial justice, gender-selective admissions policies, and sexual violence on campus were circulating heavily during the periods of data collection for my dissertation research (2015-2017).

In response to student advocacy, more institutions have taken an interest in issues related to campus climate and diversity, equity, and inclusion (Anderson & Span, 2016). These topics were, and continue to be, actively engaged during the years data was collected for my dissertation research (2015, 2016, and 2017). The historical dynamics of inclusion and exclusion in higher education are still present on campuses today which has real implications for how students experience post-secondary education generally and their campus environment specifically.

A growing body of literature on validation and belonging in higher education identifies dissonance between dominant educational structures, standards, and practices based on Eurocentric middle- and upper-class norms and increasing numbers of historically underrepresented students attending college (Brunsma et al., 2017; Cook-Sather et al., 2018; Dortch & Patel, 2017). The term historically underrepresented is often applied to low-income students and students of color, but it may also be applied to women and LGBTQ+ students among other groups (Carter et al., 2013; Gardner, 2008; Stout & Wright, 2016). In addition, first-generation (FG) college students tend to be from historically underrepresented groups. While these identities may be helpful in identifying and better understanding a range of student experiences, it is important to acknowledge the intersecting nature of identity and avoid homogenization of any identity category (Duran, Dahl, et al., 2020).

Dominant academic culture prioritizes individualism, competitiveness, and positivism and does not always reflect diverse orientations and experiences (Delgado Bernal, 2002; Espinoza, 2010; Freire, 2009). Historically underrepresented students are more likely to report alienating campus climates and fewer validating experiences which

contribute to a decreased sense of belonging, increased depressive symptoms, and increased emotional distress (Brunsma et al., 2017; Choi et al., 2021; Sylvia Hurtado, Cuellar, et al., 2011; Nicolazzo et al., 2017). Lack of sense of belonging and poor mental health outcomes may lead to decreased academic engagement and, in turn, increased attrition (Brunsma et al., 2017).

As previously mentioned, a series of policies and financial aid practices have increased access to higher education for historically underrepresented students (Jack, 2019; Mettler, 2014). Initial access to higher education has increased but completion gaps demonstrate that access does not always translate to meaningful inclusion. Completion gaps may be considered by race, gender, FG status, LGBTQ+ identity, institutional characteristics, and the intersections of these identities or categories. Gillborn et al. (2018) argue that it is important to acknowledge that neither race nor any other social identity categories are the cause of unequal outcomes but instead reflect the operation of racism and other forms of oppression. For example, completion gaps associated with race are, in reality, associated with racism, gender with sexism, and low socio-economic status with classism (Gillborn et al., 2018).

Completion rates are typically measured at 150% of time to completion for a four-year degree, thus completion is measured at six years post-enrollment. The most recent completion rates indicated that Asian students were most likely to complete within six years (76%), followed by students who are White (67%), students of two or more races (59%), Hispanic students (58%), Pacific Islander students (53%), Black students (44%), and American Indian/ Alaska Native students [AIAN] (41%) (National Center for Education Statistics [NCES], 2021). When considering both race and sex (reported using

male and female), students who identified as Asian and female were the most likely to complete (78.9%) while students who identified as AIAN and male were the least likely (38%) (NCES, 2021).

According to the Center for First-Generation Student Success (CFGSS) (2020), completion rates for FG students were 20% in comparison to 49% for their continuing-generation (CG) peers. FG students are more likely to identify as Hispanic, Black, AIAN, and Pacific Islander and reported lower average incomes ($41,000) compared to CG students ($90,0000) (CFGSS, 2020). However, Wildhagen (2015) explains that the characteristics of FG students vary by institution. In some contexts, FG students are more similar than different academically and financially in comparison to CG students. For example, Wildhagen (2015) found that FG students had comparable GPAs in comparison to their CG peers and were not relatively economically disadvantaged.

There is limited data related to completion rates and other outcomes for LGBTQ+ college students (Legg et al., 2020; Postsecondary National Policy Institute [PNPI], 2021). Among members of the LGBTQ+ community aged 25 and older, 17% have earned a bachelor's degree in comparison to 18% of people who do not identify as LGBTQ+ (PNPI, 2021). Existing data suggest disparities within the community. For example, LGBTQ+ men were two times more likely to have obtained a bachelor's degree in comparison to LGBTQ+ women (PNPI, 2021). LGBTQ+ students of color may experience unique challenges pre-college that contribute to lower rates of admission in higher education (Truong et al., 2020). Gillborn et al. (2018) argue that it is important to acknowledge that racism and other forms of oppression influence pre-college experiences including prior educational experiences, income, and parental education. In other words,

it is not race, socio-economic status, and sexual orientation that contribute to differential outcomes but racism, classism, and heterosexism.

Institutional characteristics are also associated with disparities in completion rates. Generally, completion rates are highest at four-year private nonprofit schools (64.1%), followed by public schools (54.5%), and private for-profit schools have the lowest completion rates (26%) (Shapiro et al., 2018). Students who are White and of two or more races are overrepresented at private nonprofit schools while students who are Black, AIAN, and Pacific Islander are overrepresented at private for-profit schools (de Brey et al., 2019). For-profit colleges have been accused of predatory lending practices that disproportionately target and impact low-income students and students of color (Harvard Law School, 2019).

Lower completion rates may be related to financial constraints or lack of funding (Jack, 2019; Proctor & Truscott, 2012), conflicting work and family responsibilities (Espinoza, 2010; Remenick & Bergman, 2020), as well as a lack of fit or sense of belonging (Proctor & Truscott, 2012). Leaving a program prior to completion can result in an increased student debt burden without a degree to increase earnings potential (Hayes, 2016). This burden is not shared equally among students; student debt tends to have a greater detrimental impact on low-income students and students who are Black (Scott-Clayton & Li, 2016). In addition, the most recent economic recession demonstrated that most job losses were in occupations with lower education requirements and employers favored more highly educated candidates in most industries (Carnevale et al., 2012). Successful completion of an undergraduate and graduate degree can lead to increased earnings and career opportunities (Baum & Steele, 2017) while non-completion

contributes to increased debt, lower earnings, less favorable job prospects, and a greater likelihood of defaulting on student loans – further exacerbating existing inequities (Carnevale et al., 2012; Hayes, 2016; Nadworny, 2019). Students from high-income families are largely insulated from these risks and are less likely to take on high amounts of student loan debt and have greater access to social capital and other resources to make financially informed decisions about college attainment (Blagg & Blom, 2018).

There are a variety of factors that influence the return on investment (ROI) of an undergraduate degree. These factors include cost of degree after aid, time spent, earning returns, major and institution, student background, and economic conditions (Blagg & Blom, 2018). Generally, the ROI of an undergraduate degree benefits both the individual and the State (Blagg & Blom, 2018; Ma et al., 2019). Individual benefits include increased earnings, increased likelihood of home ownership, and a decreased likelihood of unemployment (Ma et al., 2019; Scott-Clayton & Zafar, 2019). However, research suggests that disparities in earnings and other outcomes persist even among degree holders. Women tend to earn less than men, graduates who are White or Asian earn more than graduates of other races, post-traditional students earn less than traditional students, and students from lower-income backgrounds continue to earn less than students from higher-income backgrounds (Blagg & Blom, 2018; Chetty et al., 2020; Ma et al., 2019). While disparities exist, there is consensus that degree completion provides a beneficial ROI and contributes to social and economic mobility especially for students from historically underrepresented backgrounds (Karlson, 2019; Smith et al., 2020).

Public benefits of degree completion include increased tax revenue, decreased reliance on social welfare programs, reduced unemployment rates, and improved public

health (Blagg & Blom, 2018; Ma et al., 2019). Research suggests that degree holders have greater access to resources and information to engage their children in educational activities (Ma et al., 2019). Degree holders are also more likely to volunteer, vote, and participate in other forms of civic engagement (Ma et al., 2019). In summary, McCallen and Johnson (2020) write that the benefits of degree completion for historically underrepresented students and broader society cannot be overstated.

Chapter 2: Literature Review

As I will discuss in more detail in my conceptual framework section, my framework is grounded in critical race theory (CRT) and joins together related theories and concepts from validation theory and sense of belonging. These theories emerged in response to previously dominant, and often deficit-based, theories of student experiences based in psychology and sociology (Carter et al., 2013; McCallen & Johnson, 2020).

Psychological Approaches

Psychological approaches are the dominant paradigm in the existing literature on student college experiences (Carter et al., 2013). These approaches focus largely on individual traits, responses to the college environment, and emphasize the role of self-efficacy rooted in Bandura's social cognitive theories (Carter et al., 2013). Self-efficacy is defined as an individual's "beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p. 2). Social cognitive theory posits students' beliefs about their abilities influence motivation which influences college experiences and outcomes (Bandura, 1994). Schlossberg's transition theory considers the role of self-efficacy and is an example of this approach.

Schlossberg's transition theory includes four components – situation, self, support, and strategies (Chickering & Schlosserberg, 1995). Situation refers to a variety of factors including a student's sense of agency, changes in roles, and concurrent stresses.

Self describes individual student characteristics including demographics and sense of self-efficacy. Support reflects the influence of relationships with faculty, staff, family, or friends among others. Lastly, strategies refer to strategies used by students, such as information-seeking behaviors. This theory has not been applied or tested extensively among historically underrepresented students (Carter et al., 2013). Although, exploratory research has used Schlossberg's theory supplemented by CRT as a frame for analyzing the experiences of first-generation students at an extreme predominantly White institution (EPWI) (McCoy, 2014).

Psychological approaches and Schlossberg's transition theory offer helpful concepts for consideration such as self-efficacy. However, self-efficacy tends to be conceptualized as an individual, static trait versus a characteristic that is influenced before and during college by interactions between students and their environments.

Sociological Approaches

Sociological approaches to exploring college student experiences and outcomes assume that students must be socialized into the higher education environment (Carter et al., 2013; McCallen & Johnson, 2020). Bourdieu's social reproduction theory suggests that parents and caregivers pass on cultural wealth to their children (Bourdieu & Passeron, 1990). In educational settings, particular forms of cultural wealth are privileged and rewarded (Bourdieu & Passeron, 1990). Privileged forms of cultural wealth are connected to dominant academic culture, which prizes individualism, meritocracy, and positivism (Espinoza, 2010; Harper, 2012). The alignment between dominant academic culture and elite cultural wealth makes the college experience easier for students who

already possess privileged capital. Tinto's theoretical model of student departure has been used to explore this socialization process (McCallen & Johnson, 2020; Tinto, 1988).

Tinto's model includes three stages – separation, transition, and incorporation – and is based on the assumption that students must separate from their home communities, particularly those that do not possess privileged cultural wealth, to successfully integrate into the college environment (Tinto, 1988). Separation refers to separation from home communities and past habits and affiliations. The transition stage refers to being in between separation from the home community but not yet fully adapted to college norms. Lastly, incorporation occurs when students fully adopt the norms of the college setting and establish their membership. Students who are unable or unwilling to sufficiently move through these stages are more likely to drop out (Tinto, 1988). Critics of Tinto's model point out that progressing through these stages is potentially harmful to historically underrepresented students and the framework too often casts them as deficient (J. Lee et al., 2010; McCallen & Johnson, 2020).

Sociological models and theories focus on students' pre-college experiences and environments and the extent to which they prepare students, or not, to be successful in college. The primary limitation of many sociological models is that they locate deficits within individuals, their backgrounds, or their perceived inability or unwillingness to separate from their home culture and adapt to dominant academic culture. CRT has been used to modify social reproduction theory to address this gap and highlight the home knowledge (Delgado Bernal, 2002) and community cultural wealth (Yosso, 2005) that historically underrepresented students leverage to survive and thrive on campus.

CRT is often used in education research as a standalone theoretical framework (Cabrera, 2018), but it is also used to extend and enhance other theories (McCoy, 2014; Yosso, 2005). CRT is especially important for exploring and understanding racial and other disparities in educational outcomes without relying on a deficit approach (Harper, 2012). Beyond individual factors, CRT acknowledges how campus climates and environments can be oppressive and exclusionary – contributing to disparities in educational outcomes (Ledesma & Calderon, 2015; Savas, 2014). In the following section, I describe my conceptual framework which is grounded in CRT and joins together related theories and concepts from validation theory and sense of belonging.

Conceptual Framework

CRT aligns with the use of interactional models and Bronfenbrenner's human ecology theory which can be understood as an alternative to trait and environmental developmental models (Harper, 2012). An interactional, ecological model may take on a variety of specific forms but generally assumes human development is shaped by regular and reciprocal interactions between individuals and their environments (Bronfenbrenner, 1995). In a college campus setting these interactions take place between students and faculty/staff, students and peers, students and campus organizations and events, and students and campus spaces (Mendenhall, 2021). A limitation in the existing literature is that disparities in wellbeing and degree attainment tend to be attributed primarily to student individual-level factors and exclude engagement and environmental factors (Reyes, 2021; Strayhorn, 2019). An interactional approach is most appropriate for my current study as both validation and sense of belonging are produced through interactions between students and their institutions. In the following section, I first overview CRT and

then introduce key ideas and concepts from validation theory and sense of belonging. Each area identifies key concepts for consideration in analyzing the relationships between validation and belonging and their impact on academic self-concept and intent to persist.

CRT

CRT first emerged from the field of critical legal studies within the context of the civil rights movement (Cabrera, 2018; McCoy & Rodricks, 2015). According to McCoy and Rodricks (2015) critical legal studies scholars acknowledged and analyzed structural inequities in the legal system, but they did not focus explicitly enough on race and racism specifically. CRT emerged to fill this gap and was first applied to educational settings in the 1990s and is now a well-established theoretical framework in pre-K to 12 and higher education (Ledesma & Calderon, 2015; Savas, 2014). CRT includes several core tenets for higher education research (Cabrera, 2018; McCoy & Rodricks, 2015; Yosso, 2005). Yosso (2005) identifies five core tenets of CRT in educational research based in Solórzano's foundational work on CRT in educational contexts:

1. Racism is endemic, central to understanding lived experiences, and intersects with other forms of oppression such as sexism, heterosexism, and classism.
2. CRT challenges dominant ideology and claims of objectivity, color-blindness, and equal opportunity which protect privilege.
3. CRT is committed to social justice.
4. CRT values experiential knowledge and lived experience as valid ways of knowing.
5. CRT uses interdisciplinary methods to analyze racism within historical and contemporary contexts.

In recent years, prior foundational work on CRT has been expanded through consideration of hegemony of Whiteness (Cabrera, 2018) and specific application to quantitative research or QuantCrit (Duran, Dahl, et al., 2020; Gillborn et al., 2018; López et al., 2018). Cabrera (2018) offers a constructive critique of CRT and argues that CRT lacks an explicit racial theory. Put another way, as a theoretical framework CRT sufficiently describes what is (e.g., microaggressions, negative campus climate) but provides a limited understanding of how oppression is embedded within systems and structures (Cabrera, 2018). Cabrera (2018) offers an additional core tenet of CRT to address this limitation – hegemony of Whiteness. Cabrera (2018) defines this addition as follows:

> Within the theory of hegemonic Whiteness, race does not produce inequalities. Rather, race is a marker of difference that, when mediated through a system of racial domination (i.e., White supremacy), attributes differential value to specific racial backgrounds…which creates and reproduces racial inequality. (p. 224)

Hegemony of Whiteness is an important addition to the CRT tenets in educational research as it provides a checkpoint for strong racial analyses, differentiates between racism and negative experiences, and frames racism, within the broader context of white supremacy, as probabilistic versus deterministic (Cabrera, 2018).

Building on other critical theories and CRT, QuantCrit brings together quantitative methods, CRT, and intersectional approaches to the study of inequality (Lopez et al., 2018). QuantCrit challenges majoritarian narratives and considers historical and ongoing dynamics of oppression such as settler colonialism, capitalism, structural racism, and other forms of oppression embedded in curriculum, practices, and policies (Lopez et al., 2018). Gillborn et al. (2018) outline the core principles of QuantCrit in education as follows:

1. Centrality of racism: Racism is an ongoing and fluid characteristic of society.
2. Numbers are not neutral: Quantitative data is often collected and analyzed in ways that support the status quo.
3. Categories of analysis are not natural: QuantCrit scholars consider the nature and consequences of categories of analysis. It is not race, sex, or class that are a cause but racism, sexism, and classism, for example, that influence outcomes.
4. Data cannot speak for itself: QuantCrit researchers value experiential knowledge of marginalized groups and recognize that data can be interpreted in multiple ways. In other words, data cannot speak for itself.
5. Using data for social justice: Statistical research is not value free or politically neutral.

Given CRT's emphasis on experiential knowledge, narrative, and counterstory, some scholars have argued that quantitative research methods are incompatible with a CRT approach (Sablan, 2019). However, Sablan (2019) points out that qualitative methods aren't inherently immune from racism, colonialism, and other forms of oppression and core qualitative methods such as ethnography have historically played a significant role in stereotyping marginalized communities. A QuantCrit approach has many benefits including an asset-based framing that challenges deficit narratives and individualistic explanations of inequality (Sablan, 2019). In addition, QuantCrit seeks to identify how inequality is reproduced, rejects homogenization of identity categories, and explores differential outcomes for students (Duran et al., 2020).

Validation theory and sense of belonging are influenced by principles of CRT. While initially explored and developed using qualitative methods, both concepts have more recently been explored using quantitative and QuantCrit methods.

Validation Theory

Grounded in the lived experiences of underrepresented students, validation theory suggests that institutions must adapt and take a more active role in validating diverse student identities, knowledge, and experiences to increase student wellbeing and engagement (Rendón, 1994). Terenzini et al. (1994) were the first to discuss the role of validation in college student success. Rendón (1994) further developed the theory of validation and conceptualized academic and interpersonal validation. Academic validation involves institutional agents helping students to trust in their ability to learn and gain confidence. Interpersonal validation entails institutional agents nurturing personal development and social adjustment among students. Rendón (1994) identifies the following six components of validation:

1. Validation requires enabling, confirming, and supporting students.
2. Validation is related to students' sense of self-worth, acceptance, value, and ability to learn.
3. Student development requires validation.
4. Validation occurs both in- and out-of-class.
5. Validation is a developmental process.
6. Validation is most effective when it occurs early in a student's experience.

From a CRT perspective, validation theory presents multiple solutions to the challenges of non-critical models. First, validation theory challenges deficit models and

assumes that historically underrepresented students' backgrounds provide a rich resource to support student success in higher education. Second, this theory places immense value on, and validation of, the experiences and knowledge of marginalized students. Third, validation theory challenges individualistic explanations of student outcomes and instead considers the role of institutions and institutional agents. As Rendón (1994) notes, assuming all students can access support without active engagement from institutional agents means only the students who are already aware of available supports and how to access them (i.e., students who already have the requisite dominant social capital) will continue to do so in effect reinforcing existing inequalities. Rendón (1994) summarizes how the structure and dominant practices in higher education reproduce inequality:

> Higher education is set up so that students most likely to succeed are those that can successfully disconnect from the past and turn over their loyalty to the conventions and practices of the academy which may have little or nothing to do with the realities from which students come. (p. 3)

Rendón's (1994) groundbreaking work on validation provided a counterstory to dominant narratives about historically underrepresented students' experiences in higher education. Importantly, it also provided specific guidance and suggestions for institutional agents to proactively provide validating interactions with students and remove barriers to student engagement reflecting CRT's commitment to social justice. Validation theory continues to be explored in contemporary research.

Initial work on validation was qualitative and focused primarily on academic validation. Barnett's work (2007, 2010) builds on Rendón's validation theory and was the first to develop and implement a quantitative measure of academic validation. Results indicated that academic validation predicted student intent to persist (Barnett, 2007). While a critical contribution to the limited quantitative research on validation, Barnett's

work did not measure general interpersonal validation, a key theoretical concept in Rendón's validation theory.

It is important to note that there is some overlap in conceptualizations of validation and sense of belonging (Andrade, 2018; S Hurtado et al., 2015). Not only does this suggest a connection between validation and sense of belonging, but it might also suggest that validating interactions between students and institutional agents cue a sense of belonging which in turn supports academic self-concept and student persistence (Alcantar & Hernandez, 2020). Analytically, validation theory encourages consideration of academic and interpersonal validation, student identity, and engagement with the institution.

Sense of Belonging

Sense of belonging is considered a basic, evolutionary need that likely developed when reliance on others and community was necessary for survival (Betts & Hinsz, 2013). Belonging is characterized by a sense of being a valued and supported member of a group and a sense of fit within a group (Cook-Sather & Felten, 2017; Strayhorn, 2019). Strayhorn (2019) offers the following working definition of belonging in higher education contexts:

> Students' perceived social support on campus, a feeling or a sensation of connectedness, and the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the campus community or others on campus such as faculty, staff, and peers. (p. 4)

Strayhorn (2019) argues that sense of belonging is a universal need that influences human behavior and outcomes. The influence of sense of belonging is context dependent and shaped by intersecting social identities and fulfilling belongingness needs is an ongoing process.

Sense of belonging may be experienced to differing degree in specific domains including social, academic, and professional (Pifer & Baker, 2014; Walton & Cohen, 2011). Social belonging refers to positive interpersonal relationships with members of the campus community (Walton & Cohen, 2011). Academic belonging refers to students' trust in their ability to learn (Carter et al., 2013) and others' validation of their intellectual abilities (Ellis et al., 2018; Yosso, 2005). Professional belonging may refer to a sense of loyalty and adherence to professional codes of conduct (Ahmad et al., 2012). Students experience belonging among these domains differently. For example, Yosso (2005) explains that validation of intellect and academic merit is most likely to occur for students with normative cultural knowledge and skills. Relatedly, early work on professional belonging found that professionalism was associated with detachment, distance, and competition, which women of color graduate students experienced as alienating (Margolis & Romero, 1998). In my current research, sense of belonging primarily relates to social belonging.

Researchers interested in belonging argue that it provides motivation and a sense of safety that support student success (Stebleton et al., 2014; Strayhorn, 2019; Vaccaro et al., 2015). Sense of belonging supports increased engagement through a process of mutual investment in which a community invests in an individual and, in turn, an individual seeks to contribute to the community (Stebleton, 2014). Motivation to achieve is felt more strongly when the endeavor is linked to one's social identity and sense of belonging (G. L. Cohen & Garcia, 2008). Lastly, Vaccaro et al. (2015) argue that belonging provides a sense of psychological safety, which increases a student's willingness to confront and even seek out new challenges. Sense of belonging is even

more instrumental to student success in contexts where students feel excluded, isolated, or invisible (Strayhorn, 2019).

From a developmental perspective, Benshoff et al. (2015) found that older students are less motivated by individual achievement and are more concerned with mentoring, family, and community relationships. However, during times of transition, such as the transition to college, students may recycle through various developmental stages and issues of competency, interdependence, and integration of student identity may arise. The primary challenge of older students related to belonging revolves around the strain of managing multiple and competing roles and responsibilities within a campus environment designed to serve students with fewer responsibilities (Benshoff et al., 2015).

In addition to considering belonging as a factor related to student wellbeing and persistence, scholars have also considered the related concept of grit. Duckworth et al. define grit as passion and perseverance in working toward long-term goals (as cited in Credé et al., 2017). Grit is comprised of two components. The first is perseverance of effort which reflects a tendency to continue to work diligently even in the face of difficulty and setbacks. Perseverance is thought to contribute to persistence by contributing to willingness to work through failures (Credé et al., 2017). The second component of grit is consistency of interest which is a tendency to maintain the same or similar interests and goals over time. Consistency contributes to persistence through the regularity of investing time and engaging in deliberate practice toward mastery of a task or skill (Credé et al., 2017). In summary, proponents of grit have argued it helps explain student wellbeing and persistence in exclusionary or otherwise challenging contexts

(Almeida et al., 2021; Credé et al., 2017). However, a primary limitation of grit is that the concept downplays the significant role of institutional actors in student success (Almeida et al., 2021).

Empirical research has found that grit has a limited influence on student outcomes and is only moderately correlated with performance and retention (Credé et al., 2017). Credé et al. (2017) found that the perseverance component of grit may be a stronger predictor of academic performance and persistence on its own. Almeida et al. (2021) found that access to social capital with faculty and staff was a better predictor of GPA than grit among first-generation (FG) college students. Empirical research has also found little difference in grit scores associated with demographic variables such as gender and ethnicity suggesting it has limited potential to uncover differential experiences associated with social identity categories (Credé et al., 2017). In contrast, group differences in sense of belonging have been identified related to a variety of contextual factors including student demographics and campus environments.

Similar to validation theory, sense of belonging is well aligned with CRT. Sense of belonging doesn't rely on deficit-based narratives to understand differential outcomes in student experience (Ledesma & Calderon, 2015). In addition, belonging attends to structural racism and other forms of oppression within the campus environment and climate as required by CRT (Harper, 2012). Relatedly, belonging connects exclusionary environments to differential outcomes in wellbeing and persistence and does not posit race or other identity categories as a causal factor in and of itself (Gillborn et al., 2018; Harper, 2012).

Prior research considering both validation experiences and sense of belonging found that the relationship between academic validation and intent to persist is mediated by students' sense of belonging (Barnett, 2010). In addition, students' experiences of validation can reduce the negative impact of discrimination on sense of belonging (Hurtado et al., 2015). Students of color may be more likely to experience racism, microaggression, overall negative racial climates, and decreased sense of belonging in comparison to students who are White (Choi et al., 2021; Dortch & Patel, 2017; Ellis et al., 2018). Students of color and other historically underrepresented students may experience overt hostility and discrimination on campus which contribute to a sense of non-belonging (Brunsma et al., 2017; Choi et al., 2021). Academic culture may be more subtly marginalizing but nonetheless cues a sense of non-belonging or marginalization. Dominant academic culture may be reflected through the services available (or not) to students (Benshoff et al., 2015), curriculum (Byers et al., 2019; Cunningham, 2016), and teaching strategies (hooks, 1994).

Other factors associated with sense of belonging include the demographics of the campus and surrounding community. In predominantly White institutions (PWIs), 50% or more of enrolled students identify as White (Brown II & Dancy II, 2010). In extreme PWIs (EPWIs), students of color make up less than 10% of enrolled students (McCoy, 2014). Students of color attending PWIs and EPWIs are more likely to experience racism, microaggressions, overall negative racial climates, and decreased sense of belonging in comparison to students who are White (Carter et al., 2013; Dortch & Patel, 2017; Ellis et al., 2018). Students actively navigate academic culture and experiences of belonging and

non-belonging in various ways. Thus, any discussion of belonging must also attend to experiences of marginality, particularly for historically underrepresented students.

A variety of terms may be used to reflect marginality including otherness, alienation, isolation, and non-belonging (Cook-Sather et al., 2018; Espinoza, 2010; Pifer & Baker, 2014). Developing a sense of belonging is not necessarily a primary goal of students. Hornsey and Jetten (2004) explain that individuals may intentionally seek to differentiate themselves or leave groups that conflict with their values or goals. In higher education, historically underrepresented students may resist messages of non-belonging by leaving an institution (Huffman, 2001). However, the potential harmful effects of rejection, such as a sense of helplessness and lack of control, should not be minimized (Betts & Hinsz, 2013). As will be discussed in the limitations section, a limitation of my study is the unavailability of data related to self-reported importance of sense of belonging. However, variables that account for institutional context including measures of institutional commitment to diversity and frequency of discrimination, bias, and harassment experiences on campus are included.

Empirical Literature

Validation and Sense of Belonging

Findings from qualitative research with Latinx, Black women, and community college students indicated that faculty validation is linked to improved academic self-concept, decreased isolation, and improved persistence (Alcantar & Hernandez, 2020; Kelly et al., 2021; Martinez & Elue, 2020). Recent quantitative work on validation suggested that validation predicted self-efficacy (Moore, 2021; Worcester, 2017), intent to persist (Corazon-Reano, 2020; Worcester, 2017), and academic performance

(Worcester, 2017). Belonging has similarly been linked to academic performance, self-efficacy, and mental health (Corazon-Reano, 2020; Gillen-O'Neel, 2021; Gopalan & Brady, 2019).

Research exploring these relationships among subgroups of students has found that students of color perceived lower academic and interpersonal validation in comparison to students who are White (Fregoso, 2021; Hurtado et al., 2011). Differences in belonging have also been identified among student subgroups including by college generation status, race, gender, age, and sexual orientation.

First-generation (FG) students were less likely to report strong levels of belonging and may be more sensitive to fluctuations in sense of belonging in comparison to their continuing generation (CG) peers (Duran, Dahl, et al., 2020; Gillen-O'Neel, 2021; Gopalan & Brady, 2019; Miller et al., 2019).

Based on a nationally representative sample, Black, Hispanic, and Native American students reported lower sense of belonging compared to their peers who identify as White and Asian (Gopalan & Brady, 2019). However, some research has found that students who are Black reported higher levels of belonging in comparison to students who are White (Miller et al., 2019). It is important to note that Miller et al. (2019) explored belonging among students in their senior year and had a smaller sample size (N=8,939) in comparison to Gopalan and Brady (2019) with a sample of 23,750 first-year students.

Miller et al. (2019) found that older students also reported higher levels of belonging in comparison to younger students and students who attended private institutions reported higher levels of belonging in comparison to those who attended

public institutions. Regarding sexual orientation, lesbian, gay, bisexual, and asexual (LGBA+) students reported lower levels of belonging in comparison to non-LGBA+ students (Wilson & Liss, 2020).

Researchers have also explored differences in validation and belonging experiences among intersectional subgroups of students. For example, among Filipino undergraduate students, male CG college students expressed the highest sense of academic validation (Corazon-Reano, 2020). Other research has found that White men are more likely to experience higher levels of validation in comparison to women of all races (Worcester, 2017). Considering belonging, White CG students reported a higher sense of belonging compared to all other students (Duran et al., 2020). In contrast, other studies have not found statistically significant interactions in sense of belonging among students based on race and college generation status (Gopalan & Brady, 2019) and gender and college generation status (Corazon-Reano, 2020).

While clear patterns in results may not be evident, it is clear that validation and belonging are influenced by a variety of contextual factors including institutional types, class standing, and sample composition. For example, Duran et al. (2020) had a sample size of 7,888 drawn from multiple public and private institutions and included students in their first through fourth years. Worcester (2017) analyzed data from 131 biomedical students enrolled in a single, private research institution. As previously mentioned, Gopalan and Brady (2019) used the only nationally representative sample with a sample of 23,750 first-year students. Finally, Corazon-Reano (2020) drew a sample from public institutions in California and included 244 Filipino students in their first through fifth years.

The research reviewed in this section highlights how validation and belonging are linked to one another. For example, faculty validation is associated with increased sense of belonging (Alcantar & Hernandez, 2020). Finally, validation and sense of belonging are in turn associated with a range of outcomes including, but not limited to, self-efficacy (Moore, 2021), mental health (Gopalan & Brady, 2019), and persistence (Worcester, 2017; Martinez & Elue, 2020). In the following section, I turn to reviewing student-level factors currently linked to my outcomes of interest.

Student-level Factors

A variety of student-level factors related to demographics, identity, and enrollment have been associated with wellbeing, performance, persistence, and other related outcomes.

Academic Self-Concept and Wellbeing. Among college students, men reported significantly higher academic self-concept compared to women (Cooper et al., 2018). Regarding sexual orientation, LGBA+ students reported more anxiety and depression in comparison to non-LGBA+ students (Wilson & Liss, 2020). Generation status has also been associated with wellbeing. FG students reported higher levels of stress and depression in comparison to their CG peers (Stebleton et al., 2014).

Performance. Higher adverse childhood experience (ACE) scores have been associated with decreased academic performance as measured by GPA. When examining these relationships more closely, Watt et al. (2021) found that Black and Hispanic students reported higher ACE scores in comparison to White students. In turn, higher ACE scores were associated with lower GPA for Black and Hispanic students.

Persistence. Disparities in persistence have been associated with a variety of intersecting social identities including race, college generation status, sexual orientation, and gender identity. According to NCES (2021), of all groups, students who identify as Asian are the most likely to complete their undergraduate degree within six years followed by White students, students of two or more races, Hispanic students, Pacific Islander students, Black students, and American Indian/Alaska Native students (AIAN). When considering race and sex (reported using male and female), students who identified as Asian and female were the most likely to successfully complete their degree while students who identified as AIAN and male were the least likely (NCES, 2021).

FG students are more likely to identify as Hispanic, Black, AIAN, and Pacific Islander and report lower average incomes in comparison to CG students (CFGSS, 2020). Completion rates for FG students were 20% in comparison to 49% for CG students (CFGSS, 2020). However, it is important to note that other research has suggested that FG students are more similar financially and academically than different to their CG peers though this varies from institution to institution (Wildhagen, 2015). Simmons et al. (2018) found FG college students are also less likely to pursue a graduate degree in comparison to their CG peers.

As previously noted, there is limited data related to completion rates and other outcomes for LGBTQ+ college students (Legg et al., 2020; PNPI, 2021). Existing data suggests that, among members of the LGBTQ+ community aged 25 and older, 17% have earned a bachelor's degree in comparison to 18% of people who do not identify as LGBTQ+ (PNPI, 2021). Trans and gender non-conforming (TGNC) students may be

more likely to experience hostility and vulnerability which may increase the likelihood of attrition (Nicolazzo et al., 2017).

In addition to considering how race, gender, and sexual orientation are associated with wellbeing, performance, and persistence, my study also accounts for identity salience. According to Bowman and Felix (2017) identity salience generally refers to how important a dimension of one's identity is to their definition of self. Student identity centrality is positively related to intent to persist even after controlling for other factors like student demographics (Bowman & Felix, 2017). While my current study will not consider student identity salience specifically, I consider other identity salience factors that have been associated with college outcomes. For example, racial centrality, or the importance of racial group membership, was directly and positively related to academic performance as measured by GPA (Beasley & McClain, 2021). In the DLE, identity salience is operationalized as the frequency with which students think about particular aspects of their identity. Data from the DLE suggest that LGB students think about their identity more often than students who identify as heterosexual (Hughes & Hurtado, 2018). Various factors are associated with increased identity salience including inclusive curriculum, cocurricular diversity activities, and bias experiences (Hughes & Hurtado, 2018). It is important to note that identity salience does not necessarily indicate stereotype threat which is overwhelmingly associated with harmful outcomes for students including decreased feelings of belonging, confidence in ability, and motivation (Dennehy et al., 2018).

In addition to student demographics and identity, other student-level factors have been associated with wellbeing, performance, and persistence. These include family

support (Lopez, 2018; Luna & Prieto, 2009), finances and financial stress (Carter et al., 2013; Hunter & Devine, 2016), GPA (Kamer & Ishitani, 2021), and enrollment status (Gardner, 2008; Kamer & Ishitani, 2021).

Family Support. Maintaining family and community connections is particularly important to the success of historically underrepresented students (Lopez, 2018). For example, family support is associated with making graduate school more feasible for Latinx students (Luna & Prieto, 2009).

Finances. Finances and financial stress are associated with wellbeing, academic performance, and persistence (Carter et al., 2013; Lopez, 2018). Jack (2019) argues that there is an overemphasis on gender and race analysis and suggests that considering how finances impact student experiences is essential. For example, FG students experience lower financial support and more financial family responsibilities in comparison to their CG peers which increase stress and decrease persistence (Ellis et al., 2018). Hunter and Devine (2018) found that financial stress contributes to student decisions to leave a program.

GPA. Grade point average or GPA has long been identified as one of the most significant and powerful factors in influencing student persistence, though the degree of influence of GPA may vary across time or enrollment year (Kamer & Ishitani, 2021; Metzner & Bean, 1987).

Enrollment. Part-time enrollment status, associated in particular with post-traditional students, has been identified as a potential risk factor for attrition (Kamer & Ishitani, 2021). Beyond undergraduate degree completion, Garder (2008) found that part-time students are less likely to feel like graduate education is an option.

Student and Institutional Engagement

A key aspect of validation theory is that student engagement within their institution is an important opportunity for validation to occur which has implications for wellbeing and persistence (Bennett et al., 2021; Rendón, 1994). A range of student support services have been identified as supporting student persistence and wellbeing. For example, participating in cultural activities on campus is positively associated with student persistence and wellbeing, particularly for historically underrepresented students (Bennett et al., 2021; Lopez, 2018). Working closely with writing center staff and academic advisors is also associated with improved retention, degree completion, and reduced emotional stress (Brunsma et al., 2017; Hunter & Devine, 2016; Kelly et al., 2019). While historically underrepresented students benefit from these supports, some research suggests they may also be less likely to utilize them. For example, Stebleton et al. (2014) found that FG college students reported more depressive symptoms and higher stress than their CG peers but were also less likely to access counseling and psychological services on campus.

Institutional Characteristics and Climate

A limitation of existing literature is that it fails to give sufficient attention to broader racial and cultural contexts on campus and how they may affect students (Museus, 2014). Experiences of discrimination and bias have a direct negative effect on belonging, academic validation, and interpersonal validation (Hurtado et al., 2015). Experiences of racial microaggressions predicted depressive symptoms among students who identified as Asian (Choi et al., 2021). Experiences of validation and higher levels of

belonging can help to reduce negative impacts of bias and discrimination and serve a protective function (Choi et al., 2021; Hurtado et al., 2015).

Regarding campus culture and climate, perceiving campus culture as having cultural relevance and responsiveness predicted intent to persist and GPA among Filipino students (Corazon-Reano, 2020). Among LGBTQIA+ students, students who had more positive views of campus climate and greater ratings of institutional action rated their academic success as higher (Garvey et al., 2018). It is important to note that the broader political climate also impacts student wellbeing (Tebbe et al., 2021). Discrimination had a greater negative impact on belonging and mental health for trans and gender non-conforming adults who were aware of anti-trans legislation in their state of residence (Tebbe et al., 2021).

Summary: Key Concepts for an Interactional Approach

Theoretical and empirical literature on CRT, validation, and sense of belonging identifies key factors across individual and institutional levels that influence student wellbeing and academic outcomes without relying on a deficit-based framework. Literature on validation and sense of belonging suggest the inclusion of factors related to student identity and student engagement with the institution. Sense of belonging and CRT support consideration of institutional and environmental factors including institutional characteristics and climate. Instead of positing students' wellbeing and persistence as a result of primarily student- or institutional-level factors, I propose an interactional model that considers 1) student-level factors, 2) student and institutional engagement, and 3) institutional characteristics and climate for analyzing the relationships between validation, belonging, and academic self-concept and intent to persist.

Goals and Objectives of the Present Research

Sense of belonging has been identified as a key concept for understanding students', particularly historically underrepresented students', wellbeing and persistence outcomes and has been explored extensively using both quantitative and qualitative methods (Cook-Sather et al., 2018; Johnson, 2012; Strayhorn, 2019). In contrast, factors that are closely linked to belonging, such as validation, are less understood and have only recently been explored on a larger scale using quantitative methods (Rendón Linares & Muñoz, 2011). My aim is to further this line of research by exploring the relationships between sense of belonging, academic validation, and interpersonal validation and their impacts on academic self-concept and intent to persist within the context of student-level factors, student and institutional engagement, and institutional characteristics and climate. I examined these relationships for the entire sample of four-year college students and student subgroups including FG, LGBTQ+, and students of color. Results of this research will be used to inform implications for higher education administrators, educators, and researchers to advance equity in access to higher education.

Chapter 3: Methodology

Description of the Survey Instrument

The Diverse Learning Environments (DLE) survey is a multiyear national survey administered by the Higher Education Research Institute (HERI) at the University of California Los Angeles that aims to help higher education institutions evaluate their campus climate, institutional practices, and student outcomes. The survey was piloted in 2009-2010 with over 4,500 participants across 14 institutions and has been administered yearly since 2011. The primary purpose of the survey is to better understand the experiences of student subgroups, especially historically underrepresented students, to reduce inequality and improve student experiences (Hurtado et al., 2011).

The survey is based on a review of over 90 instruments that had previously been used to examine campus diversity and climate and is grounded in an interactional model linking student behaviors, perceptions, institutional practices, and student outcomes (Hurtado et al., 2011). Survey domains include student perceptions and behaviors related to climate (e.g., harassment, institutional commitment to diversity), institutional practice (e.g., curriculum of inclusion, co-curricular diversity activities), and student outcomes (e.g., integration of learning, pluralistic orientation). Variables for my current work are drawn from the first two domains – student perceptions and behaviors related to climate and institutional practice. Most of the data derived from the DLE survey is self-reported

by student participants, but there is also specific information reported by survey administrators at each institution.

I selected the DLE survey for my dissertation because, to the best of my knowledge, it is the only publicly available data source that includes validated quantitative measures of academic and interpersonal validation and sense of belonging, which are focus independent variables in my current study.

Description of the Sample

Both two-year and four-year institutions can elect to participate in the DLE. At four-year institutions, freshman through seniors are eligible to participate. However, HERI recommends that students be in at least their second or sophomore year to participate in the survey (Hurtado et al., 2011). I requested data from four-year institutions only.

To participate in the DLE, institutions must register with HERI and pay fees associated with the survey, data collection, and analysis. Total cost estimates are only available upon request, but a $1,000 deposit is required for participating institutions (HERI, 2020). The survey is administered each year from October through April. The DLE uses a non-probability sampling strategy. According to Henry (2011), non-probability sampling strategies are appropriate in developmental studies, including research conducted for theory clarification and development.

Researchers can request data from HERI that is at a minimum three years old via a proposal review process. My proposal for this study was approved by HERI in September 2020. The most recent available three years of data was requested for four-year institutions inclusive of the years 2015, 2016, and 2017. The rationale for requesting

three years of data is to increase the sample size for my analysis. In 2015, 26 institutions participated with a total sample size of 19,580. In 2016, 30 institutions participated for a total sample size of 31,111. Lastly, in 2017, a total of 28 institutions participated with a final sample size of 17,550. My current project used all subjects with non-missing data on the respective independent and dependent variables used for analyses (n=32,529).

Research Questions

I explore two primary research questions through my dissertation research. Both questions examine the entire sample of four-year college students and student subgroups including FG, LGBTQ+, and students of color. Three sets of control variables will be progressively added to regression models to determine if and how these additions affect the relationships between the primary independent variables and the dependent variables. The three sets of control variables are: 1) student demographics, identity, and enrollment, 2) student engagement, and 3) institutional characteristics and climate.

Question 1) How do academic and interpersonal validation and sense of belonging influence students' academic self-concept score controlling for student demographics, identity, and enrollment variables, student engagement variables, and institutional characteristics and climate variables?

Question 2) How do academic and interpersonal validation and sense of belonging influence students' intent to persist controlling for student demographics, identity, and enrollment variables, student engagement variables, and institutional characteristics and climate variables?

Variables

Dependent Variables

Three dependent variables were used in my study: academic self-concept (continuous), considered dropping out of college (binary), and planning to pursue graduate studies (binary).

Academic self-concept was a factor (composite) score derived from four ordinal items each consisting of a five-point Likert scale for self-rating (1= among lowest 10%, 5= among highest 10%). Items include: 1) academic ability, 2) mathematical ability, 3) self-confidence, and 4) drive to achieve (HERI, 2019). The academic self-concept measure has been shown to have adequate psychometric support with a coefficient alpha estimate of .73 (HERI, 2019).

Intent to persist was operationalized using two dichotomous variables. The first was whether the student has considered dropping out of college (1=yes, 0=no). The second variable was whether the student plans on pursuing a graduate degree (highest degree planned: 1=master's degree or above, 0=bachelor's degree or lower).

Primary Independent Variables

Three primary independent continuous variables were used in this study: academic validation, interpersonal validation, and sense of belonging. Academic validation was a factor (composite) score based on four ordinal items that each used a five-point Likert scale (1=never, 5=very often) (HERI, 2019). The items included: 1) instructors were able to determine my level of understanding of course material, 2) instructors provided me with feedback that helped me judge my progress, 3) I feel like my contributions were valued in class, and 4) instructors encouraged me to ask questions and participate in discussions. The academic validation measure has been shown to have adequate psychometric support with a coefficient alpha estimate of .86 (HERI, 2019).

Interpersonal validation was a factor (composite) score based on five ordinal items that each used a four-point Likert scale (1=strongly disagree, 4=strongly agree) (HERI, 2019). The items used included: 1) faculty empower me to learn here, 2) at least one staff member has taken an interest in my development, 3) faculty believe in my ability to succeed academically, 4) staff encourage me to get involved in campus activities, and 5) at least one faculty member has taken an interest in my development. The interpersonal validation measure has been shown to have adequate psychometric support with a coefficient alpha estimate of .88 (HERI, 2019).

Sense of belonging was a factor score based on three ordinal items that had the same four-point Likert scale as interpersonal validation (1=strongly disagree, 4=strongly agree) (HERI, 2019). Sense of belonging items included: 1) I feel a sense of belonging on campus, 2) I feel that I am a member of this college, and 3) If asked, I would recommend this college to others. The sense of belonging measure has been shown to have adequate psychometric support with a coefficient alpha estimate of .86 (HERI, 2019).

Control Variables

Survey year was a categorical variable defined based on school year corresponding to the survey. Years included are 2015, 2016, and 2017 (reference group).

Student Demographics, Identity, and Enrollment. Age was coarsened for analysis purposes and includes five categories: ≤ 17 years, 19 years, 20 years (reference group), 21-24 years, and 25+ years.

Sex was a binary categorical variable using male and female (reference group) categories.

Trans and gender non-conforming (TGNC) was a created binary categorical variable defined as participants who self-identified as a trans woman, trans man, or gender queer/ gender non-conforming. Reference group includes participants who identified as cisgender (non-TGNC).

Lesbian, gay, bisexual, queer (LGBQ) was a researcher created binary categorical variable defined as participants who self-identified as lesbian, gay, bisexual, or queer (LGBQ). Reference group for analyses were participants who identified as heterosexual (non-LGBQ).

Race was a categorical variable consisting of six response categories: Asian, Black, Hispanic, White (reference group for analyses), Multiple Races, and Other. Other includes participants who self-identified as Other, American Indian, or Hawaiian. American Indian and Hawaiian participants were included in the Other category due to small sample sizes.

Family support was a dichotomized variable measuring how frequently participants felt family support to succeed (0=not at all versus 1=occasionally/frequently).

Financial concern was a dichotomized variable measuring the extent to which participants experienced concerns about their ability to finance their college education (0=none versus 1=some/major).

Family income was a coarsened five-point ordinal scale variable (0=$0 to $39,999, 1=$40k to $74,999 (reference group), 2=$75k to $99,999, 3=$100k to $199,999, and 4=$200,000 or more. This variable was treated as categorical for statistical analyses.

First-generation (FG) status was a binary variable reflecting participants who reported their parent/s had less than some college (0=not FG college student, 1=FG college student).

Class standing was a categorical variable with response options defined as freshman, sophomore, junior (reference group for analyses), senior, and other.

GPA was an 8-category ordinal scale variable ranging from 1 = D to 8 = A/A+. This variable was treated as continuous for analysis purposes.

Identity salience was operationalized using four different ordinal variables. The ordinal response options for the identity salience items ranged from 1=never to 5=very often. The item stem for the four items was: How often in the past year have you thought about your: 1) Gender/Gender identity, 2) Race/ethnicity, 3) Sexual orientation, and 4) Socioeconomic class. These variables are treated as continuous for analysis purposes.

Student and Institutional Engagement. Co-curricular diversity activities was a measure of students' involvement in campus facilitated programs focused on diversity related issues (HERI, 2019). The factor score was comprised of three ordinal items measured on a 5-point Likert scale (1=Never to 5=Very Often). The items include: 1) Participated in ongoing campus-organized discussions on racial/ethnic issues, 2) Participated in campus center activities (e.g., LGBTQ+, Disability), and 3) Attended events focused on diversity. The co-curricular diversity activities measure has been shown to have adequate psychometric support with a coefficient alpha estimate of .89 (HERI, 2019).

Five variables were included to reflect engagement with on-campus resources. Engagement items were measured on a three-point Likert scale (1=Not at all to

3=Frequently) and based on a common prompt (Since entering this college, how often have you utilized the following services). The five engagement area variables included 1) Writing Center, 2) Career Counseling and Advising, 3) Academic Advising, 4) Student Health Services, and 5) Student Psychological Services. For analysis purposes, these variables were dichotomized (0=not at all versus 1=occasionally/frequently).

Two items were included to reflect engagement with faculty and peers outside of the classroom. These items were measured on a three-point Likert scale (1=Not at all to 3=Frequently) but were dichotomized for analyses (0=not at all versus 1=occasionally/frequently). The items had a common prompt (Since entering this college, how often have you) and addressed the areas of 1) Attended professor's office hours and 2) Discussed course content with students outside of class.

Institutional Characteristics and Climate. Region was a categorical variable denoting the geographic location of the institution: East, Midwest, South, and West (reference group).

College selectivity was a variable created based on standardized admission test scores. For analysis purposes, the variable was dichotomized into 0=very low, low, medium (lower, reference group) versus 1=high, very high.

Institutional control was a binary categorical variable that reflects whether an institution is public or private (reference group).

Institutional commitment to diversity was a measure of a participant's perception of campus commitment to diversity. A single (composite) factor score was derived from four items which used a 4-point Likert scale (1=Strongly Disagree, 4=Strongly Agree). Participants rated the following items in response to the prompt: Please indicate the

extent to which you agree or disagree with the following statements. This college: 1) Promotes the appreciation of cultural difference, 2) Has a long-standing commitment to diversity, 3) Accurately reflects the diversity of the student body in publications, and 4) Has campus administrators who regularly speak about the value of diversity (HERI, 2019). The measure showed adequate internal consistency with a coefficient alpha estimate of .86 (HERI, 2019).

Discrimination and bias measured the frequency of students' experiences with more subtle forms of discrimination. A single (composite) factor score was derived from five ordinal items that used a five-point Likert scale (1=Never, 5=Very Often). Participants rated the following items in response to the prompt: Please indicate how often you have personally experienced the following forms of bias/harassment/discrimination at this college: 1) Verbal comments, 2) Witnessed discrimination, 3) Cyberbullying, 4) Exclusion, and 5) Offensive visual images or items (HERI, 2019). The measure showed adequate internal consistency with a coefficient alpha estimate of .88 (HERI, 2019).

Harassment measured the frequency that participants experience harassment or threats. A single (composite) factor score was derived from six ordinal items that used a five-point Likert scale (1=Never, 5=Very Often). Participants rated the following four items in response to the prompt: Please indicate how often you have personally experienced the following forms of bias/harassment/discrimination at this college: 1) Physical assaults or injuries, 2) Threats of physical violence, 3) Anonymous phone calls, 4) Damage to personal property (HERI, 2019). The following two items are rated in response to a slightly different prompt: At this college how often have you: 1) Reported

an incident of sexual harassment to a campus authority and 2) Reported an incident of discrimination to a campus authority (HERI, 2019). The measure showed adequate internal consistency with a coefficient alpha estimate of .88 (HERI, 2019).

Analytic Methods

Ordinary least squares (OLS) regression, or linear regression, models were used to evaluate my first research question related to academic self-concept (continuous dependent variable). Logistic regression models were used to evaluate my second research question that focused on two different binary dependent variables (considered dropping out of college and plans for graduate studies). I implemented a common model building strategy for each of the dependent variables. Specifically, five blocks or sets of independent variables were sequentially entered as predictors in the model based on my conceptual framework. Between each model building step, r-squared values were recoded and changes in r-square were calculated to provide measures of effect size for each block of commonly themed independent variables. Additionally, when applicable, Cohen's f^2 were calculated as $f^2 = R^2/1\text{-}R^2$. Common thresholds for f^2 for small, medium, and large effects are $\geq$.02, $\geq$.15, and $\geq$.35. All data management and analyses were conducted using SPSS 26. This research received exempt status by the Bryn Mawr College IRB (#21-015) in February 2021.

General Model Building Strategy

Model 1: Survey Year and Primary Independent Variables (academic validation, interpersonal validation, and sense of belonging)

Model 2: Add Student Demographics, Identity, and Enrollment Variables

Model 3: Add Student and Institutional Engagement Variables

Model 4: Add Institutional Characteristics and Climate Variables

Model 5: Test Primary Independent Variables-by-historically underrepresented student subgroup interactions

Importantly, Model 5 evaluated whether the effects of my primary independent variables on the respective dependent variables varied by historically underrepresented subgroup (i.e., first-generation college student, TGNC, LGBQ, and Race). Thus, for each of these underrepresented subgroups there were three unique interactions.

- First-generation status: First Gen-by-Academic Validation; First Gen-by-Interpersonal Validation; First Gen-by-Belonging. Continuing generation students are the reference group.
- TGNC identity: TGNC-by-Academic Validation; TGNC-by-Interpersonal Validation; TGNC-by-Belonging. Non-TGNC students are the reference group.
- LGBQ identity: LGBQ-by-Academic Validation; LGBQ-by-Interpersonal Validation; LGBQ-by-Belonging. Students who did not identify as LGBQ are the reference group.
- Race: Race-by-Academic Validation; Race-by-Interpersonal Validation; Race-by-Belonging. Students who identified as White are the reference group.

To ensure the robustness of results, these interaction models were run in two different ways. First, all possible interactions were added simultaneously (Model 5). Second, unique interaction models were fit for each historically underrepresented group: Model 5a: First-generation, Model 5b: TGNC, Model 5c: LGBQ, Model 5d, Race.

Contextualizing the Meaningfulness of Effects

A challenge with the current work was the high statistical power associated with the large analysis sample size (over 32,000 participants). This resulted in many statistically significant effects that were trivial with regards to effect size. To facilitate the interpretation of model results so that I could focus on predictor effects that have substantively meaningful impact on my selected dependent variables, I focused on interpreting significant ($p \leq .01$) predictors that had a small effect size or larger based on commonly used rules of thumb. Specifically, for the linear regression models, I computed partial eta^2 effect size estimates for each predictor (small: $\geq .01$; moderate: $\geq .06$; large: $\geq .14$) to assist with interpretation. For logistic regression models, I computed standardized effect estimates (small: $\geq .1$; moderate: $\geq .3$; large: $\geq .6$) to facilitate interpretation of model results. As described above, I computed f^2 values to contextualize the magnitude of the set, or blocks, of themed independent variables (small: $\geq .02$; moderate: $\geq .15$, large: $\geq .35$).

I established the following criteria for interaction terms due to the large sample size and high statistical power: Interactions must be significant ($p \leq .01$) in both the full model and corresponding sensitivity analysis model to warrant further exploration and probing.

Reflexivity

From a CRT and QuantCrit perspective, providing a reflexivity statement increases transparency of positionality and elucidates how social location informs my interest, approaches, and expectations all shaped within larger dynamics of power, privilege, and disadvantage (Lopez et al., 2018). Currently, I am a seventh year Ph.D. candidate at a small, predominantly White, private liberal arts college. I am also a higher

education practitioner working in student support services providing both academic and professional support to graduate students. I identify as a White ciswoman and first-generation graduate student from a rural, working-class background.

My parents were the first in their immediate families to graduate from high school, and my mother was the first in her family to complete her undergraduate degree. Throughout my primary and secondary educational experiences, I attended rural, under resourced public schools and was not well prepared to attend college. I attended a small, predominantly White private liberal arts college not far from my hometown. Initially, I planned to drop out and return home. However, I received early validating experiences from college faculty and staff and referrals to student support services which were integral to my success in navigating unfamiliar and confusing structures and practices. It is also important to acknowledge the strengths that I brought to my college experience including a strong work ethic and professionalism given that I had already been working on and off from the age of 15.

I bring all these experiences and more to my research interests and practice. I also consider the experiences of undergraduate and graduate students that I've worked closely with at multiple institutions over the past 10 years. Currently, I work with graduate social work students and alumni as the director of career services and a writing coach at a small liberal arts college in the Northeastern U.S.

In career services, I've observed how important it is for students to feel that their prior professional and personal life experiences are recognized and valued. Validating experiences provide a strong foundation for students to acknowledge their many strengths as well as areas for growth and development. As a writing coach, I've directly observed

the impact of academic validation, or lack thereof, on students' experiences. Students have described receiving thoughtful and thorough feedback, including constructive critique, from instructors and writing support staff as not only enhancing their learning experience but also how they view themselves as capable graduate students. Conversely, I've comforted and consulted with students who received invalidating feedback explicitly and implicitly from faculty and staff. These experiences tend to increase students' anxiety, decrease their confidence, and negatively affect their ability to actively engage in course material, discussion, and other activities. In my role providing academic support to students, I've helped to develop both transition and first-year experience programming for graduate students. These programs share similar goals in that they seek to establish early, supportive social connections to help combat the isolation that many students experience while also encouraging personal, academic, and professional development. Working with students in these programs has provided many practical insights into the power of validation and belonging in shaping students' experiences.

Given these experiences, and my review of the literature, I expect that validation will play an important and significant role in student outcomes. I expect women, students of color, FG, LGBQ, and TGNC students to experience lower levels of validation and belonging and more exclusionary campus climates in comparison to students who identify as men, White, CG, heterosexual, and cisgender. As a result, I expect they may also report lower levels of academic self-concept, be more likely to consider dropping out, and be less likely to plan to attend graduate school. At the same time, I also expect students who identify as women, students of color, FG, LGBQ, and TGNC to demonstrate agency and great resilience. Admittedly, some of this nuance will be difficult

to capture using quantitative methods. Thus, it will be critical to interpret results within historical and contemporary contexts (Gillborn et al., 2018).

Chapter 4: Findings

Organization of Chapter

In Chapter 4: Findings, I first present descriptive statistics for variables used in my analyses. I then present results organized by the outcome of interest: 1) Academic Self-Concept, 2) Consider Dropping Out of College, and 3) Plans to Attend Graduate School. The results for each outcome include a brief review of model building and interpretation strategies, Pearson correlations, results for each model building step (Models 1-5), and a summary of key findings.

Descriptive Statistics

Table 1 provides descriptive statistics (sample size and percentages) for categorical variables and Table 2 provides descriptive statistics for continuous variables (means and standard deviations) used in analyses. Almost half of the total observation (N=32,529) came from the 2016 school year (47.1%, n=15,326) and just over a quarter came from 2015 (26.9%, n=8,757) and 2017 (26.0%, n=8,446). Approximately two-thirds of the sample identified as female (68.6%, n=22,309), over half identified as White (54.5%, n=17,696) followed by students who identified as Asian (14.1%, n=4,575), Hispanic (13.8%, n=4,475), Multiple Races (10.3%, n=3,366), Black (6.6%, n=2,148), and Other (.8%, 269). Just over 18% (n=5,923) identified as a first-generation college student. One percent (n=367) identified as TGNC, and 13.1% (n=4,271) identified as LGBQ.

In comparison to the national population of undergraduate students, 58% identified as female while 42% identified as male (NCES, 2020). Fifty-three percent identified as White, 22% Hispanic, 13% Black, 7% Asian, 4% two or more races, and less than 2% identified as AIAN (NCES, 2022). Nearly 35% are estimated to be FG college students (PNPI, 2021). Seventeen percent identified as LGBQ and 1.7% as TGNC (PNPI, 2022).

Ordinary Least Squares (OLS) Regression: Academic Self-Concept

Model Building and Interpretation Strategies

The sequential linear regression model building approach is documented in Chapter 3: Methodology. Due to the large sample size and high level of statistical power, it was challenging to determine which predictors were meaningful because trivially small effects would be statistically significant at the standard threshold of $p<.05$. This issue was addressed by using a sequential model building approach that emphasized effect sizes. I focus primarily on interpreting predictor effects with effect sizes that are small or greater in magnitude (i.e., $f^2 \geq .01$; partial $eta^2 \geq .01$). However, I do interpret select predictor effects significant at the p=.01 level of significance or higher. Table 4 provides a high-level summary including R^2, change in R^2, and f^2 values, across the fitted linear regression models.

For further context, I calculated and examined standard effect estimates (Table 6). For continuous predictors, standard effect estimates (b) were calculated as $b = B * \frac{\sigma_x}{\sigma_y}$ where B is the unstandardized regression coefficient and σ_x and σ_y are the standard deviations of the focal predictor variable, *x*, and dependent variable, academic self-concept (*y*). Interpretations are in standard deviation metrics (e.g., a one standard

deviation increase in x is associated with a b standard deviation change in academic self-concept [y]). For categorical predictors, the standardized estimates were calculated as $b = \frac{B}{\sigma_y}$, which is like a standardized mean difference relative to the reference group (e.g., the average academic self-concept score for students who identify as male is b standard deviations larger/smaller than students who identify as female).

Pearson Correlations

Pearson correlations were calculated to evaluate the bivariate relationships between the study variables and to provide a preliminary assessment of potential concerns with multicollinearity that could impact statistical modeling (Table 3, available upon request). Although many correlations were statistically significant at $p<.01$, few correlations were of a large magnitude ($r \sim > |.5|$). Some notable exceptions were the correlation between interpersonal validation with academic validation (r=.56) and sense of belonging (r=.61), the intercorrelations among the identity salience items (r= ~ .4 to .5), and the correlation between discrimination and bias with harassment (r=.59). The variables that correlated most highly with the academic self-concept outcome were GPA (r=.40), academic validation (r=.28), interpersonal validation (r=.26), and sense of belonging (r=.20). Taken together, the correlational results suggested that some variables may be meaningful predictors of this outcome, but there did not appear to be concerns with multicollinearity for the OLS regression models.

Model 1: Focal Predictors and School Year

Almost 10% of the variability in academic self-concept scores was explained by school year, academic validation, interpersonal validation, and sense of belonging (R^2 = .099), which is a small-to-moderate effect (f^2=.110) (Table 4). Closer examination of the

unique predictor effects suggests that although all the predictors were statistically significant at p<.001, academic validation was the only predictor that had a small-to-moderate effect size (Table 5, Model 1; partial eta^2=.027, p<.001). Specifically, as indicated in Table 6, a one standard deviation increase in academic validation is associated with a .19 standard deviation increase in academic self-concept (standard estimate =0.19). In addition, a one standard deviation increase in interpersonal validation is associated with a .12 standard deviation increase in academic self-concept (standard estimate =0.12, partial eta^2=.008).

Model 2: Student Demographics, Identity, and Enrollment Factors

Adding student demographics, identity, and enrollment factors to the model explains one-quarter of the total variance in academic self-concept (R^2=.251) and an additional 15.2% of the variance above and beyond the focal predictors and school year variable in Model 1 (change in R^2=.152) (Table 4). Adding this set of predictors showed a moderate effect (Table 4; f^2=.20). Examination of the OLS results based on partial eta^2 estimates in Table 5 Model 2 shows that in addition to the small effect of academic validation on academic self-concept (partial eta^2=.015, p<.001), which decreased from .027 in Model 1, sex had a small effect (partial eta^2=.028, p<.001) and GPA had a moderate-to-large effect on academic self-concept (partial eta^2=.125, p<.001). The predicted academic self-concept of students who identified as male was 3.29 units higher on average than students who identified as female, and a one-unit increase in GPA was associated with a 2.02 unit increase in academic self-concept (p<.001 for both effects). These results can also be interpreted in standard deviation units (Table 6). A one standard deviation increase in GPA was associated with a .35 standard deviation increase in

academic self-concept (standard estimate =0.35) and males' average academic self-concept score was .33 standard deviations higher than females' (standardized estimate =0.33).

No other predictors were linked to substantively meaningful effect sizes. However, race, FG status, TGNC and LGBQ identities, some identity salience variables, family support, and income related variables were statistically significant at p=.01 or higher level of statistical significance.

Regarding race, students who identified as Black had academic self-concept scores 2.06 points higher in comparison to students who identified as White (reference group; p<.001) while students who identified as of multiple races were predicted to have scores .71 points higher in comparison to the reference group (p<.001). On average, students who identified as Black academic self-concept score was .21 standard deviations higher than White students (standard estimate=.21, Table 6). FG students were predicted to have lower academic self-concept scores in comparison to CG students (b=-.37, p<.01). On average, FG students had academic self-concept scores .04 standard deviations lower than CG students (standard estimate =. -.04). Both TGNC (b=-1.22, p<.01) and LGBQ (b=-1.03, p<.001) students were predicted to have lower academic self-concept scores relative to cisgender and non-LGBQ students. In standard deviations, TGNC students and LGBQ students had average academic self-concept scores that were about one-tenth of a standard deviation lower (TGNC: standardized estimate =-.12; LGBQ: standardized estimate =-.10, Table 6).

Students who felt family support to succeed were predicted to have academic self-concept score .36 points lower relative to students who did not perceive family support

(p=.001). In standard deviations, students who felt family support to succeed had academic self-concept scores .04 standard deviations lower compared to students who did not feel this support (standard estimate =.-04). Lastly, students who had financial concerns about paying for college had lower academic self-concept compared to those who did not have any concerns (b= -.36, p=.001). On average, students who had financial concerns had academic self-concept scores .07 standard deviations lower compared to students without concerns (standard estimate =-.07, Table 6). All family income variables had a significant and positive relationship with academic self-concept in comparison to the reference group ($40,000-$74,999). Surprisingly, this includes the family income category lower than the reference group ($0-$39,999) and the categories higher than the reference group. For example, families with income between $0-$39,999 are predicted to have academic self-concept scores .44 points higher (p<.001) in comparison to students with family incomes between $40,000-$74,999. Students with family incomes in the highest category, $200,000+, were predicted to have academic self-concept scores 1.83 points higher in comparison to the reference group (p<.001). Results showed that the mean academic self-concept score for high income students ($200,000+) was .19 standard deviations higher than moderate income students (Table 6).

Model 3: Student and Institutional Engagement Factors

The addition of student and institutional engagement factors into the linear regression models only explained an additional 0.3% of the variation in academic self-concept above and beyond the predictors included in Model 2 (change in R^2=.003, Table 4). Table 5 Model 3 shows that none of the added predictor variables had effects sizes that were small or larger in magnitude. However, the effects of academic validation, sex,

and GPA on academic self-concept continued to be of small magnitude or larger (partial eta^2 $\geq$.01, p<.001). While the student and institutional engagement factors added in Model 3 did not have meaningful effect sizes, there were some statistically significant relationships. Participation in co-curricular diversity activities and career counseling were positively associated with academic self-concept (p<.01 or higher level of significance). Students who accessed writing support and student psychological services were predicted to have lower academic self-concept in comparison to students who did not (p=.001 or higher level of significance). For student psychological services specifically, examination of the standardized estimates in Table 6 showed that the average academic self-concept score for students using student psychological services was -.12 standard deviations lower than those who did not use these services. Participating in academic advising and discussing course content outside of class were not related to academic self-concept.

Model 4: Institutional Characteristics and Climate Factors

Similar to Model 3, results showed that adding institutional and climate factors to the model did not explain a meaningful proportion of the variance in academic self-concept (Table 4, change in R^2=.006). There were predictors such as institutional commitment to diversity, discrimination and bias, and institution type that had a statistically significant effect on academic self-concept (p<.001), but their effect sizes were well below what are commonly considered a small effect (Table 5 Model 4; partial eta^2<.01 for all). Harassment had no significant relationship with academic self-concept in the current study. Academic validation, sex, and GPA continued to show meaningful effects on academic self-concept controlling for all other variables in the model (partial eta^2$\geq$.01, p<.001).

Model 5: Focal Predictors-by-Underrepresented Subgroup Interactions

The addition of the focal predictor-by-underrepresented subgroup interaction did not help to meaningfully explain variance in academic self-concept. Although 26% of the total variance in academic self-concept is explained by the variables in Model 5, Model 5 only explains 0.1% of the variance above and beyond Model 4 (Table 4; change in R^2=.001). Table 5 Model 5 further supports this finding by showing that effect sizes associated with all the interaction effects were functionally 0 (partial eta^2<.01 for all).

Sensitivity analyses were also undertaken for the interaction models by fitting separate interaction models for each of the four unique subgroup variables (See Table 7 Model 5a: First-generation college student; Model 5b: TGNC; Model 5c: LGBQ; Model 5d: Race). Findings confirmed the results presented above. None of these models indicated meaningful improvements in R^2 or corresponding f^2 values (Table 4). While the effect sizes for these interactions do not suggest substantive relationships, there were some statistically significant interaction terms possibly due to the large DLE sample size.

Using a p<.01 threshold for determining statistical significance, there was significant race-by-belonging interaction effect on academic self-concept (Model 5 and Model 5d, p<.01; Table 7). The nature of the race-by-belonging interaction effect was probed using a model with only that interaction effect included (key elements summarized in Table 8). Results showed that increased belonging was significantly associated with increased academic self-concept for students who are White, Asian, Hispanic, and Multiple Races (p<.01 for all), but there was not a significant association for students who identified as Black and Other Race (p>.01 for all).

Contrasting the groups showed that the belonging effect was significantly stronger for students who are Asian and Hispanic relative to students who are White and the belonging effect for students who are Asian was stronger than for students who are Black and Hispanic ($p<.01$ for all, Table 8). Further, the belonging effect on academic self-concept for students who are Hispanic was significantly stronger than the effect for students who are Black ($p=.002$). This interaction effect was also plotted for closer examination (Figure 1). The plot showed that the relationship between belonging and academic self-concept was negligible for students who are Black (flat orange line) whereas there was a stronger, positive effect (steeper increase) for students who are Asian (blue line) and Hispanic (gray line).

Assumption Checks

OLS regression has four core assumptions: 1) the relationships between independent variables and the dependent variable are linear (linearity), 2) the residual variance is the same across values of independent variables (homoscedasticity), 3) observations are independent (independence), and 4) residuals are normally distributed (normality of residuals). These assumptions are empirically evaluated using a variety of approaches including residual histograms (normality of residuals) and residual-by-predicted value scatter plots (linearity and homoscedasticity). Visual inspection did not reveal any problematic departures from linearity. Furthermore, observed academic self-concept scores were plotted against the OLS predicted values, which showed no problems with nonlinearity as the points were relatively symmetrically distributed around the line. Plotting residuals against the OLS predicted values also did not reveal any troubling concerns with heteroscedasticity, and this assumption was reasonably met. The

model residuals were approximately normally distributed. Multicollinearity was assessed with Pearson correlations and using the variance inflation factor (VIF). The observed correlations among predictors were not exceedingly high (Table 3, available upon request) and no VIF exceeded 2.7 (most were between 1 and 2). Residuals were inspected for potential influential outliers using plots along with Cook's and Mahalanobis distance statistics. Visual inspection of descriptive plots paired Cook's and Mahalanobis distance statistics did not indicate any problems with outliers or influential cases.

Summary

Overall, Models 1 and 2 contributed to explaining the greatest variance in students' academic self-concept. Of the focal variables, academic validation has the largest effect on academic self-concept. The effect of academic validation decreases once controlling for student demographics, identity, and enrollment variables in Model 2. The decrease in the partial eta^2 for academic validation is most likely due to the addition of sex and GPA in model 2. The impact of sex and GPA remain stable across models after controlling for student and institutional engagement and institutional characteristics and climate factors. In summary, sex, GPA, and to a lesser extent academic validation are most meaningful predictors of academic self-concept.

While the following results were not considered meaningful using the thresholds for partial eta^2 values, there were statistically significant differences in academic self-concept scores associated with race, FG status, TGNC and LGBQ identities, and SES in Model 2. Similarly, some variables from Models 3 and 4 had significant but not meaningful relationships with academic self-concept. In Model 3, co-curricular diversity activities and career counseling were positively associated with academic self-concept

while writing support and student psychological services were associated with decreases in academic self-concept. Lastly, in Model 4, institutional commitment to diversity and discrimination and bias were both associated with increased academic self-concept.

Logistic Regression: Consider Dropping Out of College

Model Building and Interpretation Strategies

The sequential logistic regression model building approach is documented in Chapter 3: Methodology. To summarize, a sequence of five models were fitted to test my research questions related to considering dropping out (binary dependent variable [yes/no]). Reference (or dummy) coding was utilized for all categorical independent variables (e.g., sex, age, income, college region). Between each model building step, pseudo r-squared values (Cox & Snell R Square, Nagelkerke R Square) were noted and changes in r-square values were calculated to provide measures of effect size for each set of commonly themed independent variables. Additionally, when applicable, Cohen's f^2 was calculated and compared against accepted thresholds for determining small, medium, and large effects for the blocks of independent variables; >.02, >.15, and >.35 (Cohen, 2013). Similarly, when evaluating the magnitude of specific predictor effects, standardized effect estimates for categorical and continuous predictors were calculated in a manner consistent with Chinn (2000) (i.e., the standard deviation of the outcome is fixed at 1.81, the standard deviation of the logistic distribution, for effect size calculations) and were examined using thresholds of small=.1, medium=.3, and large=.5 (Cohen, 2013). Due to the large sample size and high level of statistical power, I focus on interpreting predictor effects with effect sizes that are small or greater in magnitude (i.e., $f^2 \geq .01$ [in overall model fit table]; standardized effect sizes $\geq .1$ [in specific parameter

estimates tables]). However, I note and interpret select predictor effects significant at the p=.01 level of significance or higher.

Table 9 provides a high-level summary (e.g., pseudo R^2, change in pseudo R^2, and f^2 values) across the fitted logistic regression models. In logistic regression, there is not a closed form solution for the R^2 like in linear regression. For this reason, two different pseudo R^2 measures are provided (i.e., Cox & Snell and Nagelkerke). Although the R^2 differed between the two approaches, the general substantive conclusions drawn from them are comparable when considering effect sizes. Table 10 includes a summary of AIC/BIC values for Models 1-5. The BIC values, the more conservative estimate, indicate Model 4 is the best fitting model.

Pearson Correlations

Table 3 (available upon request) provides Pearson correlation estimates for the study variables. The variables with the strongest positive correlations with the consider dropping out outcome were discrimination and bias (*r*=*.16),* identity salience related to socioeconomic class (*r*=.14), concerns about financing college (*r*=.12), LGBT status (*r*=.12), identity salience related to sexual identity (*r*=.11), and identity salience related to race/ethnicity (*r*=.10). The variables with the strongest negative correlations with the outcome variable included sense of belonging (*r*= -.22), GPA (*r*= -.22), interpersonal validation (*r*= -.16), academic validation (*r*= -*.15),* and institutional commitment to diversity (*r*= -.11). Together, the correlational results suggested that several variables are meaningful predictors of whether a student considers dropping out, but there did not appear to be concerns with multicollinearity for the logistic regression models.

Model 1: Focal Predictors and School Year

Between 6%-10% of the variance in the consider dropping out of college outcome was explained by school year and the focus predictors (Table 9). Examination of the unique predictor effects suggests that school year, academic validation, and sense of belonging were meaningful predictors of considering dropping ($p<.001$ for all and standardized estimates larger than .1) (Table 11 Model 1). Relative to the 2017 school year, odds of considering dropping out were reduced by 40% for year 2015 (OR=.60) and 42% for the year 2016 (OR=.58). Further, increased academic validation and increased belonging predicted decreased odds of considering dropping out (Std Effects of -.109 and -.262, respectively). A one-unit increase in academic validation reduced the odds of considering dropping out by 2% (OR=.98), and a one-unit increase in sense of belonging decreased the odds by about 5% (OR=.95). To provide more context for the size of these focal predictor effects, a one standard deviation increase in academic validation is associated with an 18% decrease in odds of considering dropping (rescaled OR=.82) and a one standard deviation increase in sense of belonging is associated with a 38% decrease in odds of considering dropping (rescaled OR=.62).

Model 2: Student Demographics, Identity, and Enrollment Factors

Adding student demographics, identity, and enrollment factors to the model explained between 13%-21% of the total variance in the dropping outcome, an additional 8%-14% of the variance above and beyond the focal predictors and school year variable in Model 1 (change in pseudo R^2 estimates, Table 9). Notably, with the addition of this variable block, academic validation no longer had a meaningful effect on the likelihood of considering dropping out (effect size =.010). In contrast, sense of belonging continued to meet the threshold for meaningful effect size (effect size = .236).

Examination of the unique predictor effects in Table 11 Model 2 shows that several of the added variables appeared to be meaningfully associated (effect size >.1 or larger) with dropping out. Older students tended to have a stronger propensity to consider dropping out. For instance, students who were 18 years old were 21% (OR=.79, p=.008) less likely to consider dropping out in comparison to 20-year-old students. In contrast, students aged 25 years old and older had odds that were 24% higher (OR=1.24, p<.001) relative to the reference group.

Students who identified as Asian were significantly less likely to consider dropping out of college compared to students who identified as White (OR=.59, p<.001). Part-time students had increased odds of considering dropping out compared to full-time students (OR=1.23, p<.001), and increased GPA was also predictive of reduced odds of considering dropping out of college (OR=.77, p<.001).

Students who identified as TGNC were 45% more likely to consider dropping out compared to students who identified as cisgender (OR=1.45, p<.001), and students who identified as LGBQ were 55% more likely to consider dropping out compared to students who did not identify as LGBQ (OR=1.55, p<.001). Having concerns about college financing also were associated with increased odds of considering dropping out (OR=1.66, p<.001) and, surprisingly, having family support for success was associated with increased odds of considering dropping out (OR=1.29, p<.001). No other predictors in this model were linked to meaningful effect sizes. However, additional race variables, FG status, and some identity salience variables had a statistically significant relationship with the outcome at the p=.01 or higher level of significance.

Students who identified as Hispanic were 14% less likely to consider dropping out in comparison to students who identified as White (OR =.86, p=.001). FG college students were 19% more likely to consider dropping out in comparison to CG students (OR =1.19, p= <.001). Lastly, all identity salience variables had a positive relationship with the outcome. The more students reported thinking about their race/ethnicity (OR=1.05, p=<.01), sexual orientation (OR=1.09, p=<.001), or socioeconomic status (OR=1.18, p=<.001), the more likely they were to consider dropping out.

Although having concerns about financing college was significantly and meaningfully associated with the considering dropping out, none of the income variables in the model had a statistically significant relationship with the outcome at the p=.01 or higher level of significance.

Model 3: Student and Institutional Engagement Factors

The addition of student and institutional engagement factors into the logistic regression models only explained an additional 0.5%-0.8% of the variance in the outcome above and beyond the predictors included in Model 2 (change in pseudo R2 in Table 9). Table 11 Model 3 shows that the only new predictor that showed a small or larger effect size was utilizing student psychological services (Std Effect=.245, p=.000). Students that reported using psychological services occasionally or frequently were 56% more likely to report they considered dropping out in comparison to students who never utilized psychological services (OR=1.56).

Other predictor effects, first entered in Model 2, that had more notable effects in Model 3 were student enrollment status and total family income. In Model 3, part-time students had increased odds of dropping out relative to full-time students (OR=1.27,

p=<.001) and students with a family income of $200k and up were 18% less likely to consider dropping out compared to students with a family income between $40k-$74k (OR=.82, p<.01).

Once controlling for student and institutional engagement factors, it is worth noting that first-generation college student status also displayed what might be considered a potentially meaningful effect (Std Effect=.103) in Model 3 with first-generation students' odds of considering dropping out being 20% higher than continuing generation students (OR=1.20, p<.001). Identity salience related to socioeconomic status also met the rules of thumb for meaningful effect size in Model 3 (Std effect =.113, p<.001).

Other variables that were statistically significant at the .01 level of significance but did not have meaningful effects on the odds of considering dropping out were participation in co-curricular diversity activities (OR=1.01, p=<.001) career counseling (OR=.88, p=<.001), and student health services (OR=.91, p<.01). Further, students who engaged with the writing center, academic advising, or discussed course content outside of class were no more or less likely to consider dropping out relative to students who did not engage in these activities.

Model 4: Institutional Characteristics and Climate Factors

Similar to Model 3, results showed that adding institutional characteristics and climate factors to the model did not explain a meaningful proportion of variance in consideration of dropping out (Table 9: change in pseudo R^2 .5%-.8%). The only newly added predictor that showed a small magnitude of effect was discrimination and bias (Table 11 Model 4, Std Effect=.111, p<.001) such that increased discrimination and bias

scores were associated with elevated odds of considering dropping out (OR=1.02). More precisely, a one standard deviation unit increase in discrimination and bias score increased one's odds of considering dropping out of college by over 20% (rescaled OR=1.22).

Other institutional characteristics and climate factors had a statistically significant but not meaningful relationship with the odds of considering dropping out. For example, college selectivity had a statistically significant relationship with the odds of considering dropping out but no meaningful effect. Students enrolled in highly or very highly selective institutions were 16% less likely to consider dropping compared to students enrolled in selective institutions (p=<.001).

Model 5: Focal Predictors-by-Underrepresented Subgroup Interactions

The addition of the focal predictor-by-underrepresented subgroup factor interactions did not explain a meaningful amount of variance in the dropping outcome. Across all models, there was no indication that the magnitude of the primary independent variables on students' likelihood to consider dropping out of college differed across group memberships in meaningful ways. At most, the added interactions uniquely explained 0.1% of the variability in the outcome. No single interaction had an effect size that approached what is commonly considered a small effect. The only interaction that had a statistically significant relationship, at the p=.01 level, with the outcome was TGNC-by-Interpersonal Validation (Table 11 Model 5). Interpersonal validation has a slightly more positive effect for students who identify as TGNC compared to those who identify as cisgender. Further probing of interaction terms was not completed because no

terms were significant ($p \leq .01$) in both the full model (Model 5) and corresponding sensitivity analyses models (Models 5a-5d, Table 12).

Assumption Checks

Logistic regression requires three core assumptions: 1) the dependent variable is binary, 2) the observations are independent, and 3) there is a linear relationship between the independent variables and the logit (log-odds). Additional considerations include multicollinearity among the independent variables, outliers and influential cases, and sparseness in the dependent variable (I.e., having less than 5-10 cases within a response category). Assumptions were empirically evaluated using visual plots or the raw data, correlations among independent variables, and case-specific standardized residuals on the fitted models.

Summary

Models 1 and 2, focal factors and student demographic, identity, and enrollment factors, explained the greatest variation in the odds of considering dropping out. Of the focal variables, sense of belonging appears to be a more stable and meaningful predictor of considering dropping out in comparison to academic validation. Once controlling for student demographic, identity, and enrollment, student and institutional engagement, and institutional characteristics and climate, academic validation no longer has a meaningful impact of the odds of considering dropping out. Of the student demographic, identity, and enrollment variables, age, race, part-time status, GPA, gender-identity, sexual orientation, and financial concerns are consistently meaningful predictors of the odds of considering dropping out. However, once controlling for student and institutional engagement factors in Model 3, income, FG identity, and identity salience related to socioeconomic status

became meaningful predictors of the odds of considering dropping out. Engaging with student psychological services was a consistent, meaningful predictor of increased odds of dropping out. Lastly, discrimination and bias continued to have a meaningful and positive impact on the odds of considering dropping out. In summary, sense of belonging, race, part-time status, GPA, gender-identity, sexual orientation, financial concerns, engaging in student psychological services, and experiences of discrimination and bias have meaningful and stable effects on the likelihood of considering dropping out across models.

Logistic Regression: Plans to Attend Graduate School

Model Building and Interpretation Strategies

The sequential logistic regression model building approach is documented in Chapter 3: Methodology. In summary, a sequence of five models were fitted to test my research questions related to plans to attend graduate school (binary dependent variable [yes/no]). Reference (or dummy) coding was utilized for all categorical independent variables (e.g., sex, age, income, college region). Between each model building step, pseudo r-squared values (Cox & Snell R Square, Nagelkerke R Square) were noted and changes in r-square values were calculated to provide measures of effect size for each set of themed independent variables. Additionally, when applicable, Cohen's f^2 was calculated and compared against accepted thresholds for determining small, medium, and large effects for the blocks of independent variables; >.02, >.15, and >.35 (Cohen, 2013). Similarly, when evaluating the magnitude of specific predictor effects, standardized effect estimates for categorical and continuous predictors were calculated in a manner consistent with Chinn (2000) (i.e., the standard deviation of the outcome is fixed at 1.81,

the standard deviation of the logistic distribution, for effect size calculations) and were examined using thresholds of small=.1, medium=.3, and large=.5 (Cohen, 2013). Due to the large sample size and high level of statistical power, I focus on interpreting predictor effects with effect sizes that are small or greater in magnitude (i.e., $f^2 \geq .01$ [in overall model fit table]; standardized effect sizes > .1 [in specific parameter estimates tables]). Although, I interpret select predictor effects significant at the p=.01 level of significance or higher.

Table 13 provides a high-level summary (e.g., pseudo R^2, change in pseudo R^2, and f^2 values) across the fitted logistic regression models. In logistic regression, there is not a closed form solution for the R^2 like in linear regression. As such, two different pseudo R^2 measures are provided (i.e., Cox & Snell and Nagelkerke). Although the R^2 differed between the two approaches, the general substantive conclusions drawn from them are comparable when considering effect sizes. Table 14 includes a summary of AIC/BIC values for Models 1-5. Again, the BIC values indicate Model 4 is the best fitting model.

Pearson Correlations

Table 3 (available upon request) provides Pearson correlation estimates for the study variables. None of the substantive focal variables (academic validation, interpersonal validation, sense of belonging) were correlated beyond .1 with the outcome, planned graduate degree. Notable correlation estimates (r>.1) related to survey year and HERI region. Closer inspection of the bivariate relationship between these variables and the planning to attend graduate school outcome suggested that a smaller percentage of students were planning to pursue a graduate degree in 2016 (n=3,989, 26%) relative to

2015 (n=5,996, 68.5%) and 2017 (n=6,413, 75.9%). Additionally, a lower percentage of students in the South (n=2,384, 30.5%) were planning to obtain a graduate degree compared to East (n=4,979, 53%), Midwest (n=2,730, 59.4%) and West (n=6,305, 58.9%).

Model 1: Focal Predictors and School Year

Results for Model 1 are displayed in Table 15. About 20-27% of the variance in the planning to obtain a graduate degree outcome was explained by survey year and the primary independent variables. Survey year was the only substantially meaningful predictor based on the magnitude of effect size. Relative to 2017, the odds of planning to obtain a graduate degree in 2016 were substantially lower (OR .11, p<.001) and about 31% lower in 2015 (OR=.69, p<.001). Although the academic and interpersonal validation predictor effects were statistically significant (p<.001), the magnitude of these effects were small (effect sizes less than .01). One standard deviation increase for the academic and interpersonal validation variables were associated with a 12% and 9% increase respectively in the odds of planning to obtain a graduate degree (Academic Validation: OR [per 1SD] = 1.12; Interpersonal: OR [per 1SD] =1.09).

Model 2: Student Demographics, Identity, and Enrollment Factors

Table 15 provides results from Model 2, which added student demographics, identity, and enrollment factors as predictors of considering dropping out. Adding this set of predictors had a notable impact (Table 13; f^2=.05-.07) and explained about 3-5% more variability in planning to obtain a graduate degree above and beyond the independent variables in Model 1. Notably, with the addition of student demographics, identity, and enrollment factors, Interpersonal Validation no longer has a statistically significant

relationship with plans to attend graduate school while Sense of Belonging becomes significant (OR [per 1SD] = 1.08, p<.001). Thus, in Model 2, a one standard deviation increase in sense of belonging is associated with an 8% increase in the likelihood of planning to attend graduate school.

Examining the specific model estimates in Table 15 Model 2 demonstrates that several of the added variables appeared to be meaningfully associated with planning to attend graduate school. Younger students tended to have a lower likelihood of planning to obtain a graduate degree. For instance, relative to 20-year-olds, students < 17 years, 18 years, and 19 years in age had reduced odds of planning to obtain a graduate degree, with reductions of approximately 39% (OR=.61, p<.001), 33% (OR=.67, p<.001), and 18% (OR=.82, p<.001), respectively. Further, relative to white students, Black, Asian, and Hispanic students were more likely to be planning to obtain a graduate degree (Black: OR=1.44, p<.001; Asian: OR=1.35, p<.001; Hispanic: OR=1.29, p<.001) and part-time students had decreased odds of planning to obtain a graduate degree compared to full-time students (OR=.69, p<.001). The odds of planning to obtain a graduate degree also differed by class standing. Compared to Juniors, Freshman and "other" students had higher odds of planning to obtain a graduate degree (Freshman: OR=1.52, p<.001; Other: OR=1.41, p<.001). Higher GPA was also associated with planning to obtain a graduate degree (OR[per 1SD]=1.21, p<.001).

Multiple variables had significant, but not meaningful, relationships with the planning to attend graduate school outcome. Two identity salience variables, race/ethnicity and socioeconomic class predicted increased odds of planning to attend graduate school. With an increase in the frequency a student thought about their

race/ethnicity, Model 2 predicted a 4% (OR=1.04, p<.01) increase in the likelihood of planning to pursue a graduate degree. Similarly, with an increase in the frequency of a student thought about their SES, Model 2 predicted a 10% (OR=1.10, p<.001) increase in the likelihood of planning to pursue a graduate degree. Lastly, students who felt family support to succeed were 13% (OR=.87, p<.001) less likely to plan to attend graduate school relative to students who did not feel like they had family support.

Model 3: Student and Institutional Engagement Factors

The addition of student and institutional engagement factors did not meaningfully explain variability in consideration of a graduate degree above and beyond the independent variables included in Model 2. Jointly, these added variables uniquely explain less than 1% of the variability in the outcome (Table 13), but two of the added independent variables (academic advising and discussing content outside of class) had a notable effect size (Table 15). Results showed that students that reported engaging in academic advising had odds of planning for a graduate degree that were reduced by 17% (OR=.83, p<.001), but those that reported discussing content outside of class had odds of a planned graduate degree that were 23% higher than those that did not discuss class content outside of the classroom (OR=1.23, p<.001).

In Model 3, multiple student and institutional engagement variables had a significant relationship with the planning to attend graduate school outcome but did not meet the established thresholds for determining meaningful effects. As engagement in co-curricular diversity activities increased, Model 3 indicated a .1% (OR=1.01, p<.001) increase in the likelihood of planning to attend graduate school. Students who engaged in health services (OR=1.09, p<.01) or attended professor's office hours (OR=1.14, p<.001)

were more likely to plan to attend graduate school compared to those who did not engage in these activities.

Model 4: Institutional Characteristics and Climate Factors

A trend like Model 3 was observed for Model 4, which added institutional characteristics and climate factors. This set of predictors explained less than 1% of the variance in the outcome above and beyond the factors included in Model 3 (Table 13). The only predictor with a notable association with the outcome was HERI region. After controlling for other variables in the model, particularly survey year, relative to HERI West, students from the East and South regions had substantially increased odds of planning for a graduate degree (East: OR=1.51, p<.001; South: OR=1.30, p<.001, Table 15).

Multiple institutional characteristics and climate factors were significant at the p<.01 level of significance or higher. These included public institutions (ref=private) (OR=1.10, p<.01), institutional commitment to diversity (OR=1.01, p<.001), discrimination and bias (OR=1.01, p<.01), and harassment (OR=.99, p<.001). Interestingly, as students experience increased discrimination and bias on campus, Model 4 predicted a 1% increase in the odds of planning to attend graduate school, but as students experienced increased harassment the model predicted a 1% decrease in the odds of planning to pursue a graduate degree.

Model 5: Focal Predictors-by-Underrepresented Subgroup Interactions

Table 16 summarizes the various underrepresented subgroup interaction models. Across all models, there was no indication that the magnitude of the primary independent variables on individuals' likelihood of planning for a graduate degree differed across

group memberships. At most, the added interactions uniquely explained 0.1% of the variability in the outcome (change in r-squared ranged from 0.000 to 0.001). Examination of the specific interaction effects depicted in Table 16 aligned with this overall assessment because no single interaction effect had an effect size that approached what is commonly considered a small effect. In addition, no interaction terms in model were significant at the $p<.01$ or higher level of significance. Further probing of interactions was not completed as none of the terms were significant ($p\leq.01$) in both the full model (Model 5) and corresponding sensitivity analyses models (Models 5a-5d, Table 16).

Assumption Checks

Logistic regression requires three core assumptions: 1) the dependent variable is binary, 2) the observations are independent, and 3) there is a linear relationship between the independent variables and the logit (log-odds). Additional considerations include multicollinearity among the independent variables, outliers and influential cases, and sparseness in the dependent variable (I.e., having less than 5-10 cases within a response category). Assumptions were empirically evaluated using visual plots or the raw data, correlations among independent variables, and case-specific standardized residuals on the fitted models.

Summary

Similar to the results for academic self-concept and consider dropping out analyses, the results for planning to attend graduate school suggest that Models 1 (focal factors and survey year) and 2 (student demographics, identity, and enrollment), explained the greatest variation in the odds of planning to attend graduate school. None of the focal variables beyond survey year were meaningful predictors of the odds of

planning to attend graduate school. However, it is worth noting that once student demographic, identity, and enrollment factors were added in Model 2, interpersonal validation was no longer statistically significant, but sense of belonging became statistically significant. This remains true across the remaining models. In Model 2, meaningful predictors of the outcome included race, part-time enrollment, and GPA. Meaningful predictors were also identified in Model 3 and included academic advising which decreased the odds a student planned to attend graduate school and discussing course content with peers which had a positive effect on the odds of planning to attend.

Chapter 5: Discussion

Organization of Chapter

This chapter begins with a discussion of key findings organized by research question focus starting with academic self-concept followed by persistence related outcomes. I then highlight implications for theory as well as practice and policy. The implications section is organized into three main categories: theory, implications related to academic self-concept, and implications related to persistence. I then identify and describe the primary limitations of the current study and conclude the chapter with considerations for future research.

I explored two primary research questions: Question 1) How do academic and interpersonal validation and sense of belonging influence students' academic self-concept score controlling for student demographics, identity, and enrollment variables, student engagement variables, and institutional characteristics and climate variables? Question 2) How do academic and interpersonal validation and sense of belonging influence students' intent to persist controlling for student demographics, identity, and enrollment variables, student engagement variables, and institutional characteristics and climate variables?

Academic Self-Concept

Regarding the first research question, academic validation had a small-to-medium effect on academic self-concept, but the effect size decreased after controlling for student demographic, identity, and enrollment factors. Past research has linked academic validation from faculty to improved self-concept (Alcantar & Hernandez, 2020; Kelly et al., 2021) and related concepts like self-efficacy (Moore, 2021; Worcester, 2017). The effects of interpersonal validation and sense of belonging were significantly and

positively associated with students' academic self-concept scores, but the effect sizes were not meaningful. Prior research has linked sense of belonging to academic performance and self-efficacy but, to my knowledge, has not considered effect size in assessing the meaningfulness of effects (e.g., Corazon-Reano, 2020; Gillen-O'Neel, 2021). My research suggests that of these focal factors, academic validation has the most meaningful effect on academic self-concept.

GPA had a medium-to-large positive effect on academic self-concept. GPA is frequently identified as one of the most significant and powerful factors predicting persistence (Kamer & Ishitani, 2021; Metzner & Bean, 1987). The results of the current study suggest that GPA is also a meaningful predictor of undergraduate students' academic self-concept. While not surprising, this finding could be concerning given the weight GPA is given and the bias embedded in the measure that favors majority, higher-SES, and non-historically underrepresented students (Chaviano-Moran et al., 2019).

Overall, my results suggest that the students at risk for decreased academic self-concept are students who identify as female, FG students, TGNC and LGBQ students, and students who reported financial stress relative to their respective reference groups. Even after controlling for all other variables in the model, males are predicted to have higher academic self-concept scores relative to females. This finding aligns with the results of prior research which found that, among college students, men reported significantly higher academic self-concept compared to women (Cooper et al., 2018). Cooper et al. (2018) speculate that this difference may be related to women judging their knowledge, ability, and skill more harshly than do men. Importantly, this difference exists prior to college entry and has been found among high school students (Cooper et

al., 2018). From a critical perspective, a persistent difference in academic self-concept scores speaks to historical and ongoing dynamics of inclusion and exclusion that are still felt on college campuses today (Langdon, 2001; Nash, 2021). As Gillborn et al. (2018) argue, differential outcomes can't be attributed solely to a student's race, SES, sexual orientation, etc. but to forms of oppression such as racism, classism, and heterosexism.

The current study indicates significant but not meaningful differences in academic self-concept associated with race, FG status, TGNC and LGBQ identities, and SES. Students who are Black or of multiple races were predicted to have higher academic self-concept scores in comparison to students who are White. This finding aligns with earlier research that suggests students who are Black have higher self-esteem and academic self-concept relative to students who are White (Cokley, 2002). However, prior research also suggests that students of color perceived lower academic validation in comparison to students who are White (Fregoso, 2021; Hurtado et al., 2011). The results of my study could suggest that once controlling for any differences in academic validation, interpersonal validation, and sense of belonging, students of color have higher academic self-concept scores relative to students who are White.

In contrast, students who identified as FG, TGNC, or LGBQ or reported concerns about financing college were predicted to have lower academic self-concept scores relative to their respective reference groups. I selected academic self-concept as a proxy for student well-being given its inclusion of items related to self-efficacy and motivation. While the prior research I reviewed does not examine academic self-concept specifically, it is inclusive of other measures of wellbeing such as stress, anxiety, and depression. Results similarly suggest that LGBTQ+ and FG students experience decreased wellbeing

relative to their non-LGBTQ+ and CG peers (Stebleton et al., 2014; Wilson & Liss, 2020).

Student and institutional engagement (Model 3) and institutional characteristics and climate (Model 4) had minimal impact on predicting students' academic self-concept scores. The most meaningful predictors remained academic validation, GPA, and sex. However, a number of the student and institutional engagement factors were significant at p=.01 or higher level of significance. From a CRT perspective, the risk of decreased academic self-concept is influenced, at least in part, by risk and protective factors in the environment (López et al., 2018). Results from Models 3 and 4 highlight relevant risk and protective factors. For example, participating in co-curricular diversity activities and career counseling had a positive impact on student's academic self-concept. Prior research has found that participating in cultural activities on campus supports student wellbeing, especially for historically underrepresented students (Bennett et al., 2021; Lopez, 2018). My results suggest these activities can play an important protective role in nurturing students' academic self-concept.

While past research has found that working with writing center staff can improve well-being, the results of my research indicate engaging with the writing center is negatively associated with student's academic self-concept. This is not surprising given the stigma that accessing writing support services elicits (Salem, 2016). Lastly, engaging in student psychological services is predictive of lower academic self-concept scores. These results should not be interpreted as risk factors for decreased academic self-concept as it is likely that students are already experiencing distress and decreased academic and emotional wellbeing when they access these supports.

A challenge with existing research is that it lacks adequate attention to broader racial and cultural context on campus and how they impact students (Museus, 2014). The current study suggests that two related factors are significantly associated with students' academic self-concept. First, students' perception of institutional commitment to diversity was positively associated with academic self-concept. This aligns with existing research which has established that a culturally relevant and responsive campus culture plays a protective role and predicts intent to persist, GPA, and perception of academic success (Corazon-Reano, 2020; Garvey et al., 2018). Second, experiences of discrimination and bias were also associated with increased academic self-concept. While this finding is surprising, research suggests that validation and belonging can help reduce the negative impacts of bias and discrimination and serve a protective function (Choi et al., 2021; Hurtado et al., 2015). The current results reflect the relationship between discrimination and bias and students' academic self-concept controlling for academic and interpersonal validation and sense of belonging.

Interactions do not suggest that the effects of focal predictors on outcomes were meaningfully moderated by historically underrepresented group membership. The only two interaction terms significant at the $p<.01$ level of significance or higher were related to interpersonal validation and sense of belonging. Asian-by-interpersonal validation indicates that interpersonal validation has a more positive effect on academic self-concept for students who are Asian relative to students who are White. Belonging also has a more positive effect on the academic self-concept scores of students who are Hispanic compared to students who are White. The research I explored does not include use of interaction terms in predicting students' academic self-concept. However, existing

research using interaction terms with other related outcomes such as validation and sense of belonging has mixed results. Among Filipino undergraduate students, male CG college students expressed the highest sense of academic validation (Corazon-Reano, 2020) while other research has found that White men are more likely to experience higher levels of validation in comparison to women of all races (Worcester, 2017). Regarding belonging, White CG students reported a higher sense of belonging compared to all other students (Duran et al., 2020). However, other studies have not found statistically significant interactions in sense of belonging among students based on race and college generation status (Gopalan & Brady, 2019) or gender and college generation status (Corazon-Reano, 2020).

Persistence

My second research question focused on persistence and analyzed the relationships between focal factors; student demographics, identity, and enrollment; student and institutional engagement; and institutional characteristics and climate and the likelihood of a student considering dropping out of college as well as their odds of planning to attend graduate school.

Consistent with analyses for academic self-concept, these results indicate Models 1 (focal factors and survey year) and 2 (student demographic, identity, and enrollment) explain the greatest variation in student persistence. Student and institutional engagement and institutional characteristics and climate have minimal effects.

Regarding the likelihood of a student considering dropping out, of the focal factors, sense of belonging was the most consistent predictor with a small-to-medium negative effect on the outcome. This is similar to existing research which has

demonstrated that belonging predicts better persistence among 4-year college students (Gopalan & Brady, 2019).

In contrast, none of the focal factors had a meaningful effect on plans to attend graduate school. As previously mentioned in Chapter 2, validation and belonging were initially explored and developed using qualitative methods. These relationships have not yet been explored extensively in quantitative research, particularly in relation to planning to attend graduate school. When explored using qualitative methods, findings suggest a strong relationship between validating experiences with academic advisers and supportive programming and students' plans to attend graduate school (Kelly et al., 2021; Martinez & Elue, 2020).

Related to consider dropping out, multiple student demographic, identity, and enrollment factors had meaningful and consistent effects on the odds of considering dropping out. Students who identified as Asian were less likely to consider dropping out in comparison to students who are White. Older students were more likely to consider dropping out relative to younger students, part-time students were more likely consider dropping out compared to full-time students, and TGNC and LGBQ students were more likely to consider dropping out compared to cisgender and non-LGBQ students. These findings track existing literature which indicates part-time students, who are also more likely to be older, are at greater risk for attrition (Kamer & Ishitani, 2021). Importantly, this study extends current literature which is limited regarding outcomes for LGBTQ+ students (Legg et al., 2020; PNPI, 2021). Limited studies suggest that LGBTQ+, particularly TGNC students, may be at an increased risk of attrition.

For many students, college represents an important developmental period for identity formation and continuity, particularly sexual orientation and gender identity (Bates et al., 2020). There are numerous biological, cognitive, and social changes occurring during late adolescence that extend through the second decade of life (Bates et al., 2020). During this time, students may be especially sensitive to the responses of other individuals and the broader community which can cause harm (Bates et al., 2020). LGBQ and TGNC students in particular are at a greater risk for experiencing physical violence, verbal threats, and sexual assault (Griner et al., 2020; Messman & Leslie, 2019). TGNC students also report more barriers to academic success (Messman & Leslie, 2019). The current study demonstrates that both groups are more likely to at least consider dropping out relative to their non-LGBTQ+ peers while also being at risk for decreased academic self-concept.

Students who reported financial concerns were also more likely to consider dropping out in comparison to students who did not report any concerns about financing college as were students who felt they received family support compared to those who did not. Financial difficulty is clearly linked to student persistence (Carter et al., 2013; Lopez, 2018), though Jack (2019) argues its importance is often overlooked. The importance of student concerns about financing their education in predicting increased odds of considering dropping out in this study is a critical reminder of the importance of college affordability. The relationship between family support and odds of considering dropping out is unusual but may be reflective of increased distress and thus associated with an increased risk of attrition. The literature overwhelmingly supports the importance

of family support, particularly for historically underrepresented students (Lopez, 2018; Luna & Prieto, 2009).

Once controlling for student and institutional engagement factors in Model 3, FG student status displayed what might be considered a meaningful effect with FG students more likely to consider dropping out relative to CG students. Current data suggests the completion rates for FG students are about 20% in comparison to almost 50% for CG students (CFGSS, 2020). Other scholars argue that FG students are more similar financially and academically than different relative to their CG peers (Wildhagen, 2015). My results suggest meaningful differences in the likelihood of considering dropping out between FG and CG students.

Multiple factors were associated with decreased odds of dropping out including increased GPA and some race categories. As previously noted, GPA has long been identified as one of the most powerful predictors of persistence (Kamer & Ishitani, 2021; Metzner & Bean, 1987). Regarding race, students who are Asian were less likely to consider dropping out compared to students who are White. These results align with existing research which suggests students who are Asian are the most likely to complete their undergraduate degree (NCES, 2021).

There is some overlap in the student demographic, identity, and enrollment factors that meaningfully predict plans to attend graduate school and those that also predict the odds of considering dropping out. Part-time students are less likely to plan to attend graduate school relative to students who are enrolled full-time. Older students are more likely to plan to attend graduate school compared to younger students. Increases in GPA are associated with an increased likelihood of planning to attend graduate school.

Lastly, students who are Asian, Black, or Hispanic are more likely to plan to attend graduate school relative to White students.

Admittedly, less is known about completion rates among graduate students (Council on Graduate Schools, 2019). Existing data suggests that low-income students are less likely to attend graduate school, and, in the general population, 23% of people who are White have completed a graduate degree compared to 8% of people who are Black and 5% of people who are Hispanic (Baum & Steele, 2017). The limited existing data suggests that low-income students and students of color are less likely to complete a graduate degree, but my results suggest that students of color are more likely to plan to attend graduate school relative to students who are White. This suggests that it is not differences in aspirations that lead to disparities in graduate degree completion but other factors.

Critical scholars have identified these factors as the historical and ongoing dynamics of oppression including structural racism that are embedded in curriculum, practices, and policies (Lopez et al., 2018). Researchers also point to financial constraints and lack of funding (Jack, 2019), conflicting work and family responsibilities (Espinoza, 2010; Remenick & Bergman, 2020), and a lack of sense of belonging (Proctor & Truscott, 2012). This finding has real implications for social and economic justice as obtaining a graduate degree can lead to an increase in earnings and career opportunities (Baum & Steele, 2017). In addition, employers tend to favor more highly educated candidates in most industries (Carnevale et al., 2012).

In summary, regarding persistence outcomes, students at risk of considering dropping out are older students, part-time students, FG students, TGNC and LGBQ

students, and students who reported financial distress in comparison to their respective comparison groups. In addition, part-time students are less likely to plan to attend graduate school compared to full-time students.

Overall Models 3 and 4, which included student and institutional engagement and institutional characteristics and climate had very little impact on student persistence. In relation to the likelihood of dropping out, students who participated in campus psychological services were more likely to consider dropping out compared to students who did not (small-to-medium effect). It is unlikely that this finding is related to the psychological services provided and instead likely reflects a student mental health issue contributing to distress. According to Schwitzer et al. (2018) there is a high demand for mental health support among students, and a mental health need with a lack of support can lead to decreased persistence and other harmful outcomes. Access to student psychological services is critical as Schwitzer et al. (2018) found that students who accessed services and continued with treatment as recommended had improved GPA and were more likely to graduate compared to students who did not continue with mental health counseling.

While mental health challenges may contribute to student distress, critical scholars call attention to structural issues that contribute to or exacerbate mental health issues. For example, Todd et al. (2018) argue that mental health symptoms are too often conceptualized as individualized dysfunction instead of valid and even predictable outcomes associated with increased physical, emotional, and psychological demands. Stigma around mental health may further marginalize individuals experiencing a mental health challenge (Kundra & Salzer, 2019; Poole et al., 2012; Todd et al., 2019).

Relating to plans to attend graduate school, participating in academic advising had a small negative effect on plans to pursue a graduate degree. It is unlikely that decreased odds of pursuing a graduate degree are directly related to academic advising itself. Instead, students who meet with an academic adviser may be more likely to be experiencing academic, personal, or financial crises (Kelly et al., 2021). In general, the existing literature highlights the importance of connections with faculty and staff through advising and mentoring for both undergraduate and graduate students (Brunsma et al., 2017; Hunter & Devine, 2016; Kelly et al., 2019). These connections are important protective factors, a form of social capital, and predict academic outcomes such as GPA (Almeida et al., 2021). However, due to systemic inequality and structural racism, not all students have similar access to quality advising and may have more negative experiences (Brunsma et al., 2017).

In contrast to academic advising, discussing course content outside of class with peers had a small positive effect on plans to attend graduate school. Students with stronger connections to peers also have a stronger sense of integration into the campus community and better adjustment to college (Maunder, 2018). Peers can serve a protective role as validating agents, particularly for historically underrepresented students (Kelly et al., 2021). These important relationships likely contribute to a sense of social belonging or positive interpersonal relationships with members of the campus community (Walton & Cohen, 2011).

As previously mentioned, Model 4 or institutional characteristics and climate factors, had a minimal impact on student persistence outcomes. Related to the likelihood of considering dropping out, discrimination and bias is a risk factor. This finding is

consistent with existing research which highlights numerous negative outcomes associated with experiences of discrimination and bias on campus including isolation and depressive symptoms (Choi et al., 2021; Hurtado et al., 2015). Notably, experiences of validation and sense of belonging serve as a buffer against discrimination and bias and reduce their negative impacts (Choi et al., 2021; Hurtado et al., 2015). The current study controlled for academic validation, interpersonal validation, and sense of belonging which may reduce the negative effect of discrimination and bias on persistence.

Regarding plans to attend graduate school, no notable factors beyond controls in Model 4 (i.e., region) were meaningfully linked to graduate education plans.

Interactions do not suggest that the effects of focal predictors on persistence were meaningfully moderated by historically underrepresented group membership. The only interaction term significant at the $p<.01$ level of significance or higher was TGNC-by-interpersonal validation in the analysis for the consider dropping out outcome. Interpersonal validation had a significantly more positive effect on reducing the odds of considering dropping out for TGNC students compared to cisgender students. There were no interaction terms significant at the $p<.01$ level of significance or higher for the planning to attend graduate school outcome.

Implications

Theory

The purpose of my dissertation research was to further explore the relationships between validation, sense of belonging and academic self-concept and intent to persist using a conceptual framework grounded in CRT and informed by related theories and

concepts from validation theory and sense of belonging. This framework has proved to be a useful conceptual model for exploring this topic.

Overall, the results of the current study support the notion that historical dynamics of inclusion and exclusion continue to be felt on college campuses today (Anderson & Span, 2016; Nash, 2021). A CRT approach is sensitive to these dynamics and considers structural forms of oppression and environmental factors (Duran et al., 2020; Reyes, 2021; Strayhorn, 2021). While the specific results varied across outcomes, there were differences in students' self-concept related to sex (i.e., sexism). Students who identified as LGBTQ+, part-time students, and to a lesser extent FG students had worse persistence outcomes reflecting heterosexism, classism, ageism, and other forms of oppression. In summary, the current results support Jack's (2019) argument that access to higher education does not necessarily mean inclusion within higher education.

Based on my conceptual framework, I developed four blocks of variables: 1) Focal factors (academic validation, interpersonal validation, and sense of belonging), 2) Student demographic, identity, and enrollment factors, 3) Student and institutional engagement, and 4) Institutional characteristics and climate. Of these blocks, blocks 1 and 2 held the most explanatory power across outcomes. However, specific variables from blocks 3 and 4 were meaningful predictors of academic self-concept and persistence suggesting the relevance of both engagement and environmental factors beyond individual-level factors alone (Lewis, 2014; Reyes, 2021; Strayhorn, 2021). These factors included co-curricular diversity activities, some student support services, and discrimination and bias. These findings taken together lend support for the use of

interactional, ecological approaches to exploring equity and inclusion in higher education.

The results also deepen understanding of the roles of validation and sense of belonging in shaping student outcomes. Of the two types of validation identified by Rendón (1994), academic validation played the most significant role in the current study. Interpersonal validation appears less important as a standalone predictor of academic self-concept and persistence. However, the current study also suggests significant correlation between interpersonal validation and sense of belonging as others have noted (Andrade, 2018; Hurtado & Alvarado, 2015). Belonging does in fact play a critical role in predicting whether a student considers dropping out. This finding highlights the importance of sense of belonging for research in this area and challenges a student deficit-based narrative by instead pointing to exclusionary environments (Gillborn, 2018; Harper, 2012; Ledesma & Calderon, 2015).

The campus environment is associated with what is often referred to as the hidden or implicit curriculum (Council on Social Work Education [CSWE], 2015; O'Shea, 2016). The definition of implicit curriculum varies across disciplines, but the CSWE (2015) defines it as "the learning environment in which the explicit curriculum is presented" (p. 14). In social work education, the implicit curriculum is composed of multiple components including: commitment to diversity; admissions practices; advising, retention, and termination policies; student governance; faculty; administrative organization; and resources (CSWE, 2015). The implicit curriculum is just as important to students' experiences as the explicit curriculum (CSWE, 2015). In the following

section I turn to implications for practice and policy. Many of the practice implications focus on components of the implicit curriculum described above.

Academic Self-Concept

The primary implications identified in this section relate to the following areas: the meaningfulness of academic validation and GPA as predictors of academic self-concept, significant differences in academic self-concept among historically underrepresented groups of students, and student support services approaches to support academic self-concept.

In this study, academic validation encompasses a faculty's ability to determine a student's level of understanding in class, helpful feedback to assess progress, encouragement to ask questions and participate in discussions, and a feeling that contributions were valued in class. Given the importance of academic validation in supporting students' academic self-concept, faculty and staff alike should intentionally include such opportunities for academic validation to occur within and beyond the classroom. Cooper et al. (2018) suggest finding ways to increase academic self-concept through classroom instruction such as identifying students to monitor and encourage equitable participation in discussion during group work. Pedagogical strategies could play a critical role in nurturing academic validation and increasing students' self-concept. These efforts are especially important to support historically underrepresented students as the current study found that females, FG students, and LGBTQ+ students had lower academic self-concept scores in comparison to their respective reference groups.

Students' academic success is often measured using GPA, and the current research found a strong positive link between GPA and students' academic self-concept.

However, Weatherton and Schussler (2021) argue that it's important to acknowledge differences in how researchers, faculty, and students think about and define student success. Student input, particularly from historically underrepresented students, is rarely considered in defining measures of success in the classroom and college setting. As Weatherton and Schussler (2021) state "if these definitions are not created *by* and *for* a diverse population, then there will be cascading impacts on outcomes for those left out of the conversation" (p. 2). Colleges should have a policy to acknowledge non-academic measures of student success in student evaluations and coursework such as the development of professional networks, metacognitive strategies, and the development of an academic identity (Weatherton & Schussler, 2021).

More support should also be directed toward so-called non-academic support such as career centers, multicultural student centers and student groups, and mental health services (Weatherton & Schussler, 2021). While student and institutional engagement factors did not meaningfully contribute to explaining variation in academic self-concept, both participation in cultural activities and career counseling had a statistically significant and positive impact on students' academic self-concept. Recent work in student services, including career services, advocates for critical and identity-conscious strategies to support students, particularly historically underrepresented students (Garriott, 2020; Pendakur, 2016). Duran et al. (2020) apply an intersectional framework to understanding student retention, particularly for TGNC students, and note that while campus cultural and identity centers are important resources for students, they are often siloed in singular identity categories. Further, on many campuses LGBTQ+ centers are often experienced as White-centered spaces while multicultural spaces are experienced as heteronormative

(Duran et al., 2020). Duran et al. (2020) argue that campus cultural and identity centers should take more expansive approaches to programming and resources and attend to multiple, intersecting marginalized identities. This work is especially important given the pervasiveness of dominant, Eurocentric middle- and upper-class norms in higher educational structures, standards, and practices (Brunsma et al., 2017; Cook-Sather et al., 2018; Dortch & Patel, 2017).

Persistence

Primary implications related to student persistence include interventions designed to foster a sense of belonging, college affordability and feasibility, advising and mentoring opportunities, and campus climate.

Given the role sense of belonging plays in decreasing the odds a student considers dropping out, my recommendations include interventions aimed at fostering a sense of belonging. Pedagogical partnerships are one avenue to enhance engagement for students as well as faculty and staff (Cook-Sather & Felten, 2017). Student-faculty/staff partnership programs vary in structure and purpose, but all emphasize collaboration and are grounded in "respect, reciprocity, and shared responsibility" (Cook-Sather & Felten, 2017, p. 5). For an extensive, step-by-step pedagogical partnership guide, see Cook-Sather et al. (2019). Other notable strategies include early orientation opportunities, transition programming, learning communities, and opportunities to research and volunteer within departments (Knekta & McCartney, 2021). Importantly, these strategies not only provide early and ongoing opportunities for connection but also formal structures through which meaningful relationships can develop. While a student's sense

of belonging is important to persistence, structural factors such as affordability should not be overlooked.

College affordability is an important factor in accessing higher education. In the current study, students who had concerns about financing their education were more likely to consider dropping out compared to those who did not. Peters et al. (2019) argue that colleges and universities cannot drive economic mobility and equity without addressing affordability in higher education. Proposed solutions target all levels including national, state, and institutional. At the national level, the College Affordability Act is intended to expand the availability of financial aid inclusive of graduate students, reform financial aid practices and policies, strengthen institutional accountability, increase transparency, and expand academic and social support for students (Hegji & Collins, 2020). However, critics of the Act argue college affordability cannot be adequately addressed without decreasing the actual price of higher education and diversifying educational opportunities for students such as career and technical education options (Amselem, 2019).

State-level programs include Promise programs that take on a variety of forms but promise free tuition to resident students (Callahan et al., 2019). According to Callahan et al. (2019), in 2019, 19 states had a Promise program. In general, these programs are designed to provide financial resources, increase access through streamlined eligibility requirements and communication, and support student success through student-centered program requirements and student support services.

Lastly, institutions can design initiatives to address specific issues such as textbook affordability through open access resources (Bjork et al., 2019) and paid on-

campus employment opportunities with a professional development component such as pedagogical partnerships (Jack, 2019). In summary, addressing college affordability will require simultaneous interventions across multiple levels.

Another primary implication is for institutions to make graduate school more feasible for historically underrepresented students to better support them in reaching their aspirations. First, efforts could be made to make graduate school a viable option for working, part-time students whom the current study found are less likely to plan for graduate study. Current research suggests that there is overlap among post-traditional students, low-income students, and students of color. In general, these students are more likely to be working, enrolled part-time, and have family responsibilities (Espinoza, 2010; Gardner, 2008; Kamer & Ishitani, 2021). Remenick and Bergman (2020) suggest that institutions develop policies and practices that incentivize working students. This could include programs that pair students' professional and educational experiences, more on campus employment opportunities that complement students' educational goals, and specialized career support focused on finding flexible employment for students.

A specific example of a promising program is credit for prior learning (CPL) or prior learning assessment (PLA) (Klein-Collins et al., 2020; Leibrandt et al., 2020; McKay & Douglas, 2020). CPL generally refers to a variety of different methods that can be used to evaluate and give credit to students for college-level skills and knowledge that have been developed and gained outside of a traditional classroom setting (McKay & Douglas, 2020). Evaluation methods include exams, portfolio-based assessments, and evaluation of professional development and other training provided by employers including military experience (McKay & Douglas, 2020). CPL expanded through funding

provided in the American Recovery and Reinvestment Act in response to the Great Recession and researchers argue it could play a critical role in recovery post the COVID pandemic (Leibrandt et al., 2020; McKay & Douglas, 2020).

Outcomes of CPL for students include better persistence and graduation rates, shorter time to degree completion, and costs savings (Leibrandt et al., 2020; McKay & Douglas, 2020). However, there are disparities in take-up of CPL and students of color, low-income students, women, and older students are less likely to participate in CPL programs and experience their benefits (McKay & Douglas, 2020). Leibrandt et al. (2020) argue that equitable and widespread CPL opportunities can help institutions play a key role in economic recovery, particularly as an influx of displaced employees seek out new educational opportunities and institutions themselves experience real, significant financial challenges.

Another key strategy for making graduate education more feasible for historically underrepresented students is quality mentoring (Brunsma et al., 2017; Martinez & Elue, 2020) and opportunities for peer support (Brown et al., 2021). Mentors play a critical role in encouraging students to obtain a graduate degree (Martinze & Elue, 2020). However, historically underrepresented students are less likely to have access to quality mentoring (Brunsma et al., 2017). Brunsma et al. (2017) provide a comprehensive list of recommendations for faculty, departments, and institutions. Ultimately, they argue that departments must be willing to make financial and temporal resources available to mentors. Mentorship should also be integrated into curriculum, culture, recruitment, and retention processes. Opportunities for identity-conscious peer support and mentoring are also critical, particularly for FG graduate students (see Brown et al., 2021).

My results indicate that engaging in academic advising decreased the likelihood a student would consider attending graduate school. When contemplating this result, it's important to consider that students who are referred to academic advising are likely experiencing some form of distress (Kelly et al., 2021) and that the current study did not take into account the advising approaches used. However, academic advising may be an underused resource to support students' aspirations to attend graduate school.

Advisers may use a variety of different approaches when engaging with students. Lee (2018) offers the following model for advisors: affirm, support, and advocate. Affirm refers to an advisor's ability to encourage students and engage in microaffirmations to counter microaggressions. Support reflects an advisor's willingness to decrease the burden experienced by historically underrepresented students by connecting them to relevant resources to support their academic and career goals. Lastly, advisors can also advocate for change within their institutions and beyond on behalf of historically underrepresented students. Carnaje (2016) suggests that advisors see themselves as institutional liaisons providing encouragement to seek out academic support and engage in extracurricular activities.

Regardless of the specific strategies used, training and development opportunities for advisors are key. Areas of focus could include cultural competence, sensitivity, and inclusive practices (Carnaje, 2016; Kelly et al., 2021). Advisors benefit from space and time to reflect on their advising practices (Carnaje, 2016). Reflection can include a focus on how racism and other forms of oppression shape student development and experiences and disparities in academic progress and degree completion (Carnaje, 2016; Lee, 2018).

The responsibility for advising historically underrepresented students on campus is not shared equitably. Faculty and staff of color are often disproportionately advising and mentoring students of color (Kelly et al., 2021). White faculty and staff should be provided with training and development opportunities focused on cultural sensitivity and advocacy (Kelly et al., 2021). Institutions can provide direct resources and, importantly, enhanced communication about available resources and support to students and advisors (Kelly et al., 2021). In addition, student advisory boards can play an important role in shaping advising practices as well as other student support services (Kelly et al., 2021). Taken together, these various strategies can enhance advising practices to better support advisors and advisees.

Experiences of discrimination and bias lead students to consider dropping out of their programs. In response to student advocacy, institutions have been pushed to take a greater interest in issues related to campus climate including experiences of discrimination and bias (Anderson & Span, 2016). The years of data collection (2015-2017) used in the current study correspond with an increase in anti-immigrant, Latinx/Chicanx, Black, and LGBTQIA+ and misogynistic rhetoric and policies which contributed to increasingly hostile campus climates for many students (Franklin & Medina, 2018; Logan et al., 2017).

Existing research suggests that historically underrepresented students are more likely to experience alienating campus climates which contribute to a decreased sense of belonging, increased depressive symptoms, and increased emotional distress (Brunsma et al., 2017; Choi et al., 2021; Hurtado et al., 2011; Nicolazzo et al., 2017). Lack of sense of belonging and poor mental health outcomes may lead to decreased academic engagement

and, in turn, increased attrition (Brunsma et al., 2017). The current study confirms that experiences of discrimination and bias meaningfully impact student persistence. Experiences of discrimination and bias directly contribute to negative campus climates while academic culture may be more subtly marginalizing. It's important for faculty, staff, and administrators to consider how dominant academic culture is embedded in the student support services available (or not available) to students (Benshoff et al., 2015), the curriculum (Byers et al., 2019; Cunningham, 2016), and pedagogy (hooks, 1994).

Given the protective role of validation and sense of belonging against the harmful outcomes associated with discrimination and bias and negative campus climates more generally, institutional agents should look for ways to increase and enhance opportunities for validation to occur and sense of belonging to develop to promote positive change on campus. As discussed, faculty, staff, and peers can play a critical role in these efforts (Maunder, 2018; Rendón et al., 2011). Research suggests a variety of promising practices, with particular attention to the implicit curriculum, to move forward including pedagogical partnerships (Cook-Sather & Felten, 2017), enhanced advising practices and student support services programming (Carnaje, 2016; Duran et al., 2020; Kelly et al., 2021; Knekta & McCartney, 2021; Lee, 2018), and administrative support and investment in student groups and student advisory boards (Kelly et al., 2021).

When thinking about various types of student engagement and the effects on persistence, it's important to remember that students do not have equitable access to engagement opportunities (Rendón, 1994). Students may only connect to faculty and staff when they are already experiencing a crisis or are identified as "at-risk" (Kelly et al., 2021). Therefore, in alignment with my conceptual framework, institutions must take a

proactive role in student engagement and provide formal structures for relevant engagement to occur (Brunsma et al., 2017; Rendón, 1994). In the following section, I turn to the limitations of the current study.

Limitations

I have identified five primary limitations including limitations related to the interpretation strategy, variables available, use of self-report data, use of a non-probability sample, and use of cross-sectional data in my analysis.

Due to the large sample size (over 32,000 participants) and high statistical power, my results included many statistically significant estimates that were not necessarily meaningful in terms of effect size. To facilitate focused interpretation of model results, I established multiple criteria including interpreting significant ($p \leq .01$) predictors that had a small effect size or larger based on commonly used rules of thumb as detailed in Chapter 3: Methodology. A strength of this strategy was that I used an inclusive approach to interpreting effect sizes, including effect sizes that were considered small or larger. A potential limitation is that I did not discuss every statistically significant result in detail. However, to be more inclusive in my results, interpretation, and discussion, I do include results that are significant at $p \leq .01$ but do not have effect sizes that are considered small or larger. Ultimately, identifying and consistently applying a clear interpretation strategy was important to focus my dissertation research.

Sense of belonging has been associated with measures of well-being among college students (Petridis, 2015; Stebleton et al., 2014). This relationship has yet to be similarly established for academic and interpersonal validation. Ideally, a measure more directly related to well-being would be used in the current analysis in lieu of academic

self-concept, which includes items on confidence and motivation but primarily relates to perception of academic ability. Recognizing the importance of collecting data on mental health and well-being among college students, HERI added an emotional-health variable to the DLE survey in 2018. However, this data was not available for access until late 2021.

Importantly, the current study includes a comprehensive sense of belonging measure. However, the literature indicates that it's not only student sense of belonging that is relevant, but also the importance students place on belonging within their particular institution (Hornsey & Jetten, 2004; Huffman, 2001). Whether or not, or the extent to which, belonging is a desired outcome for students may further nuance the relationships between sense of belonging and academic self-concept and intent to persist.

The majority of the data collected in the DLE is self-report data. One concern about self-report data related to behavior is that students may not answer accurately, and their responses may not reflect actual behaviors (Fredricks & McColskey, 2012). Fredricks and McColskey (2012) also point out that self-report behavioral questions are often worded more generally versus asking about particular tasks and situations, making it more difficult to answer the questions accurately. On the other hand, self-report data is especially useful for items related to personal perceptions or subjective states (Fowler & Consenza, 2009). The primary variables of interest in the current study relate to student perceptions and subjective states, thus self-report data is more appropriate.

Institutions self-select to participate in the DLE and must complete a registration process and pay related fees. Institutions implementing diversity related initiatives may be more likely to self-select as well as institutions that have existing concerns about

campus climate. The self-select nature of the survey may affect the results of the current study and won't reflect the general population of four-college students (please see Chapter 4: Findings for a comparison of my sample to estimates for the national population of undergraduate students). To address this concern, results are interpreted with caution and not generalized outside of the participating institutions.

The DLE is a cross-sectional survey with different institutions participating each year. As a result, a causal relationship between the variables of interest can't be explored or established. Validation theory currently suggests that validation experiences lead to student integration or belonging on campus (Rendón, 1994). However, this hypothesis couldn't be tested in the current study.

Future Research

Areas of future research pertain to further exploring my findings related to discrepancies in planned graduate school attendance, the negative effect of academic advising on planning to attend graduate school, use of interaction terms across models, the consistent influence of GPA on student outcomes, and nuances of student sense of belonging.

Future research should further probe the discrepancy highlighted by the current research which suggests that students who are Black and Hispanic are more likely to plan to attend graduate school compared to students who are White but are less likely to be advanced degree holders following current limited data (Baum & Steele, 2017). Better understanding barriers to an advanced degree for historically underrepresented students is critical from a social and economic justice perspective, particularly given the increasing

demand for advanced degrees and the potential benefits of obtaining one (Baum & Steele, 2017; Carnevale et al., 2012; Torpey, 2018).

The current study found that engaging with student support services, in this case academic advising, actually decreased the likelihood a student planned to attend graduate school. Relationships with academic advisers and other faculty and staff have the potential to enhance students' social capital in meaningful ways. Future research might consider the primary approaches used in the delivery of various student support services including academic advising. The impact of specific promising practices including identity-conscious strategies (Pendakur, 2016) and community cultural wealth models (Garriott, 2020) should be explored further and accounted for in future research.

Including interaction terms based on historically underrepresented student group membership was important to the current study given my interest in identifying differential relationships. However, most of the interaction terms in the current study were not significant at the p=.01 or higher level of significance. Future research could explore interaction effects, beyond the focal factors, for some of the most meaningful predictors in the current study. For academic self-concept these included GPA, enrollment status, and sex. For the odds of considering dropping out, variables of interest included age, race, enrollment status, GPA, SES, and discrimination and bias. Finally, for planning to attend graduate school, these factors included age, race, enrollment status, GPA, academic advising, and interactions with peers outside of class.

GPA is often a default for measure of student success (Kamer & Ishitani, 2021; Metzner & Bean, 1987). Given the consistent influence of GPA on academic self-concept and persistence, future research could explore alternative, student-driven indicators of

student success as outlined by Weatherton and Schussler (2021). Better understanding the various ways researchers, faculty, staff, and students define success and developing alternative operationalizations could help researchers understand and support student success more holistically.

Sense of belonging was a focal factor in the current study and is meaningfully related to persistence. However, sense of belonging may not be perceived as important or desired for all students, particularly in exclusionary environments (Hornsey & Jetten, 2004; Huffman, 2001). Future research could account for the importance students place on belonging as well as further exploring how students actively navigate belonging needs in exclusionary environments that conflict with their values or goals.

Chapter 6: Conclusion

The goal of my dissertation research was to explore the relationships between sense of belonging, academic validation, and interpersonal validation and their impact on academic self-concept and intent to persist within the context of student-level factors, student and institutional engagement, and institutional characteristics and climate. My conceptual framework brings together critical race theory (CRT) and related concepts from validation theory and sense of belonging. I used this framework to identify key variables across individual and institutional levels that influence students' wellbeing and persistence. Scholarship using validation theory and sense of belonging suggests the consideration of factors related to student identity and engagement with the institution. CRT and sense of belonging support the inclusion of both institutional- and environmental-level factors. I proposed an interactional, ecological model that considers 1) student-level factors, 2) student and institutional engagement, and 3) institutional characteristics and climate for assessing the relationships between validation, belonging, and academic self-concept and intent to persist.

I used secondary data analysis methods and data drawn from the Diverse Learning Environment (DLE) survey from the Higher Education Research Institute (HERI) at the University of California Los Angeles. I requested data from four-year institutions only inclusive of the years 2015, 2016, and 2017. My project used all subjects with non-missing data for a final sample size of 32,529 students. My primary independent

variables included academic validation, interpersonal validation, and sense of belonging. I explored three outcome variables including academic self-concept (continuous), considered dropping out of school (binary), and planning to attend graduate school (binary) using ordinary least squares (OLS) and logistic regressions. I used a sequential model building strategy with themed blocks of factors progressively added to my analysis. Model 1 included the survey year and the primary independent variables. Model 2 added student demographics, identity, and enrollment variables. Model 3 included student and institutional engagement factors. Model 4 added institutional characteristics and climate variables. Lastly, Model 5 included independent variables-by-historically underrepresented student subgroup interactions.

I used the above approach to explore two primary research questions. The first question explored how academic and interpersonal validation and sense of belonging influenced students' academic self-concept score controlling for student demographics, identity, and enrollment variables, student engagement variables, and institutional characteristics and climate variables. The second question focused on how academic and interpersonal validation and sense of belonging influenced students' intent to persist controlling for these same factors.

I used two criteria to focus my interpretation of unique predictor results. First, I used effect sizes to determine the meaningfulness of effects using partial $eta^2 \geq .01$ for the OLS regression threshold and effect size $\leq .1$ for logistic regressions. Secondly, I interpreted variables significant at the $p \leq .01$ level. Using this criteria was important to focus interpretation given the high sample size and high statistical power.

Regarding the first research question, I found that Models 1 and 2 contributed to explaining the greatest variance in students' academic self-concept. Of the focal factors, academic validation had the largest effect on academic self-concept. However, the effect of academic validation decreases once controlling for student demographics, identity, and enrollment factors in Model 2, particularly sex (with females predicted to have lower scores than males) and GPA. My results also indicated statistically significant differences in academic self-concept associated with race, FG status, TGNC and LGBQ identities, and SES. Students who are Black or of multiple races were predicted to have higher academic self-concept scores relative to students who are White. Students who identified as FG, LGBQ, TGNC, or reported concerns about financing college were predicted to have lower academic self-concept scores relative to their reference groups. In Model 3, participating in co-curricular diversity activities and career counseling were positively associated with academic self-concept. In contrast, engaging with writing support and student psychological services were negatively associated with academic self-concept. In Model 4, both institutional commitment to diversity and discrimination and bias were positively associated with students' academic self-concept scores.

My second research question focused on intent to persist operationalized with two separate outcomes variables – considered dropping out and planning to attend graduate school. Regarding considering dropping out, Models 1 and 2 explained the greatest variation in the odds of considering dropping out. Sense of belonging appears to be a more stable and meaningful predictor of this outcome in comparison to the validation variables. Of the student demographic, identity, and enrollment variables added in Model 2, age, race, part-time status, GPA, gender-identity, sexual orientation and financial

concerns are consistently meaningful predictors of the odds of considering dropping out. Older students, part-time students, TGNC students, LGBQ students, and students with financial concerns are more likely to consider dropping out relative to their reference groups. Asian students are less likely to consider dropping out in comparison to White students. Once controlling for student and institutional engagement factors, the effect size for FG student status increased with FG students predicted to be 20% more likely to consider dropping out. In Model 3, engaging with student psychological services was a consistent, meaningful predictor of increased odds of dropping out. In Model 4, discrimination and bias had a meaningful and positive impact on increasing the odds of considering dropping out.

Related to plans to attend graduate school, Models 1 and 2 again explained the greatest variation in the outcome. Surprisingly, none of the focal factors beyond survey year were meaningful predictors of the odds of planning to attend graduate school. In Model 2, meaningful predictors included race, part-time enrollment, and GPA. Relative to White students, Black, Asian, and Hispanic students were more likely to plan to obtain a graduate degree. Part-time students were less likely to plan to pursue a graduate degree in comparison to full-time students. GPA was also associated with increased odds of planning to attend graduate school. Meaningful effect sizes were also identified in Models 3 and 4. In Model 3, students who engaged in academic advising had decreased odds of planning to attend graduate school while students who discussed course content with peers outside of class had increased odds of planning to pursue a graduate degree.

Across all analyses, there was little indication that the magnitude of the primary independent variables on students' academic self-concept or persistence meaningfully

differed across group membership. In relation to academic self-concept, the only two interaction terms significant at the $p<.01$ level of significance or higher were related to interpersonal validation and sense of belonging. Asian-by-interpersonal validation indicates that interpersonal validation has a more positive effect on academic self-concept for students who are Asian relative to students who are White. Belonging also has a more positive effect on the academic self-concept scores of students who are Hispanic compared to students who are White. Regarding consider dropping out, the only interaction term significant at the $p<.01$ level of significance or higher was TGNC-by-interpersonal validation. Interpersonal validation had a significantly more positive effect on reducing the odds of considering dropping out for TGNC students compared to cisgender students. There were no interaction terms significant at the $p<.01$ level of significance or higher for the planning to attend graduate school outcome.

Based on these findings, I identified relevant implications for theory, practice, and policy. A CRT approach considers structural forms of oppression and environmental factors (Duran et al., 2020; Reyes, 2021). This framework has proved to be a useful conceptual model for exploring this topic. Regarding validation theory, my results deepen understanding of the roles of validation in shaping student outcomes. Of the two types of validation identified by Rendón (1994), academic validation played the most meaningful role in the current study related to both academic self-concept and persistence. Belonging also plays a critical role in student persistence particularly related to whether a student considers dropping out.

Practice implications focus primarily on enhancing the implicit or hidden curriculum (CSWE, 2015; O'Shea, 2016). Suggestions for promising practices include

pedagogical partnerships (Cook-Sather & Felten, 2017), enhanced advising practices and student support services programming (Carnaje, 2016; Duran et al., 2020; Kelly et al., 2021; Knekta & McCartney, 2021; Lee, 2018), and administrative support and investment in student groups and student advisory boards (Kelly et al., 2021). Validation theory suggests institutions take a proactive role in student engagement and provide formal structures for engagement to occur (Brunsma et al., 2017; Rendón, 1994).

I identified policy implications that primarily related to college affordability. These include federal policies such as the College Affordability Act (Hegji & Collins, 2020), state-level policies such as Promise programs (Callahan et al., 2019), and institution-specific policies such as credit for prior learning (CPL) programs (Klein-Collins et al., 2020; Leibrandt et al., 2020; McKay & Douglas, 2020), textbook affordability initiatives, and on campus employment opportunities (Bjork et al., 2019; Jack, 2019).

Inequity in access to higher education is an important issue for social workers, educators, and researchers. As mentioned in the introduction, social justice is a core value of the profession (NASW, 2021). If completion gaps and disparities in educational outcomes are not better understood, college-going will soon be associated with decreased mobility and increasingly entrenched inequality (Jack, 2019; Mettler, 2014). It is my hope that the results of this research and policy and practice implications will be used by higher education administrators, educators, and researchers to advance equity in access to higher education and beyond.

References

Ahmad, Z., Anantharaman, R. N., & Ismail, H. (2012). Students' motivation, perceived environment and professional commitment: An application of Astin's college impact model. *Accounting Education: An International Journal*, *21*(2), 187–208. https://doi.org/10.1080/09639284.2011.603472

Alcantar, C. M., & Hernandez, E. (2020). "Here the professors are your guide, tus guias": Latina/o student validating experiences with faculty at a hispanic-serving community college. *Https://Doi-Org.Proxy.Brynmawr.Edu/10.1177/1538192718766234*, *19*(1), 3–18. https://doi.org/10.1177/1538192718766234

Almeida, D. J., Byrne, A. M., Smith, R. M., & Ruiz, S. (2021). How relevant is grit? The importance of social capital in first-generation college students' academic success. *Journal of College Student Retention: Research, Theory, & Practice*, *23*(3), 539–559. https://doi.org/10.1177/1521025119854688

Amselem, M. C. (2019). The college affordability act is unaffordable. In *Heritage Foundation*. The Heritage Foundation.

Anderson, J. D., & Span, C. M. (2016). The legacy of slavery, racism, and contemporary Black activism on campus. *History of Education Quarterly*, *56*(4). https://doi.org/10.1111/hoeq.12214

Andrade, R. J. (2018). *The influence of validation on academic outcomes for Oceania Community College Students*. San Francisco State University.

Baker, D. J. (2019). Pathways to racial equity in higher education: Modeling the antecedents of state affirmative action bans. *American Educational Research Journal*, *56*(5), 1861–1895. https://doi.org/10.3102/0002831219833918

Bandura, A. (1994). Encyclopedia of mental health. In *Encyclopedia of human behavior* (Vol. 4, pp. 71–81). Academic Press. https://www.uky.edu/~eushe2/Bandura/Bandura1994EHB.pdf

Barnett, E. A. (2007). *Validation experiences and persistence among urban community college students*. University of Illinois at Urbana-Champaign.

Barnett, E. A. (2010). Validation experiences and persistence among community college students. *Review of Higher Education*, *34*(2), 193–230. https://doi.org/10.1353/rhe.2010.0019

Bates, A., Hobman, T., & Bell, B. T. (2020). "Let me do what I please with it...don't decide my identity for me": LGBTQ+ youth experiences of social media in narrative identity development. *Journal of Adolescent Research*, *35*(1), 51–83. https://doi.org/10.1177/0743558419884700

Baum, S., & Steele, P. (2017). *Who Goes to Graduate School and Who Succeeds?* www.urban.org/support.

Beasley, S. T., & McClain, S. (2021). Examining Psychosociocultural Influences as Predictors of Black College Students' Academic Self-Concept and Achievement.

Journal of Black Psychology, *47*(2–3), 118–150. https://doi.org/10.1177/0095798420979794
Bennett, C. A., Hsiao, E.-L., Dees, D. C., Kim, D., & Bochenko, M. J. (2021). The impact of TRIO Student Support Services on academic performance of non-traditional students at a public state college in Georgia. *Journal of Adult and Continuing Education*, *27*(2), 157–174. https://doi.org/10.1177/1477971420915938
Benshoff, J. M., Cashwell, C. S., & Rowell, P. C. (2015). Graduate students on campus: Needs and implications for college counselors. *Journal of College Counseling*, *18*(1), 82–94. https://doi.org/10.1002/j.2161-1882.2015.00070.x
Benuto, L. T., Casas, J. B., Cummings, C., & Newlands, R. (2018). Undocumented, to DACAmented, to DACAlimited: Narratives of Latino students with DACA status. *Hispanic Journal of Behavioral Sciences*, *40*(3), 259–278. https://doi.org/10.1177/0739986318776941
Betts, K. R., & Hinsz, V. B. (2013). Group marginalization: Extending research on interpersonal rejection to small groups. *Personality and Social Psychology Review*, *17*(4), 355–370. https://doi.org/10.1177/1088868313497999
Bjork, K., Stanforth, A., Wood, J., & Robison, S. (2019). Harnessing the power of campus-wide collaborations to address college affordability with OER. In *Online Northwest*. https://pdxscholar.library.pdx.edu/onlinenorthwest/2019/schedule/1
Blagg, K., & Blom, E. (2018). *Evaluating the return on investment in higher education: An assessment of individual- and state-level returns*. https://nces.ed.gov/datalab.
Bourdieu, P., & Passeron, J.-C. (1990). *Reproduction in education, society, and culture*. SAGE Publications Ltd. https://monoskop.org/images/8/82/Bourdieu_Pierre_Passeron_Jean_Claude_Reproduction_in_Education_Society_and_Culture_1990.pdf
Bowman, N. A., & Felix, V. (2017). It's who I am: Student identity centrality and college student success. *Journal of Student Affairs Research and Practice*, *54*(3), 235–247. https://doi.org/10.1080/19496591.2017.1331853
Bradley, D. (2021). Affirmative action. In *Encyclopedia of Critical Whiteness Studies in Education* (pp. 4–14). BRILL. https://doi.org/10.1163/9789004444836_002
Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In *Examining lives in context: Perspectives on the ecology of human development.* (pp. 619–647). American Psychological Association.
Brophy, A. L. (2018). Forum on slavery and universities: Introduction. *Slavery & Abolition*, *39*(2), 229–235. https://doi.org/10.1080/0144039X.2018.1446790
Brown II, C. M., & Dancy II, T. E. (2010). Predominantly White Institutions. In *Encyclopedia of African American Education* (pp. 524–526). SAGE Publications, Inc. https://doi.org/10.4135/9781412971966.n193
Brunsma, D. L., Embrick, D. G., & Shin, J. H. (2017). Graduate students of color: Race, racism, and mentoring in the white waters of academia. *Sociology of Race and Ethnicity*, *3*(1), 1–13. https://doi.org/10.1177/2332649216681565
Byers, D. S., McInroy, L. B., Craig, S. L., Slates, S., & Kattari, S. K. (2019). Naming and Addressing Homophobic and Transphobic Microaggressions in Social Work Classrooms. *Journal of Social Work Education*, *0*(0), 1–12. https://doi.org/10.1080/10437797.2019.1656688
Cabrera, N. L. (2018). Where is the racial theory in critical race theory?: A constructive

criticism of the Crits. *The Review of Higher Education*, *42*(1), 209–233. https://doi.org/10.1353/rhe.2018.0038

Callahan, M. K., Kent, D. C., Meehan, K., & Shaw, K. (2019). Affordability, access, and success: A framework for examining statewide college promise programs. In *Research for Action*. Research for Action. 3701 Chestnut Street, Philadelphia, PA 19104. Tel: 215-823-2500; Fax: 215-823-2510; e-mail: info@researchforaction.org; Web site: http://www.researchforaction.org.

Carnaje, E. G. (2016). Advising across race: Providing culturally-sensitive academic advising at predominantly white institutions. *The Vermont Connection*, *37*, 38–47.

Carnevale, A., Jayasundera, T., & Cheah, B. (2012). *The college advantage: Weathering the economic storm*. https://files.eric.ed.gov/fulltext/ED534454.pdf

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* (pp. 93–149). Springer Science+Business Media. https://doi.org/10.1007/978-94-007-5836-0_3

Center for First-Generation Student Success. (2020). *National data fact sheets*. https://firstgen.naspa.org/journal-and-research/national-data-fact-sheets-on-first-generation-college-students/national-data-fact-sheets

Chaviano-Moran, R., Chuck, E., & Perez, H. (2019). Unintended demographic bias in GPA/DAT-based pre-admission screening: An argument for holistic admissions in dental schools. *Journal of Dental Education*, *83*(11), 1280–1288. https://doi.org/10.21815/JDE.019.144

Chetty, R., Friedman, J., Saez, E., Turner, N., & Yagan, D. (2020). Income segregation and intergenerational mobility across colleges in the United States. *The Quarterly Journal of Economics*, *The Quarte*, 1567–1633. https://doi.org/10.1093/qje/qjaa005

Chickering, A., & Schlosserberg, N. (1995). *Getting the most out of college*. Allyn and Bacon.

Chinn, S. (2000). A simple method for converting an odds ratio to effect size for use in meta-analysis. *Statistics in Medicine*, *19*(22), 3127–3131. https://doi.org/10.1002/1097-0258(20001130)19:22<3127::AID-SIM784>3.0.CO;2-M

Choi, S., Weng, S., Park, H., Lewis, J., Harwood, S. A., Mendenhall, R., & Huntt, M. B. (2021). Sense of belonging, racial microaggressions, and depressive symptoms among students of Asian descent in the United States. *Smith College Studies in Social Work*, *91*(2), 115–141. https://doi.org/10.1080/00377317.2021.1882922

Cohen, G. L., & Garcia, J. (2008). Identity, belonging, and achievement. *Current Directions in Psychological Science*, *17*(6), 365–369. https://journals-sagepub-com.proxy.brynmawr.edu/doi/pdf/10.1111/j.1467-8721.2008.00607.x

Cohen, J. (2013). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Routledge.

Cokley, K. O. (2002). Ethnicity, gender, and academic self-concept: A preliminary examination of academic disidentification and implications for psychologists. *Cultural Diversity and Ethnic Minority Psychology*, *8*(4), 378–388. https://doi.org/10.1037/1099-9809.8.4.379

Cook-Sather, A., Des-Ogugua, C., & Bahti, M. (2018). Articulating identities and

analyzing belonging: A multi-step intervention that affirms and informs a diversity of students. *Teaching in Higher Education*. https://doi.org/10.1080/13562517.2017.1391201

Cook-Sather, A., & Felten, P. (2017). Where student engagement meets faculty development: How student-faculty pedagogical partnership fosters a sense of belonging. *Student Engagement in Higher Education Journal*, *1*(2), 1–11. https://pdfs.semanticscholar.org/7e15/5009dbf065d2774dbef797d58d0b083ca09b.pdf

Cooper, K. M., Krieg, A., & Brownell, S. E. (2018). Who perceives they are smarter? Exploring the influence of student characteristics on student academic self-concept in physiology. *Adv Physiol Educ*, *42*, 200–208. https://doi.org/10.1152/advan.00085.2017.-Academic

Corazon-Reano, M. (2020). *U.S. Filipinos in higher education: Sense of belonging, validation, well-being, and campus culture as predictors of GPA and intent to persist* [University of Southern California]. https://www.proquest.com/docview/2533381464?pq-origsite=gscholar&fromopenview=true

Corcoran, J. (2018). *Strengths-based models in social work*. Oxford Bibliographies. https://www.oxfordbibliographies.com/display/document/obo-9780195389678/obo-9780195389678-0006.xml

Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, *113*(3), 492–511. https://doi.org/10.1037/PSPP0000102

CSWE. (2015). *Council on Social Work Education (CSWE) - 2015 EPAS*. https://www.cswe.org/Accreditation/Standards-and-Policies/2015-EPAS

Cunningham, M. J. (2016). *Bridging the worlds of home and school: A study of the relational worlds of first-generation students in a school of social work* [Portland State University]. https://search-proquest-com.proxy.brynmawr.edu/psycinfo/docview/1814745510/fulltextPDF/B10F034FCF414248PQ/1?accountid=9772

de Brey, C., Musu, L., McFarland, J., Wilkinson-Flicker, S., Diliberti, M., Zhang, A., Branstetter, C., & Wang, X. (2019). Status and trends in the education of racial and ethnic groups 2018. *National Center for Educational Statistics*, 181. https://nces.ed.gov/pubs2019/2019038.pdf

Delgado Bernal, D. (2002). Critical race theory, Latino critical theory, and critical raced-gendered epistemologies: Recognizing students of color as holders and creators of knowledge. *Qualitative Inquiry*, *8*(1), 105–126. https://journals-sagepub-com.proxy.brynmawr.edu/doi/pdf/10.1177/107780040200800107

Dennehy, T. C., Smith, J. S., Moore, C., & Dasgupta, N. (2018). Stereotype threat and stereotype inoculation for underrepresented students in the first year of college. In R. S. Feldman (Ed.), *The first year of college: Research, theory, and practice on improving the student experience and increasing retention* (pp. 309–344). Cambridge University Press. https://psycnet-apa-org.proxy.brynmawr.edu/record/2018-00905-011

Dortch, D., & Patel, C. (2017). Black undergraduate women and their sense of belonging in STEM at predominantly white institutions. *NASPA Journal About Women in*

Higher Education, *10*(2), 202–215. https://doi.org/10.1080/19407882.2017.1331854
Duran, A., Dahl, L. S., Stipeck, C., & Mayhew, M. J. (2020). A critical quantitative analysis of students' sense of belonging: Perspectives on race, generation status, and collegiate environments. *Journal of College Student Development*, *61*(2), 133–153.
Duran, A., Pope, R. L., & Jones, S. R. (2020). The necessity of intersectionality as a framework to explore queer and trans student retention. *Journal of College Student Retention: Research, Theory and Practice*, *21*(4), 520–543. https://doi.org/10.1177/1521025119895510
Ellis, J. M., Powell, C. S., Demetriou, C. P., Huerta-Bapat, C., & Panter, A. T. (2018). Examining first-generation college student lived experiences with microaggressions and microaffirmations at a predominately white public research university. *Cultural Diversity and Ethnic Minority Psychology*, *TBD*(TBD), TBD. https://doi.org/10.1037/cdp0000198
Espinoza, R. (2010). The good daughter dilemma: Latinas managing family and school demands. *Journal of Hispanic Higher Education*, *9*(4), 317–330. https://doi.org/10.1177/1538192710380919
Forsgren, L. L. (2017). Black folk's theatre to Black Lives Matter: The Black revolution on campus. *Theatre History Studies*, *36*, 301–309. https://doi.org/10.1353/ths.2017.0014
Fowler, F., & Consenza, C. (2009). Design and evaluation of survey questions. In L. Bickman & D. Rob (Eds.), *The SAGE Handbook of Applied Social Research Methods* (2nd ed., pp. 375–412). SAGE Publications, Inc.
Franklin, J. D., & Medina, R. (2018). Trump and an anti-immigrant climate: Implications for Latinx undergraduates. *Journal of Critical Scholarship on Higher Education and Student Affairs*, *3*(3), 74–87. https://ecommons.luc.edu/jcshesa
Fredricks, J., & McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. In C. Wiley, A. Reschly, & S. Christenson (Eds.), *Handbook of Research on Student Engagement* (pp. 763–782). Springer Science+Business Media. https://doi.org/10.1007/978-1-4614-2018-7
Fregoso, J. (2021). *Findings from the 2020 administration of the Diverse Learning Environments survey*. https://heri.ucla.edu/publications-dle/
Freire, P. (2009). *Pedagogy of the oppressed* (30th ed.). Continuum.
Gardner, S. K. (2008). Fitting the mold of graduate school: A qualitative study of socialization in doctoral education. *Innov High Educ*, *33*, 125–138. https://doi.org/10.1007/s10755-008-9068-x
Garriott, P. O. (2020). A critical cultural wealth model of first-generation and economically marginalized college students' academic and career development. *Journal of Career Development*, *47*(1), 80–95. https://doi.org/10.1177/0894845319826266
Garvey, J. C., Squire, D. D., Stachler, B., & Rankin, S. (2018). The impact of campus climate on queer-spectrum student academic success. *Https://Doi-Org.Proxy.Brynmawr.Edu/10.1080/19361653.2018.1429978*, *15*(2), 89–105. https://doi.org/10.1080/19361653.2018.1429978
Gillborn, D., Warmington, P., & Demack, S. (2018). QuantCrit: education, policy, "Big Data" and principles for a critical race theory of statistics. *Race Ethnicity and*

Education, *21*(2), 158–179. https://doi.org/10.1080/13613324.2017.1377417
Gillen-O'Neel, C. (2021). Sense of belonging and student engagement: A daily study of first- and continuing generation college students. *Research in Higher Education*, *62*(1), 45–71. https://doi.org/10.1007/S11162-019-09570-Y/FIGURES/2
Gopalan, M., & Brady, S. T. (2019). College students' sense of belonging: A national perspective. *Educational Researcher*, *49*(2), 134–137. https://doi.org/10.3102/0013189X19897622
Griner, S. B., Vamos, C. A., Thompson, E. L., Logan, R., Vázquez-Otero, C., & Daley, E. M. (2020). The intersection of gender identity and violence: Victimization experienced by transgender college students. *Journal of Interpersonal Violence*, *35*(23–24), 5704–5725. https://doi.org/10.1177/0886260517723743
Gronert, N. M. (2019). Law, campus policy, social movements, and sexual violence: Where do we stand in the #MeToo movement? *Sociology Compass*, 1–20. https://doi.org/10.1111/soc4.12694
Hanson, D., Perez-Felkner, L., & Thayer, D. (2020). Overview of Higher Education (USA). *Bloomsbury Education and Childhood Studies*, 1–10. https://doi.org/10.5040/9781350996489.0012
Harper, S. R. (2012). Race without racism: How higher education researchers minimize racist institutional norms. *The Review of Higher Education*, *36*(1), 9–29. https://doi.org/10.1353/rhe.2012.0047
Harvard Law School. (2019). *96% of students defrauded by for-profit Colleges report their lives are worse now than before they went to school*. https://clinics.law.harvard.edu/blog/2019/08/96-of-students-defrauded-by-for-profit-colleges-report-their-lives-are-worse-now-than-before-they-went-to-school/
Hayes, J. E. (2016). *An examination of The first-generation student experience at a small, private institution* [Illinois State University]. https://ir.library.illinoisstate.edu/etd/616
Hegji, A., & Collins, B. (2020). H.R. 4674, the College Affordability Act: Proposed Reauthorization of the Higher Education Act, Summary of Major Provisions. CRS Report R46176, Version 1. In *Congressional Research Service*. Congressional Research Service.
Henry, G. (2011). Practical Sampling. *Practical Sampling*, 77–105. https://doi.org/10.4135/9781412985451
HERI. (2019). *CIRP Factor Technical Report 2018-19 Appendix Diverse Learning Environments (DLE) Survey*.
hooks, bell. (1994). *Teaching to transgress: Education as the practice of freedom*. Routledge.
Hornsey, M. J., & Jetten, J. (2004). The individual within the group: Balancing the need to belong with the need to be different. *Personality and Social Psychology Review*, *8*(3), 248–264. https://journals.sagepub.com/doi/pdf/10.1207/s15327957pspr0803_2
Huffman, T. (2001). Resistance Theory and the Transculturation Hypothesis as Explanations of College Attrition and Persistence Among Culturally Traditional American Indian Students. *Journal of American Indian Education*, *40*(3), 1–23.
Hughes, B. E., & Hurtado, S. (2018). Thinking about sexual orientation: College experiences that predict identity salience. *Journal of College Student Development*, *59*(3), 309–326. https://doi.org/10.1353/csd.2018.0029

Hunter, K. H., & Devine, K. (2016). Doctoral students' emotional exhaustion and intentions to leave academia. *International Journal of Doctoral Studies*, *11*, 35–61. http://ijds.org/Volume11/IJDSv11p035-

Hurtado, S, Ruiz Alvarado, A., & Guillermo-Wann, C. (2015). Creating inclusive environments: The mediating effect of faculty and staff validation on the relationship of discrimination/bias to students' sense of belonging. *Journal Committed to Social Change on Race and Ethnicity*, *1*(1), 60–80.

Hurtado, Sylvia, & Alvarado, A. R. (2015). *Findings from the 2015 Diverse Learning Environments Survey*. https://doi.org/10.3102/0034654309352495

Hurtado, Sylvia, Arellano, L., Cuellar, M., & Guillermo Wan, C. (2011). Diverse Learning Environments survey instrument: Introduction and select factors. *For Committees, Student Affairs Units, and Institutional Research*, 1–53.

Hurtado, Sylvia, Cuellar, M., & Guillermo-Wann, C. (2011). Quantitative measures of students' sense of validation: Advancing the study of diverse learning environments. *Enrollment Management Journal*, *Summer*, 53–71.

Jack, A. A. (2019). *The privileged poor: How elite colleges are failing disadvantaged students*. Harvard University Press.

Johnson, D. R. (2012). Campus racial climate perceptions and overall sense of belonging among racially diverse women in STEM majors. *Journal of College Student Development*, *53*(2), 336–346. https://doi.org/10.1353/csd.2012.0028

Kamer, J. A., & Ishitani, T. T. (2021). First-year, nontraditional student retention at four-year institutions: How predictors of attrition vary across time. *Journal of College Student Retention: Research, Theory, & Practice*, *23*(3), 560–579. https://doi.org/10.1177/1521025119858732

Karlson, K. B. (2019). College as equalizer? Testing the selectivity hypothesis. *Social Science Research*, *80*, 216–229. https://doi.org/10.1016/j.ssresearch.2018.12.001

Kelly, B. T., Raines, A., Brown, R., French, A., & Stone, J. (2021). Critical validation: Black women's retention at predominantly white institutions. *Journal of College Student Retention*, *23*(2), 434–456. https://doi.org/10.1177/1521025119841030

Klein-Collins, R., Taylor, J., Bishop, C., Bransberger, P., Lane, P., & Leibrandt, S. (2020). The PLA boost: Results from a 72 institution targeted study of prior learning assessment and adult student outcomes. In *Council for Adult and Experiential Learning*. Council for Adult and Experiential Learning. 55 East Monroe Street Suite 1930, Chicago, IL 60603. Tel: 312-499-2600; Fax: 312-499-2601; e-mail: cael@cael.org; Web site: http://www.cael.org.

Kondrat, M. E. (2013). Person-in-Environment. *Encyclopedia of Social Work*, *November*, 1–13. https://doi.org/10.1093/acrefore/9780199975839.013.285

Kundra, L. B., & Salzer, M. S. (2019). Out of the shadows: supporting social workers with a mental illness. *Social Work in Mental Health*, *17*(4), 462–478. https://doi.org/10.1080/15332985.2019.1576155

Langdon, E. (2001). Women's colleges then and now: Access then, equity now. *Peabody Journal of Education*, *76*(1), 5–30. https://doi.org/10.1207/S15327930PJE7601_02

Ledesma, M., & Calderon, D. (2015). Critical race theory in education: A review of past literature and a look to the future. *Qualitative Inquiry*, *21*(3), 206–222. https://doi.org/10.1177/1077800414557825

Lee, J. A. (2018). Affirmation, Support, and Advocacy: Critical Race Theory and

Academic Advising. *NACADA Journal*, *38*(1), 77–87. https://doi.org/10.12930/nacada-17-028
Lee, J., Donlan, W., & Brown, E. F. (2010). American Indian/Alaskan Native undergraduate retention at predominantly white institutions: An elaboration of Tinto's theory of college student departure. *J. COLLEGE STUDENT RETENTION*, *12*(3), 257–276. https://doi.org/10.2190/CS.12.3.a
Legg, K., Cofino, A., & Sanlo, R. (2020). Lesbian, gay, bisexual, and transgender college students: Revisiting retention. *Journal of College Student Retention: Research, Theory and Practice*, *21*(4), 417–430. https://doi.org/10.1177/1521025119895513
Leibrandt, S., Klein-Collins, R., & Lane, P. (2020). Recognizing prior learning in the COVID-19 Era: Helping displaced workers and students one credit at a time. In *Western Interstate Commission for Higher Education*. Western Interstate Commission for Higher Education. P.O. Box 9752, Boulder, CO 80301-9752. Tel: 303-541-0200; Fax: 303-541-0291; Web site: http://wiche.edu.proxy.brynmawr.edu.
Liu, H. (2020). How do affirmative action bans affect the racial composition of postsecondary students in public institutions? *Educational Policy*, *1–25*. https://doi.org/10.1177/0895904820961007
Logan, G., Lightfoot, B. A., & Contreras, B. A. (2017). Black & brown millennial activism on a PWI campus in the era of trump. *Journal of Negro Education*, *86*(3), 252–268. https://doi.org/10.7709/jnegroeducation.86.3.0252
Lopez, J. D. (2018). Factors influencing American Indian and Alaska Native postsecondary persistence: AI/AN Millennium Falcon Persistence Model. *Research in Higher Education*, *59*, 792–811. https://doi.org/10.1007/s11162-017-9487-6
López, N., Erwin, C., Binder, M., & Chavez, M. J. (2018). Making the invisible visible: advancing quantitative methods in higher education using critical race theory and intersectionality. *Race, Ethnicity, and Education*, *21*(2), 180–207. https://doi.org/10.1080/13613324.2017.1375185
Luna, V., & Prieto, L. (2009). Mentoring affirmations and interventions: A bridge to graduate school for Latina/o students. *Journal of Hispanic Higher Education*, *8*(2), 213–224. https://doi.org/10.1177/1538192709331972
Ma, J., Pender, M., & Welch, M. (2019). *The benefits of higher education for individuals and society*.
Margolis, E., & Romero, M. (1998). "The department is very male, very white, very old, and very conservative": The functioning of the hidden curriculum in graduate sociology departments. *Harvard Educational Review*, *68*(1), 1–32.
Martinez, E., & Elue, C. (2020). From community college to graduate school: Exploring the role of academic advisors in promoting graduate education a baccalaureate degree-granting community colleges. *The Journal of Higher Education*, *91*(7), 1003–1027. https://doi.org/10.1080/00221546.2020.1732176
Maunder, R. E. (2018). Students' peer relationships and their contribution to university adjustment: the need to belong in the university community. *Journal of Further and Higher Education*, *42*(6), 756–768. https://doi.org/10.1080/0309877X.2017.1311996
McCallen, L. S., & Johnson, H. L. (2020). The role of institutional agents in promoting higher education success among first-generation college students at a public urban university. *Journal of Diversity in Higher Education*, *13*(4), 320–332.

https://doi.org/10.1037/dhe0000143
McCoy, D. L. (2014). A phenomenological approach to understanding first-generation college students' of color transitions to one "extreme" predominantly white institution. *College Student Affairs Journal*, *32*(1), 155–169. https://search-proquest-com.proxy.brynmawr.edu/docview/1611000661/fulltextPDF/FD26B9A8F0564DF0PQ/1?accountid=9772
McCoy, D. L., & Rodricks, D. J. (2015). Critical race theory in higher education: 20 years of theoretical and research innovations. *ASHE Higher Education Report*, *41*(3), 1–117. https://doi.org/10.1002/AEHE.20021
Mccoy, M., Risam, R., & Guiliano, J. (2021). The future of land-grab universities. *Native American and Indigenous Studies*, *8*(1), 169–175. https://muse.jhu.edu/article/784831
McKay, H. A., & Douglas, D. (2020). Credit for prior learning in community college: A case from Colorado. In *Western Interstate Commission for Higher Education*. The Education and Employment Research Center.
Mendenhall, S. G. (2021). *Narratives of (in)validation: Experiences of gay/queer cisgender men in college*. The University of Georgia.
Messman, J. B., & Leslie, L. A. (2019). Transgender college students: Academic resilience and striving to cope in the face of marginalized health. *Journal of American College Health*, *67*(2), 161–173. https://doi.org/10.1080/07448481.2018.1465060
Mettler, S. (2014). *Degrees of inequality: How the politics of higher education sabotaged the American dream*. Perseus Books.
Metzner, S. B., & Bean, P. J. (1987). The estimation of a conceptual model of nontraditional undergraduate student attrition. *Research In Higher Education*, *27*(1), 15–38.
Miller, A. L., Williams, L. M., & Silberstein, S. M. (2019). Found my place: the importance of faculty relationships for seniors' sense of belonging. *Higher Education Research & Development*, *38*(3), 594–608. https://doi.org/10.1080/07294360.2018.1551333
Moore, A. C. (2021). *Validation and self-efficacy: A holistic approach to career exploration for the undecided community college students.* Northern Arizona University.
Morin, S. M., Crandall, R. E., Rockenbach, A. N., & Mayhew, M. J. (2018). Bridging political divides on campus: Insights from the study of worldview diversity. *Journal of College and Character*, *19*(2), 152–159. https://doi.org/10.1080/2194587X.2018.1445647
Museus, S. D. (2014). *The Culturally Engaging Campus Environments (CECE) Model: A new theory of college success among racially diverse student populations*. From the Selected Works of Samuel D Museus. https://doi.org/10.1007/978-94-017-8005-6_5
Mwangi, C. A. G., Thelamour, B., Ezeofor, I., & Carpenter, A. (2018). "Black elephant in the room": Black students contextualizing campus racial climate within US racial climate. *Journal of College Student Development*, *59*(4), 456–474. https://doi.org/10.1353/csd.2018.0042
Nadworny, E. (2019). *College completion rates are up, but the numbers will still surprise you*. https://www.npr.org/2019/03/13/681621047/college-completion-rates-are-up-

but-the-numbers-will-still-surprise-you
Nash, M. A. (2021). Entangled pasts: Land-grant colleges and American Indian dispossession. *History of Education Quarterly*, *59*(4), 74–109. https://doi.org/10.1017/heq.2019.31
National Archives. (2022). *Servicemen's Readjustment Act (1944)*. https://www.archives.gov/milestone-documents/servicemens-readjustment-act
National Association of Social Workers. (2021). *Code of Ethics of the National Association of Social Workers OVERVIEW*. https://www.socialworkers.org/LinkClick.aspx?fileticket=ms_ArtLqzeI%3D&portalid=0
National Center for Education Statistics. (2020). *Fast Facts*. https://nces.ed.gov/fastfacts/display.asp?id=98
National Center for Education Statistics. (2021). *Indicator 23: Postsecondary Graduation Rates*. https://nces.ed.gov/programs/raceindicators/indicator_red.asp
National Center for Education Statistics. (2022). *Characteristics of postsecondary students*. https://nces.ed.gov/programs/coe/indicator/csb/postsecondary-students
Nicolazzo, Z., Pitcher, E. N., Renn, K. A., & Woodford, M. (2017). An exploration of trans* kinship as a strategy for student success. *International Journal of Qualitative Studies in Education*, *30*(3), 305–319. https://doi.org/10.1080/09518398.2016.1254300
O'Boyle, J., & Jo-Yun Li, Q. (2019). #MeToo is different for college students: Media framing of campus sexual assault, its causes, and proposed solutions. *Newspaper Research Journal*, *40*(4), 431–450. https://doi.org/10.1177/0739532919856127
O'Shea, S. (2016). Avoiding the manufacture of "sameness": First-in-family students, cultural capital and the higher education environment. *Higher Education*, *27*(1), 59–78. https://doi.org/10.1007/s
Pendakur, V. (2016). *Closing the opportunity gap: Identity-concious strategies for retention and student success*. Stylus Publishing, LLC.
Peters, E. E., Roberson, A. J., & Voight, M. (2019). *The cost of opportunity: Student stories of college affordability*. The Institute for Higher Education Policy. https://vtechworks.lib.vt.edu/handle/10919/92659
Phillips, N. D., & Chagnon, N. (2020). Where's the panic, where's the fire? Why claims of moral panic and witch hunts miss the mark when it comes to campus rape and MeToo. *Feminist Media Studies*, *21*(3), 409–426. https://doi.org/10.1080/14680777.2020.1765836
Pifer, M. J., & Baker, V. L. (2014). "It could be just because I'm different": Otherness and its outcomes in doctoral education. *Journal of Diversity in Higher Education*, *7*(1), 14–30. https://doi.org/10.1037/a0035858
Poole, J. M., Jivraj, T., Arslanian, A., Bellows, K., Chiasson, S., Hakimy, H., Pasini, J., & Reid, J. (2012). Sanism, "mental health", and social work/education: A review and call to action. In *Intersectionalities: A Global Journal of Social Work Analysis, Research, Polity, and Practice* (Vol. 1, Issue 0). http://journals.library.mun.ca.proxy.brynmawr.edu/ojs/index.php/IJ/article/view/348/227
Postsecondary National Policy Institute. (2021a). *Factsheets: First-generation students*. https://pnpi.org/first-generation-students/

Postsecondary National Policy Institute. (2021b). *Factsheets*. LGBTQ Students in Higher Education. https://pnpi.org/lgbtq-students-in-higher-education/
Postsecondary National Policy Institute. (2022). *Factsheets: LGBTQ students in higher education*. https://pnpi.org/lgbtq-students-in-higher-education/
Pritchard, A. J., Dekeseredy, W. S., Nolan, J., & Hall-Sanchez, A. (2019). Who speaks first? Analyzing response waves in a large-scale campus climate survey. *Journal of Aggression, Maltreatment & Trauma*, *28*(7), 888–901. https://doi.org/10.1080/10926771.2018.1468374
Proctor, S. L., & Truscott, S. D. (2012). Reasons for African American student attrition from school psychology programs. *Journal of School Psychology*, *50*, 655–679. https://doi.org/10.1016/j.jsp.2012.06.002
Remenick, L., & Bergman, M. (2020). Support for working students: Considerations for higher education institutions. *The Journal of Continuing Higher Education*, *69*(1), 34–45. https://doi.org/10.1080/07377363.2020.1777381
Rendón, L. (1994). *Validating culturally diverse students: Toward a new model of learning and student development*. https://files-eric-ed-gov.proxy.brynmawr.edu/fulltext/ED371672.pdf
Rendón Linares, L., & Muñoz, S. M. (2011). Revisiting validation theory: Theoretical foundations, applications, and extension. *Enrollment Management Journal*, *5*(2), 12–33. https://doi.org/10.1300/J050v03n02_08
Reyes, I. (2021). *Understanding the role of institutional actors in the first-generation Latina/o higher education achievement gap*. Claremont Graduate University.
Rosche, L. (2018). Beyond a hashtag: Considering campus policies in the age of #MeToo. *Composition Studies*, *46*(2), 186–188.
Sablan, J. R. (2019). Can you really measure that? Combining critical race theory and quantitative methods. *American Educational Research Journal*, *56*(1), 178–203. https://doi.org/10.3102/0002831218798325
Salem, L. (2016). Decisions ... decisions: who chooses to use the writing center? *The Writing Center Journal*, *35*(2), 147–171.
Savas, G. (2014). Understanding critical race theory as a framework in higher educational research. *British Journal of Sociology of Education*, *35*(4), 506–522. https://doi.org/10.1080/01425692.2013.777211
Schwitzer, A. M., Moss, C. B., Pribesh, S. L., St. John, D. J., Burnett, D. D., Thompson, L. H., & Foss, J. J. (2018). Students with mental health needs: College counseling experiences and academic success. *Journal of College Student Development*, *59*(1), 3–20. https://doi.org/10.1353/csd.2018.0001
Scott-Clayton, J., & Li, J. (2016). *Black-white disparity in student loan debt more than triples after graduation*. https://www.brookings.edu/wp-content/uploads/2016/10/es_20161020_scott-clayton_evidence_speaks.pdf
Scott-Clayton, J., & Zafar, B. (2019). Financial aid, debt management, and socioeconomic outcomes: Post-college effects of merit-based aid. *Journal of Public Economics*, *170*, 68–82. https://doi.org/10.1016/j.jpubeco.2019.01.006
Shapiro, D., Dundar, A., Huie, F., Wakhungu, P. K., Bhimdiwala, A., & Wilson, S. E. (2018). *Completing college: A national view of student completion rates - Fall 2012 cohort*. https://nscresearchcenter.org/wp-content/uploads/SignatureReport16.pdf
Simmons, L. D., Taylor, L. C., Anderson, K., & Neely-Barnes, S. L. (2018). Comparative

experiences of first- and continuing-generation social work students. *Journal of Social Work Education*, *54*(3), 480–491. https://doi.org/10.1080/10437797.2018.1434436
Smith, J., Goodman, J., & Hurwitz, M. (2020). The economic impact of access to public four-year colleges. *National Bureau of Economic Research, 27177*, 1–41.
Stebleton, M. J., Soria, K. M., & Huesman, R. L. (2014). First-generation students' sense of belonging, mental health, and use of counseling services at public research universities. *Journal of College Counseling*, *17*, 6–20. https://doi.org/10.1002/j.2161-1882.2014.00044.x
Stout, J. G., & Wright, H. M. (2016). Lesbian, gay, bisexual, transgender, and queer students sense of belonging in computing: An intersectional approach. *Computing in Science & Engineering*, *18*(3), 24–30. https://doi.org/10.1109/MCSE.2016.45
Strayhorn, T. (2019). *College students' sense of belonging: A key to educational success for all students* (2nd ed.). Routledge.
Tebbe, E. A., Simone, M., Wilson, E., & Hunsicker, M. (2021). A dangerous visibility: Moderating effects of antitrans legislative efforts on trans and gender-diverse mental health. *Psychology of Sexual Orientation and Gender Diversity*, 1–13. https://doi.org/10.1037/sgd0000481
Terenzini, P. T., Rendon, L. I., Upcraft, M. L., Millar, S. B., Allison, K. W., & Gregg, P. L. (1994). The transition to college: Diverse students, diverse stories. *Research in Higher Education*, *35*(1), 57–73.
Tinto, V. (1988). Stages of Student Departure: Reflections on the Longitudinal Character of Student Leaving. *The Journal of Higher Education*, *59*(4), 438–455. https://doi.org/10.2307/1981920
Todd, S., Asakura, K., Morris, B., Eagle, B., & Park, G. (2019). Responding to student mental health concerns in social work education: reflective questions for social work educators. *Social Work Education*, *38*(6), 779–796. https://doi.org/10.1080/02615479.2018.1563591
Torpey, E. (2018). *Careers in social work: Outlook, pay, and more : Career Outlook: U.S. Bureau of Labor Statistics*. Bureau of Labor Statistics Career Outlook. https://www.bls.gov/careeroutlook/2018/article/social-workers.htm
Truong, N., Zongrone, A., & Kosciw, J. (2020). *Erasure and resilience: The experiences of LGBTQ students of color*. www.glsen.org/research.
U.S. Senate. (2022). *Sputnik Spurs Passage of the National Defense Education Act*. https://www.senate.gov/artandhistory/history/minute/Sputnik_Spurs_Passage_of_National_Defense_Education_Act.htm
Vaccaro, A., Daly-Cano, M., & Newman, B. M. (2015). A sense of belonging among college students with disabilities: An emergent theoretical model. *Journal of College Student Development*, *56*(7), 670–686. https://doi.org/10.1353/csd.2015.0072
Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, *331*(18), 1447–1451. https://doi.org/10.1126/science.1199967
Warikoo, N., & Allen, U. (2020). A solution to multiple problems: the origins of affirmative action in higher education around the world. *Studies in Higher Education*, *45*(12), 2398–2412. https://doi.org/10.1080/03075079.2019.1612352
Watt, T. T., Hartfield, K., Kim, S., & Ceballos, N. (2021). Adverse childhood

experiences contribute to race/ethnic differences in post-secondary academic performance among college students. *Journal of American College Health*, *0*(0), 1–9. https://doi.org/10.1080/07448481.2021.1947838

Weatherton, M., & Schussler, E. E. (2021). Success for all? A call to re-examine how student success is defined in higheeducation. *CBE Life Sciences Education*, *20*(1), 1–13. https://doi.org/10.1187/cbe.20-09-0223

Weber, S. (2016). "Womanhood does not reside in documentation": Queer and feminist student activism for transgender women's inclusion at women's colleges. *Journal of Lesbian Studies*, *20*(1), 29–45. https://doi.org/10.1080/10894160.2015.1076238

Wildhagen, T. (2015). "Not your typical student": The social construction of the "first-generation" college student. *Qualitative Sociology*, *38*, 285–303. https://doi.org/10.1007/s11133-015-9308-1

Wilson, L. C., & Liss, M. (2020). Safety and belonging as explanations for mental health disparities among sexual minority college students. *Psychology of Sexual Orientation and Gender Diversity*, 1–10. https://doi.org/10.1037/sgd0000421

Winkle-Wagner, R., & Mccoy, D. L. (2018). Feeling like an "alien" or "family"? Comparing students and faculty experiences of diversity in STEM disciplines at a PWI and an HBCU. *Race, Ethnicity, and Education*, *21*(5), 593–606. https://doi.org/10.1080/13613324.2016.1248835

Worcester, D. J. (2017). *The relationship among gender, race/ethnicity, sense of validation, science identity, science self-efficacy, persistence, and academic performance of biomedical undergraduates*. University of Southern California.

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity, and Education*, *8*(1), 69–91. https://doi.org/10.1080/136133205200034100

Appendix

Table 1: Descriptive Statistics for Categorical Variables

Variable	n	%
2015	8757	26.9
2016	15326	47.1
2017	8446	26.0
≤ 17 years	142	0.4
18 years	2480	7.6
19 years	5667	17.4
20 years	6655	20.5
21-24 years	12361	38.0
25+ years	5224	16.1
Male	10220	31.4
Female	22309	68.6
Asian	4575	14.1
Black	2148	6.6
Hispanic	4475	13.8
White	17696	54.4
Multiple Races	3366	10.3
Other	269	.8
$0-$39,999	10419	32.0
$40,000-$74,999	8479	26.1
$75,000-$99,999	4077	12.5

$100,000-$199,999	7009	21.5
$200,000+	2545	7.8
First-Generation Student	5923	18.2
Continuing-Generation Student	26606	81.8
Not enrolled	158	.5
Part-time	2182	6.7
Full-time	30189	92.8
Freshman	4730	14.5
Sophomore	7523	23.1
Junior	9751	30.0
Senior	6903	21.2
Other	3622	11.1
East	9394	28.9
Midwest	4599	14.1
South	7825	24.1
West	10711	32.9
High/ Very High Selectivity	15474	47.6
Low Selectivity	17055	52.4
Public Institution	19127	58.8
Private Institution	13402	41.2
TGNC	367	1.1
Cisgender	32162	98.9
LGBQ	4271	13.1
Non-LGBQ	28258	86.9
Felt family support to succeed	23392	71.9
Did not feel family support to succeed	9137	28.1
Concerns about financing college education	24513	75.4
Did not have concerns about financing college education	8016	24.6

Writing Center	11187	34.4
Did not engage with Writing Center	21342	65.6
Career Counseling	16881	51.9
Did not engage in Career Counseling	15648	48.1
Academic Advising	27130	83.4
Did not engage in Academic Advising	5399	16.6
Student Health Services	16463	50.6
Did not engage with Student Health Services	16066	49.4
Student Psychological Services	6154	18.9
Did not engage with Student Psychological Services	26375	81.1
Attended professor's office hours	27227	83.7
Did not attend professor's office hours	5302	16.3
Discussed course content outside of class	30006	92.2
Did not discuss course content outside of class	2523	7.8
Considered dropping out of college	6691	20.6
Did not consider dropping out of college	25838	79.4
Graduate degree planned	16398	50.4
No graduate degree planned	16131	49.6

Table 2: Descriptive Statistics for Continuous Variables

Variable	Mean	SD
Academic Validation in the classroom	50.29	9.67
Interpersonal Validation	50.44	9.78
Sense of Belonging	50.47	9.88
GPA (1=D to 8=A/A+)	5.93	1.70
Identity salience (IS): Gender Identity (1=never to 5=very often)	2.61	1.41
IS: Race/Ethnicity (1=never to 5=very often)	2.89	1.38
IS: Sexual orientation (1=never to 5=very often)	2.11	1.34
IS: SES (1=never to 5=very often)	3.02	1.31
Co-curricular Diversity Activities	50.35	10.00
Institutional Commitment to Diversity	49.50	9.51
Discrimination and Bias	50.21	9.81
Harassment	49.76	9.09
Academic Self-Concept	50.24	9.85

Table 3: Correlation Matrix

Available upon request

Table 4: Academic Self-Concept Model Fit

Model	Predictors Included	R^2	ΔR^2	f^2	Adj R^2	Predictors with > Small Effect
1	Focal Factors (and School Year)	0.099	-	***0.110***	0.098	Academic Validation
2	Demographic, Identity, and Enrollment	0.251	0.152	***0.203***	0.250	GPA, Sex, Academic Validation
3	Student and Institutional Engagement	0.254	0.003	0.004	0.253	GPA, Sex, Academic Validation
4	Institutional Characteristics and Climate	0.259	0.005	0.007	0.258	GPA, Sex, Academic Validation
5	Interactions (all)	0.261	0.002	0.003	0.259	No Interaction Effects
5a	Interactions (FG only)	0.259	0.000	0.000	0.258	No Interaction Effects
5b	Interactions (TGNC only)	0.259	0.000	0.000	0.258	No Interaction Effects
5c	Interactions (LGBQ only)	0.259	0.000	0.000	0.258	No Interaction Effects
5d	Interactions (Race only)	0.261	0.002	0.003	0.259	No Interaction Effects

Small Effect is defined as having partial eta^2 value of greater than .01.

f^2 rules of thumb: small=.02, medium=.15, large=.35.

Table 5: Academic Self-Concept OLS Regression with Partial Eta²

	Model 1 Focal Factors Coeff (SE) **Eta²ᵃ**	Model 2 Demographics, Identity, and Enrollment Coeff (SE) **Eta²**	Model 3 Student and Institutional Engagement Coeff (SE) **Eta²**	Model 4 Institutional Characteristics and Climate Coeff (SE) **Eta²**	Model 5 Interaction Terms Coeff (SE) **Eta²**
Intercept	30.76 (.34)	22.78 (.42)	21.43 (.47)	16.73 (.59)	17.31 (.68)
2015	.57 (.14).000***	.49 (.14).000***	.46 (.14) .000***	.33 (.14) .000	.32 (.14) .000
2016	.82 (.13).001***	.44 (.12).000***	.38 (.12) .000***	.10 (.13) .000	.08 (.13) .000
2017 (Reference)	--	--	--	--	--
Academic Validation	.20 (.01) **.027****	.14 (.01) **.015****	.13 (.01) **.014****	.13 (.01) **.014****	.14 (.01) .007***
Inter. Validation	.12 (.01).008***	.07 (.01).003***	.06 (.01) .003***	.07 (.01) .003***	.07 (.01) .001***
Sense of Belonging	.06 (.01).003***	.08 (.01).005***	.08 (.01) .005***	.07 (.01) .003***	.06 (.01) .001***
≤ 17 years of age	--	2.28 (.74).000**	2.18 (.74) .000**	1.87 (.74) .000	1.80 (.74) .000
18 years of age	--	.56 (.26).000	.54 (.26) .000	.59 (.26) .000	.61 (.26) .000
19 years of age	--	.00 (.18) .000	-.03 (.18) .000	-.01 (.18) .000	-.02 (.18) .000
20 years of age (Reference)	--	--	--	--	--
21-24 years of age	--	-.06 (.15) .000	-.04 (.15) .000	-.10 (.15) .000	-.12 (.15) .000
25+ years of age	--	.42 (.19) .000	.53 (.19) .000**	.54 (.19) .000**	.49 (.19) .000
Male	--	3.29 (.11) .**028****	3.27 (.11) **.028****	3.27 (.11) **.028****	3.28 (.11) **.028****
Female (Reference)	--	--	--	--	--
Asian	--	-.08 (.15) .000	-.13 (.15) .000	-.15 (.15) .000	-3.53 (.93) .000***
Black	--	2.06 (.21) .003***	1.89 (.21) .003***	1.97 (.21) .003***	4.31 (1.21) .000***
Hispanic	--	-.08 (.16) .000	.13 (.16) .000	-.10 (.17) .000	-.71 (.94) .000
Multiple Races	--	.71 (.17) .001***	.65 (.17) .000***	.60 (.17) .000***	-.04 (1.03) .000
Other Race	--	-.29 (.53) .000	-.36 (.52) .000	-.35 (.52) .000	2.77 (3.12) .000
White (Reference)	--	--	--	--	--
$0-$39,999	--	.44 (.13) .000***	.45 (.13) .000***	.37 (.13) .000**	.37 (.13) .000**
$40,000-$74,999 (Reference)	--	--	--	--	--
$75,000-$99,999	--	.51 (.16) .000**	.52 (.16) .000**	.53 (.16) .000***	.54 (.16) .000***
$100,000-$199,999	--	.85 (.14) .001***	.87 (.14) .001***	.89 (.14) .001***	.89 (.14) .001***
$200,000+	--	1.83 (.20) .002***	1.84 (.20) .003***	1.86 (.20) .003***	1.88 (.20) .003***
First-Generation	--	-.37 (.14) .000**	-.38 (.14) .000**	-.41 (.13) .000**	-1.07 (.79) .000
Continuing-Generation (Reference)	--	--	--	--	--

Part-time	--	-.23 (.20) .000	-.16 (.21) .000	-.20 (.21) .000	-.19 (.21) .000
Freshman	--	-1.11 (.22) .001***	-1.02 (.22) .001***	-97 (.22) .001***	-.97 (.22) .001***
Sophomore	--	-.23 (.16) .000	-.19 (.16) .000	-.15 (.16) .000	-.14 (.16) .000
Junior (Reference)	--	--	--	--	--
Senior	--	.52 (.15) .000***	.48 (.15) .000***	.46 (.15) .000**	.48 (.15) .000***
Other	--	.66 (.43) .000	.64 (.42) .000	.89 (.43) .000	.88 (.43) .000
GPA	--	2.02 (.03) **.125****	2.02 (.03) **.124****	2.06 (.03) **.128****	2.06 (.03) **.128****
TGNC	--	-1.22 (.46) .000**	-1.12 (.46) .000	-1.22 (.46) .000**	-3.10 (2.79) .000
Cisgender (Reference)	--	--	--	--	--
LGBQ	--	-1.03 (.17) .001***	-1.00 (.17) .001***	-.92 (.17) .001***	-1.35 (.93) .000
Non-LGBQ (Reference)	--	--	--	--	--
Identity Salience (IS): Gender	--	.12 (.05) .000	.11 (.05) .000	.10 (.05) .000	.10 (.05) .000
IS: Race	--	.11 (.05) .000	.07 (.05) .000	.03 (.05) .000	.03 (.05) .000
IS: Sexual orientation	--	-.32 (.05) .001***	-.32 (.05) .001***	-.35 (.05) .001***	-.35 (.05) .001***
IS: SES	--	.03 (.05) .000	.02 (.05) .000	.01 (.05) .000	.02 (.05) .000
Family support to succeed	--	-.36 (.11) .000***	-.42 (.11) .000***	-.57 (.11) .000***	-.57 (.11) .001***
Did not feel family support to succeed (Reference)	--	--	--	--	--
Concerns about financing college	--	-.70 (.12) .001***	-.72 (.12) .001***	-.71 (.12) .001***	-.71 (.12) .001***
Did not have concerns about financing college (Reference)	--	--	--	--	--
Co-curricular Diversity Activities	--	--	.04 (.01) .002***	.03 (.01) .001***	.03 (.01) .001***
Writing Center	--	--	-.33 (.11) .000***	-.31 (.11) .000**	-.31 (.11.000)**
Did not engage with Writing Center (Reference)	--	--	--	--	--
Career Counseling	--	--	.27 (.10) .000**	.23 (.10) .000	.23 (.10) .000
Did not engage in Career Counseling (Reference)	--	--	--	--	--
Academic Advising	--	--	-.03 (.13) .000	-.08 (.13) .000	-.08 (.13) .000
Did not engage in Academic Advising (Reference)	--	--	--	--	--
Student Health Services	--	--	.20 (.10) .000	.20 (.11) .000	.20 (.11) .000
Did not engage in Student Health Services (Reference)	--	--	--	--	--
Student Psych Services	--	--	-1.17 (.13) .002***	-1.22 (.13) .003***	-1.22 (.13) .003***

Did not engage in Student Psych Services (Reference)	--	--	--	--	--
Attended professor's office hours	--	--	.29 (.14) .000	.29 (.14) .000	.30 (.14) .000
Did not attend professor's office hours (Reference)	--	--	--	--	--
Discussed course content outside of class	--	--	.15 (.18) .000	.10 (.18) .000	.11 (.18) .000
Did not discuss course content outside of class (Reference)	--	--	--	--	--
East	--	--	--	-.37 (.15) .000	-.35 (.15) .000
Midwest	--	--	--	.05 (.16) .000	.03 (.16) .000
South	--	--	--	.26 (.16) .000	.23 (.16) .000
West (Reference)	--	--	--	--	--
High/Very High Selectivity	--	--	--	-.03 (.12) .000	-.03 (.12) .000
Low Selectivity (Reference)	--	--	--	--	--
Public	--	--	--	.75 (.11) .001***	.75 (.11) .001***
Private (Reference)	--	--	--	--	--
Institutional Commitment to Diversity	--	--	--	.04 (.01) .002***	.04 (.01) .002***
Discrimination and Bias	--	--	--	.06 (.01) .002***	.06 (.01) .002***
Harassment	--	--	--	.01 (.01) .000	.01 (.01) .000
FG-by-Academic Validation	--	--	--		.02 (.02) .000
FG-by-Interpersonal Validation	--	--	--	--	-.03 (.02) .000
FG-by-Belonging	--	--	--	--	.02 (.02) .000
TGNC-by-Academic Validation			--	--	-.02 (.06) .000
TGNC-by-Interpersonal Validation	--	--	--	--	.06 (.07) .000
TGNC-by-Belonging	--	--	--	--	.00 (.05) .000
LGBQ-by-Academic Validation	--	--	--	--	.03 (.02) .000
LGBQ-by-Interpersonal Validation	--	--	--	--	.00 (.02) .000
LGBQ-by-Belonging	--	--	--	--	-.02 (.02) .000
Asian-by-Academic Validation	--	--	--	--	-.03 (.02) .000
Black-by-Academic Validation	--	--	--	--	-.02 (.02) .000
Hispanic-by-Academic Validation	--	--	--	--	-.04 (.02) .000

Multiple Races-by-Academic Validation	--	--	--	--	.01 (.02) .000
Other Race-by-Academic Validation	--	--	--	--	.03 (.07) .000
Asian-by-Interpersonal Validation	--	--	--	--	.06 (.02) .000**
Black-by-Interpersonal Validation	--	--	--	--	-.02 (.03) .000
Hispanic-by-Interpersonal Validation	--	--	--	--	-.01 (.02) .000
Multiple Races-by-Interpersonal Validation	--	--	--	--	00 (.02) .000
Other Race-by-Interpersonal Validation	--	--	--	--	-.17 (.08) .000
Asian-by-Belonging	--	--	--	--	.04 (.02) .000
Black-by-Belonging	--	--	--	--	-.01 (.02) .000
Hispanic-by-Belonging	--	--	--	--	.06 (.02) .000**
Multiple Races-by-Belonging	--	--	--	--	.00 (.02) .000
Other Race-by-Belonging	--	--	--	--	.08 (.06) .000
R-squared	.099	.251	.254	.259	.261
Adjusted R-squared	--	.098	.250	.253	.259
N = 32,529					

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

Partial Eta^2 "rules of thumb": small=.01, medium=.06, large=.14.

[a]Partial Eta2 that meet rules of thumb thresholds are reported in bold

Academic validation is a factor score based on four ordinal items with a mean of 50.29 and a SD of 9.67. Higher scores reflect more experiences of academic validation.

Interpersonal validation is a factor score based on five ordinal items with a mean of 50.44 and a SD of 9.78. Higher scores reflect more experiences of interpersonal validation.

Sense of belonging is a factor score based on three ordinal items with a mean of 50.47 and a SD of 9.88. Higher scores reflect a greater sense of belonging on campus.

GPA is an 8-category ordinal scale variable: 1=D, 2=C, 3=C+, 4=B-, 5=B, 6=B+, 7=A-, 8=A/A+.

Co-curricular diversity activities is a measure of students' involvement in campus facilitated programs focused on diversity related issues. Higher scores reflect more frequent involvement.

Institutional commitment to diversity is a measure of participants' perception of campus commitment to diversity. Higher scores reflect stronger endorsement of campus commitment to diversity.

Discrimination and bias measures the frequency of students' experiences with more subtle forms of discrimination. Higher scores reflect more frequent experiences with discrimination.
Harassment measures the frequency that participants experience harassment or threats. Higher scores reflect more frequent harassment experiences.
Academic self-concept is a factor score derived from four ordinal items each consisting of a five-point Likert scale for self-rating. Items include: 1) academic ability, 2) mathematical ability, 3) self-confidence, and 4) drive to achieve. Higher scores reflect higher self-rated academic self-concept.

Table 6: Academic Self-Concept with Standardized Estimates

	Model 1 Focal Factors Coeff (SE) Std Est	Model 2 Demographics, Identity, and Enrollment Coeff (SE) Std Est	Model 3 Student and Institutional Engagement Coeff (SE) Std Est	Model 4 Institutional Characteristics and Climate Coeff (SE) Std Est	Model 5 Interaction Terms Coeff (SE) Std Est
Intercept	30.76 (.34)	22.78 (.42)	21.43 (.47)	16.73 (.59)	17.31 (.68)
2015	.57 (.14) .06***	.49 (.14) .05***	.46 (.14) .05***	.33 (.14) .03	.32 (.14) .03
2016	.82 (.13) .08***	.44 (.12) .04***	.38 (.12) .04***	.10 (.13) .01	.08 (.13) .01
2017 (Reference)	--	--	--	--	--
Academic Validation	.20 (.01) .19***	.14 (.01) .13***	.13 (.01) .13***	.13 (.01) .13***	.14 (.01) .13***
Inter. Validation	.12 (.01) .12***	.07 (.01) .07***	.06 (.01) .06***	.07 (.01) .07***	.07 (.01) .07***
Sense of Belonging	.06 (.01) .06***	.08 (.01) .08***	.08 (.01) .08***	.07 (.01) .07***	.06 (.01) .05***
$\underline{<}$ 17 years of age	--	2.28 (.74) .23**	2.18 (.74) .22**	1.87 (.74) .19	1.80 (.74) .18
18 years of age	--	.56 (.26) .06	.54 (.26) .05	.59 (.26) .06	.61 (.26) .06
19 years of age	--	.00 (.18) .00	-.03 (.18) .00	-.01 (.18) .00	-.02 (.18) .00
20 years of age (Reference)	--	--	--	--	--
21-24 years of age	--	-.06 (.15) -.01	-.04 (.15) .00	-.10 (.15) -.01	-.12 (.15) -.01
25+ years of age	--	.42 (.19) .04	.53 (.19) .05**	.54 (.19)** .05	.49 (.19) .05
Male	--	3.29 (.11) .33***	3.27 (.11) .33***	3.27 (.11) .33***	3.28 (.11) .33***
Female (Reference)	--	--	--	--	--
Asian	--	-.08 (.15) -.01	-.13 (.15) -.01	-.15 (.15) -.01	-3.53 (.93) -.01***
Black	--	2.06 (.21) .21***	1.89 (.21) .19***	1.97 (.21) .20***	4.31 (1.21) .20***
Hispanic	--	-.08 (.16) -.01	.13 (.16) -.01	-.10 (.17) -.01	-.71 (.94) -.01
Multiple Races	--	.71 (.17) .07***	.65 (.17) .07***	.60 (.17) .06***	-.04 (1.03) .06
Other Race	--	-.29 (.53) -.03	-.36 (.52) -.04	-.35 (.52) -.04	2.77 (3.12) -.04
White (Reference)	--	--	--	--	--
$0-$39,999	--	.44 (.13) .04***	.45 (.13) .05***	.37 (.13) .04**	.37 (.13) .04**
$40,000-$74,999 (Reference)	--	--	--	--	--
$75,000-$99,999	--	.51 (.16) .05**	.52 (.16) .05**	.53 (.16) .05***	.54 (.16) .05***
$100,000-$199,999	--	.85 (.14) .09***	.87 (.14) .09***	.89 (.14) .09***	.89 (.14) .09***
$200,000+	--	1.83 (.20) .19***	1.84 (.20) .19***	1.86 (.20) .19***	1.88 (.20) .19***
First-Generation	--	-.37 (.14) -.04**	-.38 (.14) -.04**	-.41 (.13) -.04**	-1.07 (.79) -.04
Continuing-Generation (Reference)	--	--	--	--	--
Part-time	--	-.23 (.20) -.02	-.16 (.21) -.02	-.20 (.21) -.02	-.19 (.21) -.02

Freshman	--	-1.11 (.22) -.11***	-1.02 (.22) -.10***	-97 (.22) -.10***	-.97 (.22) -.10***
Sophomore	--	-.23 (.16) -.02	-.19 (.16) -.02	-.15 (.16) -.01	-.14 (.16) -.01
Junior (Reference)	--	--	--	--	--
Senior	--	.52 (.15)*** .05	.48 (.15) .05***	.46 (.15) .05**	.48 (.15) .05***
Other	--	.66 (.43) .07	.64 (.42) .06	.89 (.43) .09	.88 (.43) .09
GPA	--	2.02 (.03) .35***	2.02 (.03) .35***	2.06 (.03) .36***	2.06 (.03) .36***
TGNC	--	-1.22 (.46) -.12**	-1.12 (.46) -.11	-1.22 (.46) -.12**	-3.10 (2.79) -.13
Cisgender (Reference)	--	--	--	--	--
LGBQ	--	-1.03 (.17) -.10***	-1.00 (.17) -.10***	-.92 (.17) -.09***	-1.35 (.93) -.10
Non-LGBQ (Reference)	--	--	--	--	--
Identity Salience (IS): Gender	--	.12 (.05) .02	.11 (.05) .02	.10 (.05) .01	.10 (.05) .01
IS: Race	--	.11 (.05) .02	.07 (.05) .01	.03 (.05) .00	.03 (.05) .00
IS: Sexual orientation	--	-.32 (.05) -.04***	-.32 (.05) -.04***	-.35 (.05) -.05***	-.35 (.05) -.05***
IS: SES	--	.03 (.05) .00	.02 (.05) .00	.01 (.05) .00	.02 (.05) .00
Family support to succeed	--	-.36 (.11) -.04***	-.42 (.11) -.04***	-.57 (.11) -.06***	-.57 (.11) -.06***
Did not feel family support to succeed (Reference)	--	--	--	--	--
Concerns about financing college	--	-.70 (.12) -.07***	-.72 (.12) -.07***	-.71 (.12) -.07***	-.71 (.12) -.07***
Did not have concerns about financing college (Reference)	--	--	--	--	--
Co-curricular Diversity Activities	--	--	.04 (.01) .04***	.03 (.01) .03***	.03 (.01) .03***
Writing Center	--	--	-.33 (.11) -.03***	-.31 (.11) -.03**	-.31 (.11) -.03**
Did not engage with Writing Center (Reference)	--	--	--	--	--
Career Counseling	--	--	.27 (.10) .03**	.23 (.10) .02	.23 (.10) .02
Did not engage in Career Counseling (Reference)	--	--	--	--	--
Academic Advising	--	--	-.03 (.13) .00	-.08 (.13) -.01	-.08 (.13) -.01
Did not engage in Academic Advising (Reference)	--	--	--	--	--
Student Health Services	--	--	.20 (.10) .02	.20 (.11) .02	.20 (.11) .02
Did not engage in Student Health Services (Reference)	--	--	--	--	--
Student Psych Services	--	--	-1.17 (.13) -.12***	-1.22 (.13) -.12***	-1.22 (.13) -.12***

Did not engage in Student Psych Services (Reference)	--	--	--	--	--
Attended professor's office hours	--	--	.29 (.14) .03	.29 (.14) .03	.30 (.14) .03
Did not attend professor's office hours (Reference)	--	--	--	--	--
Discussed course content outside of class	--	--	.15 (.18) .02	.10 (.18) .01	.11 (.18) .01
Did not discuss course content outside of class (Reference)	--	--	--	--	--
East	--	--	--	-.37 (.15) -.04	-.35 (.15) -.04
Midwest	--	--	--	.05 (.16) .00	.03 (.16) .00
South	--	--	--	.26 (.16) .02	.23 (.16) .02
West (Reference)	--	--	--	--	--
High/Very High Selectivity	--	--	--	-.03 (.12) .00	-.03 (.12) .00
Low Selectivity (Reference)	--	--	--	--	--
Public	--	--	--	.75 (.11) .08***	.75 (.11) 08***
Private (Reference)	--	--	--	--	--
Institutional Commitment to Diversity	--	--	--	.04 (.01) .04***	.04 (.01) .04***
Discrimination and Bias	--	--	--	.06 (.01) .06***	.06 (.01) .06***
Harassment	--	--	--	.01 (.01) .01	.01 (.01) .01
FG-by-Academic Validation	--	--	--		.02 (.02) .02
FG-by-Interpersonal Validation	--	--	--	--	-.03 (.02) -.03
FG-by-Belonging	--	--	--	--	.02 (.02) .02
TGNC-by-Academic Validation			--	--	-.02 (.06) -.02
TGNC-by-Interpersonal Validation	--	--	--	--	.06 (.07) .06
TGNC-by-Belonging	--	--	--	--	.00 (.05) .00
LGBQ-by-Academic Validation	--	--	--	--	.03 (.02) .03
LGBQ-by-Interpersonal Validation	--	--	--	--	.00 (.02) .00
LGBQ-by-Belonging	--	--	--	--	-.02 (.02) -.02
Asian-by-Academic Validation	--	--	--	--	-.03 (.02) .-03
Black-by-Academic Validation	--	--	--	--	-.02 (.02) -.02
Hispanic-by-Academic Validation	--	--	--	--	-.04 (.02) -.04

Multiple Races-by-Academic Validation	--	--	--	--	.01 (.02) .01
Other Race-by-Academic Validation	--	--	--	--	.03 (.07) .03
Asian-by-Interpersonal Validation	--	--	--	--	.06 (.02) .05**
Black-by-Interpersonal Validation	--	--	--	--	-.02 (.03) -.02
Hispanic-by-Interpersonal Validation	--	--	--	--	-.01 (.02) -.01
Multiple Races-by-Interpersonal Validation	--	--	--	--	00 (.02) .00
Other Race-by-Interpersonal Validation	--	--	--	--	-.17 (.08) -.17
Asian-by-Belonging	--	--	--	--	.04 (.02) .04
Black-by-Belonging	--	--	--	--	-.01 (.02) -.01
Hispanic-by-Belonging	--	--	--	--	.06 (.02) .06**
Multiple Races-by-Belonging	--	--	--	--	.00 (.02) .00
Other Race-by-Belonging	--	--	--	--	.08 (.06) .08
R-squared	**.099**	**.251**	**.254**	**.259**	**.261**
Adjusted R-squared	**--**	**.098**	**.250**	**.253**	**.259**
N = 32,529					

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

Academic validation is a factor score based on four ordinal items with a mean of 50.29 and a SD of 9.67. Higher scores reflect more experiences of academic validation.

Interpersonal validation is a factor score based on five ordinal items with a mean of 50.44 and a SD of 9.78. Higher scores reflect more experiences of interpersonal validation.

Sense of belonging is a factor score based on three ordinal items with a mean of 50.47 and a SD of 9.88. Higher scores reflect a greater sense of belonging on campus.

Academic self-concept is a factor score derived from four ordinal items each consisting of a five-point Likert scale for self-rating. Items include: 1) academic ability, 2) mathematical ability, 3) self-confidence, and 4) drive to achieve. Higher scores reflect higher self-rated academic self-concept.

Table 7: Academic Self-Concept Interaction Model

	Model 5 (full) Coeff (SE) **Eta[2a]**	Model 5a FG Coeff (SE) **Eta[2a]**	Model 5b TGNC Coeff (SE) **Eta[2a]**	Model 5c LGBQ Coeff (SE) **Eta[2a]**	Model 5d Race Coeff (SE) **Eta[2a]**
FG-by-Academic Validation	.02 (.02) .000	.01 (.02) .000	--	--	--
FG-by-Interpersonal Validation	-.03 (.02) .000	-.03 (.02) .000	--	--	--
FG-by-Belonging	.02 (.02) .000	.04 (.02) .000	--	--	--
TGNC-by-Academic Validation	-.02 (.06) .000	--	-.01 (.06) .000	--	--
TGNC-by-Interpersonal Validation	.06 (.07) .000	--	.07 (.07) .000	--	--
TGNC-by-Belonging	.00 (.05) .000	--	-.02 (.05) .000	--	--
LGBQ-by-Academic Validation	.03 (.02) .000	--	--	.03 (.02) .000	--
LGBQ-by-Interpersonal Validation	.00 (.02) .000	--	--	.01 (.02) .000	--
LGBQ-by-Belonging	-.02 (.02) .000	--	--	-.02 (.02) .000	--
Asian-by-Academic Validation	-.03 (.02) .000	--	--	--	-.03 (.02) .000
Black-by-Academic Validation	-.02 (.02) .000	--	--	--	-.02 (.02) .000
Hispanic-by-Academic Validation	-.04 (.02) .000	--	--	--	-.03 (.02) .000
Multiple Races-by-Academic Validation	.01 (.02) .000	--	--	--	-.02 (.02) .000
Other Race-by-Academic Validation	.03 (.07) .000	--	--	--	.03 (.07) .000
Asian-by-Interpersonal Validation	.06 (.02) .000**	--	--	--	.05 (.02) .000
Black-by-Interpersonal Validation	-.02 (.03) .000	--	--	--	-.03 (.03) .000
Hispanic-by-Interpersonal Validation	-.01 (.02) .000	--	--	--	-.02 (.02) .000
Multiple Races-by-Interpersonal Validation	00 (.02) .000	--	--	--	.00 (.02) .000
Other Race-by-Interpersonal Validation	-.17 (.08) .000	--	--	--	-.17 (.08) .000
Asian-by-Belonging	.04 (.02) .000	--	--	--	.04 (.02) .000
Black-by-Belonging	-.01 (.02) .000	--	--	--	-.01 (.02) .000
Hispanic-by-Belonging	.06 (.02) .000**	--	--	--	.07 (.02) .000***

Multiple Races-by-Belonging	.00 (.02) .000	--	--	--	.00 (.02) .000
Other Race-by-Belonging	.08 (.06) .000	--	--	--	.08 (.06) .000

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

Partial Eta^2 "rules of thumb": small=.01, medium=.06, large=.14.

[a]Partial Eta2 that meet rules of thumb thresholds are reported in bold

Academic validation is a factor score based on four ordinal items with a mean of 50.29 and a SD of 9.67. Higher scores reflect more experiences of academic validation.

Interpersonal validation is a factor score based on five ordinal items with a mean of 50.44 and a SD of 9.78. Higher scores reflect more experiences of interpersonal validation.

Sense of belonging is a factor score based on three ordinal items with a mean of 50.47 and a SD of 9.88. Higher scores reflect a greater sense of belonging on campus.

GPA is an 8-category ordinal scale variable: 1=D, 2=C, 3=C+, 4=B-, 5=B, 6=B+, 7=A-, 8=A/A+.

Co-curricular diversity activities is a measure of students' involvement in campus facilitated programs focused on diversity related issues. Higher scores reflect more frequent involvement.

Institutional commitment to diversity is a measure of participants' perception of campus commitment to diversity. Higher scores reflect stronger endorsement of campus commitment to diversity.

Discrimination and bias measures the frequency of students' experiences with more subtle forms of discrimination. Higher scores reflect more frequent experiences with discrimination.

Harassment measures the frequency that participants experience harassment or threats. Higher scores reflect more frequent harassment experiences.

Academic self-concept is a factor score derived from four ordinal items each consisting of a five-point Likert scale for self-rating. Items include: 1) academic ability, 2) mathematical ability, 3) self-confidence, and 4) drive to achieve. Higher scores reflect higher self-rated academic self-concept.

Table 8: Academic Self-Concept Race-by-Belonging Probe

	Est	SE	t	P-value	95% CI Low	95% CI High	Partial Eta^2
Belonging Effect for							
White	0.06	0.01	7.43	<.001	0.04	0.07	0.002
Asian	0.13	0.02	8.43	<.001	0.10	0.15	0.002
Black	0.03	0.02	1.67	0.094	-0.01	0.07	0.000
Hispanic	0.10	0.01	7.28	<.001	0.07	0.13	0.002
Multiple Races	0.06	0.02	3.95	<.001	0.03	0.09	0.000
Other Race	0.05	0.05	0.97	0.332	-0.05	0.15	0.000

Contrasts

	White	Asian	Black	Hispanic	Multiple	Other
White	-					
Asian	***<.001***	-				
Black	0.179	***<.001***	-			
Hispanic	***0.003***	0.168	***0.002***	-		
Multiple	0.868	***0.001***	0.219	0.041	-	
Other	0.883	0.150	0.735	0.344	0.847	-

Table 9: Consider Dropping Out Model Fit

Model	Predictors Included	Cox & Snell R^2	Cox & Snell ΔR^2	Cox & Snell f^2	Nagelkerke R^2	Nagelkerke ΔR^2	Nagelkerke f^2	Added Predictors with > Small Effects
1	Focal Factors (and School Year)	0.061		**0.064**	0.095		**0.105**	School Year, Academic Validation, Sense o Belonging
2	Demographic, Identity, and Enrollment	0.133	0.072	**0.084**	0.208	0.113	**0.143**	Age, Race, Enrollment Status, GPA, TGNC LGBQ, Family Support, Financial Concern
3	Student and Institutional Engagement	0.138	0.005	0.006	0.216	0.008	0.010	Student Psych Services
4	Institutional Characteristics and Climate	0.143	0.005	0.006	0.224	0.008	0.010	Discrimination and Bias
5	Interactions (all)	0.144	0.001	0.001	0.226	0.002	0.003	There were no substantively meaningful interaction effects
5a	Interactions (FG only)	0.143	0.000	0.000	0.225	0.001	0.001	There were no substantively meaningful interaction effects
5b	Interactions (TGNC only)	0.143	0.000	0.000	0.224	0.000	0.000	There were no substantively meaningful interaction effects
5c	Interactions (LGBQ only)	0.143	0.000	0.000	0.224	0.000	0.000	There were no substantively meaningful interaction effects
5d	Interactions (Race only)	0.144	0.001	0.001	0.225	0.001	0.001	There were no substantively meaningful interaction effects

Small Effect is defined as having an effect size greater than .1.
f^2 rules of thumb: small=.02, medium=.15, large=.35.

Table 10: Consider Dropping Out AIC/BIC

Model	Predictors	AIC	BIC
1	Focal Factors (and School Year)	31043.22	31093.56
2	Demographic, Identity, and Enrollment	28502.53	28821.34
3	Student and Institutional Engagement	28328.38	28714.31
4	Institutional Characteristics and Climate	28152.36	**28605.42**
5	Interactions (all)	28150.54	28804.96

Table 11: Consider Dropping Out Logistic Regression

	Model 1 Focal Factors OR **(Std Effect)**[a]	Model 2 Demographics, Identity, and Enrollment OR **(Std Effect)**	Model 3 Student and Institutional Engagement OR **(Std Effect)**	Model 4 Institutional Characteristics and Climate OR **(Std Effect)**	Model 5 Interaction Terms OR **(Std Effect)**
Intercept (Est/SE)	2.40 (.09)	2.00 (.13)	1.61 (.15)	.90 (.18)	1.44 (.21)
2015	.60 **(-.285)*****	.58 **(-.305)*****	.58 **(-.300)*****	.54 **(-.341)*****	.54 **(-.340)*****
2016	.58 **(-.302)*****	.59 **(-.294)*****	.59 **(-.293)*****	.54 **(-.339)*****	.54 **(-.341)*****
2017 (Reference)	--	--	--	--	--
Academic Validation	.98 **(-.109)*****	.98 (-.094)***	.98 (-.098)***	.98 (-.091)***	.98 (-.099)***
Inter. Validation	1.00 (-.001)	1.00 (.005)	.99 (-.006)	1.00 (-.008)	1.00 (-.015)
Sense of Belonging	.95 **(-.262)*****	.96 **(-.236)*****	.96 **(-.236)*****	.96 **(-.223)*****	.95 **(-.263)*****
≤ 17 years of age	--	.83 (-.103)	.83 (-.101)	.80 (-.124)	.80 (-.127)
18 years of age	--	.79 **(-.130)****	.80 (-.124)	.81 (-.114)	.82 (-.107)
19 years of age	--	.97 (-.015)	.98 (-.011)	.99 (-.008)	.99 (-.007)
20 years of age (Reference)	--	--	--	--	--
21-24 years of age	--	1.04 (.025)	1.06 (.033)	1.06 (.034)	1.07 (.036)
25+ years of age	--	1.24 **(.117)*****	1.29 **(.140)*****	1.32 **(.154)*****	1.32 **(.216)*****
Male	--	1.07 (.036)	1.08 (.042)	1.08 (.043)	1.07 (.040)
Female (Reference)	--	--	--	--	--
Asian	--	.59 **(-.288)*****	.60 **(-.284)*****	.62 **(-.267)*****	.31 (**-.653)*****
Black	--	.93 (-.042)	.91 (-.053)	.89 (-.062)	.39 **(-.527**)**
Hispanic	--	.86 (-.085)***	.88 (-.072)**	.88 (-.069)	.53 (-.351)
Multiple Races	--	1.03 (.014)	1.03 (.015)	1.01 (.005)	.62 (-.261)
Other Race	--	.91 (-.053)	.91 (-.053)	.91 (-.054)	.12 (-1.191)
White (Reference)	--	--	--	--	--
$0-$39,999	--	1.08 (.044)	1.07 (.039)	1.06 (.034)	1.06 (.033)
$40,000-$74,999 (Reference)	--	--	--	--	--
$75,000-$99,999	--	.92 (-.045)	.92 (-.048)	.92 (-.048)	.92 (-.046)
$100,000-$199,999	--	.92 (-.049)	.91 (-.049)	.91 (-.050)	.92 (-.048)
$200,000+	--	.84 (-.098)	.82 **(-.109)****	.81 **(-.118)****	.81 **(-.117)****
First-Generation	--	1.19 (-.097)***	1.20 **(.103)*****	1.21 **(.105)*****	.77 (-.146)
Continuing-Generation (Reference)	--	--	--	--	--
Part-time	--	1.23 **(.112)*****	1.27 **(.130)*****	1.27 **(.134)*****	1.27 **(.134)*****

Freshman	--	.88 (-.074)	.90 (-.056)	.92 (-.047)	.91 (-.050)
Sophomore	--	.98 (-.014)	.98 (-.014)	.98 (-.009)	.98 (-.009)
Junior (Reference)	--	--	--	--	--
Senior	--	.98 (-.010)	.97 (-.018)	.96 (-.021)	.96 (-.023)
Other	--	.84 (-.094)	.85 (-.092)	.83 (-.104)	.83 (-.105)
GPA	--	.77 **(-.250)*****	.77 **(-.248)*****	.77 **(-.245)*****	.77 **(-.246)*****
TGNC	--	1.45 **(.207)****	1.33 (-.158)	1.29 (.143)	.70 (-.201)
Cisgender (Reference)	--	--	--	--	--
LGBQ	--	1.55 **(.242)*****	1.46 **(.208)*****	1.48 **(.216)*****	.80 (-.121)
Non-LGBQ (Reference)	--	--	--	--	--
Identity Salience (IS): Gender	--	.99 (-.002)	.98 (-.012)	.98 (-.017)	.98 (-.016)
IS: Race	--	1.05 (.024)**	1.03 (.025)	1.01 (.011)	1.01 (.011)
IS: Sexual orientation	--	1.09 (.049)***	1.08 (.053)***	1.07 (.051)***	1.07 (.049)***
IS: SES	--	1.18 (.091)***	1.17 **(.113)*****	1.16 **(.109)*****	1.16 **(.110)*****
Family support to succeed	--	1.29 **(.141)*****	1.28 **(.135)*****	1.24 **(.120)*****	1.24 **(.119)*****
Did not feel family support to succeed (Reference)	--	--	--	--	--
Concerns about financing college	--	1.66 **(.279)*****	1.64 **(.275)*****	1.63 **(.271)*****	1.63 **(.269)*****
Did not have concerns about financing college (Reference)	--	--	--	--	--
Co-curricular Diversity Activities	--	--	1.01 (.053)***	1.00 (.021)	1.00 (.018)
Writing Center	--	--	.98 (-.013)	.98 (-.014)	.97 (-.015)
Did not engage with Writing Center (Reference)	--	--	--	--	--
Career Counseling	--	--	.88 (-.070)***	.88 (-.070)***	.88 (-.069)***
Did not engage in Career Counseling (Reference)	--	--	--	--	--
Academic Advising	--	--	1.02 (.012)	1.01 (.006)	1.01 (.006)
Did not engage in Academic Advising (Reference)	--	--	--	--	--
Student Health Services	--	--	.91 (-.050)**	.89 (-.066)***	.89 (-.064)***
Did not engage in Student Health Services (Reference)	--	--	--	--	--
Student Psych Services	--	--	1.56 **(.245)*****	1.54 **(.238)*****	1.53 **(.236)*****

Did not engage in Student Psych Services (Reference)	--	--	--	--	--
Attended professor's office hours	--	--	1.10 (.054)	1.09 (.045)	1.09 (.047)
Did not attend professor's office hours (Reference)	--	--	--	--	--
Discussed course content outside of class	--	--	1.07 (.039)	1.05 (.028)	1.05 (.028)
Did not discuss course content outside of class (Reference)	--	--	--	--	--
East	--	--	--	.93 (-.037)	.94 (-.037)
Midwest	--	--	--	.98 (-.011)	.97 (-.015)
South	--	--	--	1.10 (.054)	1.11 (.056)
West (Reference)	--	--	--	--	--
High/Very High Selectivity	--	--	--	.84 (-.097)***	.84 (-.095)***
Low Selectivity (Reference)	--	--	--	--	--
Public	--	--	--	.97 (-.017)	.97 (-.019)
Private (Reference)	--	--	--	--	--
Institutional Commitment to Diversity	--	--	--	1.00 (.013)	1.00 (.010)
Discrimination and Bias	--	--	--	1.02 **(.111)****	1.02 **(.112)****
Harassment	--	--	--	1.00 (0.00)	1.00 (.000)
FG-by-Academic Validation	--	--	--	--	1.00 (-.001)
FG-by-Interpersonal Validation	--	--	--	--	1.00 (.001)
FG-by-Belonging	--	--	--	--	1.01 (.005)
TGNC-by-Academic Validation			--	--	.99 (-.006)
TGNC-by-Interpersonal Validation	--	--	--	--	1.05 (.026)**
TGNC-by-Belonging	--	--	--	--	.98 (-.013)
LGBQ-by-Academic Validation	--	--	--	--	1.01 (.005)
LGBQ-by-Interpersonal Validation	--	--	--	--	.99 (-.004)
LGBQ-by-Belonging	--	--	--	--	1.01 (.006)
Asian-by-Academic Validation	--	--	--	--	1.00 (.002)
Black-by-Academic Validation	--	--	--	--	1.00 (.001)
Hispanic-by-Academic Validation	--	--	--	--	1.00 (-.001)

Multiple Races-by-Academic Validation	--	--	--	--	1.00 (.001)
Other Race-by-Academic Validation	--	--	--	--	.99 (-.005)
Asian-by-Interpersonal Validation	--	--	--	--	1.00 (.001)
Black-by-Interpersonal Validation	--	--	--	--	1.00 (.001)
Hispanic-by-Interpersonal Validation	--	--	--	--	1.00 (.000)
Multiple Races-by-Interpersonal Validation	--	--	--	--	1.01 (.004)
Other Race-by-Interpersonal Validation	--	--	--	--	1.02 (.009)
Asian-by-Belonging	--	--	--	--	1.01 (.005)
Black-by-Belonging	--	--	--	--	1.01 (.008)
Hispanic-by-Belonging	--	--	--	--	1.01 (.006)
Multiple Races-by-Belonging	--	--	--	--	1.00 (.000)
Other Race-by-Belonging	--	--	--	--	1.04 (.019)
Cox & Snell	.061	.133	.138	.143	.144
Nagelkerke	.095	.208	.216	.224	.226
N = 32,529					

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

Effect size "rules of thumb": small=.1, medium-.3, large=.5

[a]Significant standard effects that meet rules of thumb thresholds are reported in bold

Academic validation is a factor score based on four ordinal items with a mean of 50.29 and a SD of 9.67. Higher scores reflect more experiences of academic validation.

Interpersonal validation is a factor score based on five ordinal items with a mean of 50.44 and a SD of 9.78. Higher scores reflect more experiences of interpersonal validation.

Sense of belonging is a factor score based on three ordinal items with a mean of 50.47 and a SD of 9.88. Higher scores reflect a greater sense of belonging on campus.

GPA is an 8-category ordinal scale variable: 1=D, 2=C, 3=C+, 4=B-, 5=B, 6=B+, 7=A-, 8=A/A+.

Co-curricular diversity activities is a measure of students' involvement in campus facilitated programs focused on diversity related issues. Higher scores reflect more frequent involvement.

Institutional commitment to diversity is a measure of participants' perception of campus commitment to diversity. Higher scores reflect stronger endorsement of campus commitment to diversity.

Discrimination and bias measures the frequency of students' experiences with more subtle forms of discrimination. Higher scores reflect more frequent experiences with discrimination.
Harassment measures the frequency that participants experience harassment or threats. Higher scores reflect more frequent harassment experiences.

Table 12: Consider Dropping Out Interaction Model

	Model 5 (full) OR (Std Effect)	Model 5a FG OR (Std Effect)	Model 5b TGNC OR (Std Effect)	Model 5c LGBQ OR (Std Effect)	Model 5d Race OR (Std Effect)
FG-by-Academic Validation	1.00 (-.001)	1.00 (-.001)	--	--	--
FG-by-Interpersonal Validation	1.00 (.001)	1.00 (.001)	--	--	--
FG-by-Belonging	1.01 (.005)	1.01 (.007)**	--	--	--
TGNC-by-Academic Validation	.99 (-.006)	--	.99 (-.003)	--	--
TGNC-by-Interpersonal Validation	1.05 (.026)**	--	1.04 (.023)	--	--
TGNC-by-Belonging	.98 (-.013)	--	.98 (-.010)	--	--
LGBQ-by-Academic Validation	1.01 (.005)	--	--	1.01 (.005)	--
LGBQ-by-Interpersonal Validation	.99 (-.004)	--	--	1.00 (-.002)	--
LGBQ-by-Belonging	1.01 (.006)	--	--	1.01 (.004)	--
Asian-by-Academic Validation	1.00 (.002)	--	--	--	1.00 (.002)
Black-by-Academic Validation	1.00 (.001)	--	--	--	1.00 (.001)
Hispanic-by-Academic Validation	1.00 (-.001)	--	--	--	1.00 (-.001)
Multiple Races-by-Academic Validation	1.00 (.001)	--	--	--	1.00 (.001)
Other Race-by-Academic Validation	.99 (-.005)	--	--	--	.99 (-.006)
Asian-by-Interpersonal Validation	1.00 (.001)	--	--	--	1.00 (.001)
Black-by-Interpersonal Validation	1.00 (.001)	--	--	--	1.00 (.001)
Hispanic-by-Interpersonal Validation	1.00 (.000)	--	--	--	1.00 (.001)
Multiple Races-by-Interpersonal Validation	1.01 (.004)	--	--	--	1.01 (.004)
Other Race-by-Interpersonal Validation	1.02 (.009)	--	--	--	1.02 (.009)
Asian-by-Belonging	1.01 (.005)	--	--	--	1.01 (.005)
Black-by-Belonging	1.01 (.008)	--	--	--	1.01 (.008)
Hispanic-by-Belonging	1.01(.006)	--	--	--	1.01 (.008)**

Multiple Races-by-Belonging	1.00 (.000)	--	--	--	1.00 (.001)
Other Race-by-Belonging	1.04 (.019)	--	--	--	1.04 (.020)

**p<.01, ***p<.001
Effect size “rules of thumb”: small=.1, medium-.3, large=.5

Table 13: Planning to Attend Graduate School Model Fit

Model	Predictors Included	Cox & Snell R^2	Cox & Snell ΔR^2	Cox & Snell f^2	Nagelkerke R^2	Nagelkerke ΔR^2	Nagelkerke f^2	Added Predictors with > Small Effects
1	Focal Factors (and School Year)	0.205		**0.258**	0.274		**0.377**	Survey Year
2	Demographic, Identity, and Enrollment	0.239	0.034	**0.045**	0.319	0.045	**0.066**	Age, Race, Enrollment Status, Class Standi GPA
3	Student and Institutional Engagement	0.242	0.003	0.004	0.323	0.004	0.006	Academic Advising, Discussed Course Con
4	Institutional Characteristics and Climate	0.246	0.004	0.005	0.328	0.005	0.007	HERI Region
5	Interactions (all)	0.246	0.000	0.000	0.328	0.000	0.000	There were no substantively meaningful interaction effects
5a	Interactions (FG only)	0.246	0.000	0.000	0.328	0.000	0.000	There were no substantively meaningful interaction effects
5b	Interactions (TGNC only)	0.246	0.000	0.000	0.328	0.000	0.000	There were no substantively meaningful interaction effects
5c	Interactions (LGBQ only)	0.246	0.000	0.000	0.328	0.000	0.000	There were no substantively meaningful interaction effects
5d	Interactions (Race only)	0.246	0.000	0.000	0.328	0.000	0.000	There were no substantively meaningful interaction effects

Small Effect is defined as having an effect size greater than .1.
f^2 rules of thumb: small=.02, medium=.15, large=.35.

Table 14: Planning to Attend Graduate School AIC/BIC

Model	Predictors	AIC	BIC
1	Focal Factors (and School Year)	37630.75	37681.09
2	Demographic, Identity, and Enrollment	36268.62	36587.44
3	Student and Institutional Engagement	36175.96	36561.89
4	Institutional Characteristics and Climate	36023.46	**36476.51**
5	Interactions (all)	36044.88	36699.29

Table 15: Planning to Attend Graduate School Logistic Regression

	Model 1 Focal Factors OR **(Std Effect)**[a]	Model 2 Demographics, Identity, and Enrollment OR **(Std Effect)**	Model 3 Student and Institutional Engagement OR **(Std Effect)**	Model 4 Institutional Characteristics and Climate OR **(Std Effect)**	Model 5 Interaction Terms OR **(Std Effect)**
Intercept (Est/SE)	.13 (.08)	-.88 (.11)	-1.17 (.13)	-1.56 (.16)	-1.53 (.19)
2015	.69 **(-.207)*****	.67 **(-.221)*****	.67 **(-.220)*****	.73 **(-.176)*****	.73 **(-.176)*****
2016	.11 **(-1.22)*****	.09 **(-1.32)*****	.09 **(-1.32)*****	.08 **(-1.38)*****	.08 **(-1.38)*****
2017 (Reference)	--	--	--	--	--
Academic Validation	1.01 (.061)***	1.01 (.028)***	1.01 (.024)**	1.01 (.027)**	1.01 (.027)
Inter. Validation	1.01 (.050)***	1.00 (.019)	1.00 (.016)	1.00 (.019)	1.00 (.017)
Sense of Belonging	1.00 (-.002)	1.01 (.044)***	1.01 (.040)***	1.00 (.025)**	1.00 (.024)
≤ 17 years of age	--	.61 (-.273)	.63 (-.253)	.62 (-.266)	.61 (.-.275)
18 years of age	--	.67 **(-.220**)***	.68 **(-.213)*****	.69 **(-.208**)***	.69 **(-.207)*****
19 years of age	--	.82 **(-.110)*****	.82 **(-.107)*****	.83 **(-.102)*****	.83 **(-.101)*****
20 years of age (Reference)	--	--	--	--	--
21-24 years of age	--	1.05 (.025)	1.06 (.032)	1.07 (.037)	1.07 (.036)
25+ years of age	--	1.84 **(.337)*****	1.91 **(.358)*****	1.96 **(.371)*****	1.96 **(.531)*****
Male	--	.98 (-.006)	.99 (-.005)	.99 (-.004)	.99 (-.005)
Female (Reference)	--	--	--	--	--
Asian	--	1.35 **(.166)*****	1.35 **(.167)*****	1.33 **(.158)*****	1.07 (.037)
Black	--	1.44 **(.200)*****	1.43 **(.196)*****	1.41 **(.188)*****	1.85 (.340)
Hispanic	--	1.29 **(.139)*****	1.32 **(.152)*****	1.44 **(.202)*****	1.14 (.072)
Multiple Races	--	1.00 (.002)	1.01 (.003)	1.05 (.025)	.69 (-.204)
Other Race	--	1.12 (.060)	1.10 (.052)	1.10 (.055)	1.22 (.111)
White (Reference)	--	--	--	--	--
$0-$39,999	--	1.01 (.004)	1.01 (.003)	1.02 (.009)	1.02 (.008)
$40,000-$74,999 (Reference)	--	--		--	--
$75,000-$99,999	--	.99 (-.001)	.99 (-.002)	1.00 (-.001)	1.00 (-.001)
$100,000-$199,999	--	1.09 (.050)	1.09 (.050)	1.09 (.048)	1.09 (.048)
$200,000+	--	1.09 (.049)	1.08 (.042)	1.08 (.043)	1.08 (.044)
First-Generation	--	.93 (-.040)	.94(-.034)	.93 (-.038)	1.03 (.019)
Continuing-Generation (Reference)	--	--	--	--	--
Part-time	--	.69 **(-.206)*****	.72 **(-.180)*****	.72 **(-.179)*****	.72 **(-.180)*****

Freshman	--	1.52 **(.230)*****	1.55 **(.241)*****	1.52 **(.230)*****	1.51 **(.229)*****
Sophomore	--	1.17 (.088)***	1.18 (.090)***	1.16 (.081)***	1.16 (.080)***
Junior (Reference)	--	--	--	--	--
Senior	--	.88 (-.074)***	.86 (-.084)***	.84 (-.099)***	.84 (-.098)***
Other	--	1.41 (.189)	1.42 (.195)	1.56 **(.247)****	1.57 **(.249)****
GPA	--	1.12 **(.104)*****	1.12 **(.103)*****	1.11 **(.101)*****	1.11 **(.101)*****
TGNC	--	.83 (-.103)	.81 (-.118)	.81 (-.114)	2.86 (.580)
Cisgender (Reference)	--	--	--	--	--
LGBQ	--	1.05 (.024)	1.02 (.009)	.99 (-.003)	1.21(.104)
Non-LGBQ (Reference)	--	--	--	--	--
Identity Salience (IS): Gender	--	1.03 (.015)	1.02 (.015)	1.02 (.015)	1.02 (.015)
IS: Race	--	1.04 (.020)**	1.03 (.023)	1.03 (.022)	1.03 (.022)
IS: Sexual orientation	--	.97 (-.016)	.96 (-.027)	.97 (-.022)	.97 (-.022)
IS: SES	--	1.09 (.051)***	1.09 (.063)***	1.09 (.061)***	1.09 (.061)***
Family support to succeed	--	.87 (-.76)***	.87 (-.080)***	.85 (-.089)***	.85 (-.089)***
Did not feel family support to succeed (Reference)	--	--	--	--	--
Concerns about financing college	--	1.02 (.013)	1.02 (.011)	1.03 (.016)	1.03 (.017)
Did not have concerns about financing college (Reference)	--	--	--	--	--
Co-curricular Diversity Activities	--	--	1.01 (.035)***	1.01 (.035)***	1.01 (.035)***
Writing Center	--	--	.95 (-.026)	.96 (-.023)	.96 (-.024)
Did not engage with Writing Center (Reference)	--	--	--	--	--
Career Counseling	--	--	.94 (-.037)	.94 (-.032)	.94 (-.033)
Did not engage in Career Counseling (Reference)	--	--	--	--	--
Academic Advising	--	--	.83 **(-.105)*****	.85 (-.090)***	.85 (-.090)***
Did not engage in Academic Advising (Reference)	--	--	--	--	--
Student Health Services	--	--	1.09 (.052)**	1.08 (.044)**	1.08 (.044)**
Did not engage in Student Health Services (Reference)	--	--	--	--	--
Student Psych Services	--	--	1.05 (.026)	1.05 (.028)	1.05 (.029)

Did not engage in Student Psych Services (Reference)	--	--	--	--	--
Attended professor's office hours	--	--	1.14 (.074)***	1.13 (.069)***	1.13 (.069)***
Did not attend professor's office hours (Reference)	--	--	--	--	--
Discussed course content outside of class	--	--	1.23 **(.115)****	1.22 **(.111)****	1.23 **(.112)****
Did not discuss course content outside of class (Reference)	--	--	--	--	--
East	--	--	--	1.51 **(.227)****	1.52 **(.230)****
Midwest	--	--	--	1.12 (.063)**	1.12**
South	--	--	--	1.30 **(.145)****	1.30 **(.146)****
West (Reference)	--	--	--	--	--
High/Very High Selectivity	--	--	--	1.02 (.013)	1.02 (.012)
Low Selectivity (Reference)	--	--	--	--	--
Public	--	--	--	1.10 (.052)**	1.10 (.052)**
Private (Reference)	--	--	--	--	--
Institutional Commitment to Diversity	--	--	--	1.01 (.034)***	1.01 (.034)***
Discrimination and Bias	--	--	--	1.01 (.031)**	1.01 (.031)**
Harassment	--	--	--	.99 (-.038)***	.99 (-.039)***
FG-by-Academic Validation	--	--	--		1.00 (-.001)
FG-by-Interpersonal Validation	--	--	--	--	1.00 (.000)
FG-by-Belonging	--	--	--	--	1.00 (.000)
TGNC-by-Academic Validation			--	--	.97 (-.016)
TGNC-by-Interpersonal Validation	--	--	--	--	1.01 (.003)
TGNC-by-Belonging	--	--	--	--	1.00 (-.001)
LGBQ-by-Academic Validation	--	--	--	--	1.01 (.006)
LGBQ-by-Interpersonal Validation	--	--	--	--	.99 (-.007)
LGBQ-by-Belonging	--	--	--	--	1.00 (-.001)
Asian-by-Academic Validation	--	--	--	--	1.00 (.001)
Black-by-Academic Validation	--	--	--	--	1.00 (-.001)
Hispanic-by-Academic Validation	--	--	--	--	1.00 (-.002)

Multiple Races-by-Academic Validation	--	--	--	--	1.00 (.000)
Other Race-by-Academic Validation	--	--	--	--	.97 (-.015)
Asian-by-Interpersonal Validation	--	--	--	--	1.01 (.004)
Black-by-Interpersonal Validation	--	--	--	--	.99 (-.004)
Hispanic-by-Interpersonal Validation	--	--	--	--	1.00 (.002)
Multiple Races-by-Interpersonal Validation	--	--	--	--	1.00 (.002)
Other Race-by-Interpersonal Validation	--	--	--	--	1.04 (.019)
Asian-by-Belonging	--	--	--	--	1.00 (-.002)
Black-by-Belonging	--	--	--	--	1.00 (.002)
Hispanic-by-Belonging	--	--	--	--	1.00 (.002)
Multiple Races-by-Belonging	--	--	--	--	1.00 (.002)
Other Race-by-Belonging	--	--	--	--	.99 (-.006)
Cox & Snell	.061	.133	.138	.143	.144
Nagelkerke	.095	.208	.216	.224	.226
N = 32,529					

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

Effect size "rules of thumb": small=.1, medium-.3, large=.5

[a]Significant, standard effects that meet rules of thumb thresholds are reported in bold

Academic validation is a factor score based on four ordinal items with a mean of 50.29 and a SD of 9.67. Higher scores reflect more experiences of academic validation.

Interpersonal validation is a factor score based on five ordinal items with a mean of 50.44 and a SD of 9.78. Higher scores reflect more experiences of interpersonal validation.

Sense of belonging is a factor score based on three ordinal items with a mean of 50.47 and a SD of 9.88. Higher scores reflect a greater sense of belonging on campus.

GPA is an 8-category ordinal scale variable: 1=D, 2=C, 3=C+, 4=B-, 5=B, 6=B+, 7=A-, 8=A/A+.

Co-curricular diversity activities is a measure of students' involvement in campus facilitated programs focused on diversity related issues. Higher scores reflect more frequent involvement.

Institutional commitment to diversity is a measure of participants' perception of campus commitment to diversity. Higher scores reflect stronger endorsement of campus commitment to diversity.

Discrimination and bias measures the frequency of students' experiences with more subtle forms of discrimination. Higher scores reflect more frequent experiences with discrimination.
Harassment measures the frequency that participants experience harassment or threats. Higher scores reflect more frequent harassment experiences.

Table 16: Planning to Attend Graduate School Interaction Model

	Model 5 (full) OR (Std Effect)	Model 5a FG OR (Std Effect)	Model 5b TGNC OR (Std Effect)	Model 5c LGBQ OR (Std Effect)	Model 5d Race OR (Std Effect)
FG-by-Academic Validation	1.00 (-.001)	1.00 (-.002)	--	--	--
FG-by-Interpersonal Validation	1.00 (.000)	1.00 (.001)	--	--	--
FG-by-Belonging	1.00 (.000)	1.00 (.000)	--	--	--
TGNC-by-Academic Validation	.97 (-.016)	--	.98 (-.011)	--	--
TGNC-by-Interpersonal Validation	1.01 (.003)	--	1.00 (-.002)	--	--
TGNC-by-Belonging	1.00 (-.001)	--	1.00 (-.001)	--	--
LGBQ-by-Academic Validation	1.01 (.006)	--	--	1.01 (.005)	--
LGBQ-by-Interpersonal Validation	.99 (-.007)	--	--	.99 (-.007)	--
LGBQ-by-Belonging	1.00 (-.001)	--	--	1.00 (-.001)	--
Asian-by-Academic Validation	1.00 (.001)	--	--	--	1.00 (.001)
Black-by-Academic Validation	1.00 (-.001)	--	--	--	1.00 (-.002)
Hispanic-by-Academic Validation	1.00 (-.002)	--	--	--	1.00 (-.003)
Multiple Races-by-Academic Validation	1.00 (.000)	--	--	--	1.00 (.000)
Other Race-by-Academic Validation	.97 (-.015)	--	--	--	.97 (-.015)
Asian-by-Interpersonal Validation	1.01 (.004)	--	--	--	1.01 (.004)
Black-by-Interpersonal Validation	.99 (-.004)	--	--	--	.99 (-.004)
Hispanic-by-Interpersonal Validation	1.00 (.002)	--	--	--	1.00 (.002)
Multiple Races-by-Interpersonal Validation	1.00 (.002)	--	--	--	1.00 (.002)
Other Race-by-Interpersonal Validation	1.04 (.019)	--	--	--	1.04 (.019)
Asian-by-Belonging	1.00 (-.002)	--	--	--	1.00 (-.002)
Black-by-Belonging	1.00 (.002)	--	--	--	1.00 (.002)
Hispanic-by-Belonging	1.00 (.002)	--	--	--	1.00 (.002)

Multiple Races-by-Belonging	1.00 (.002)	--	--	--	1.00 (.002)
Other Race-by-Belonging	.99 (-.006)	--	--	--	.99 (-.006)

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

Effect size "rules of thumb": small=.1, medium-.3, large=.5

[a]Significant, standard effects that meet rules of thumb thresholds are reported in bold

Academic validation is a factor score based on four ordinal items with a mean of 50.29 and a SD of 9.67. Higher scores reflect more experiences of academic validation.

Interpersonal validation is a factor score based on five ordinal items with a mean of 50.44 and a SD of 9.78. Higher scores reflect more experiences of interpersonal validation.

Sense of belonging is a factor score based on three ordinal items with a mean of 50.47 and a SD of 9.88. Higher scores reflect a greater sense of belonging on campus.

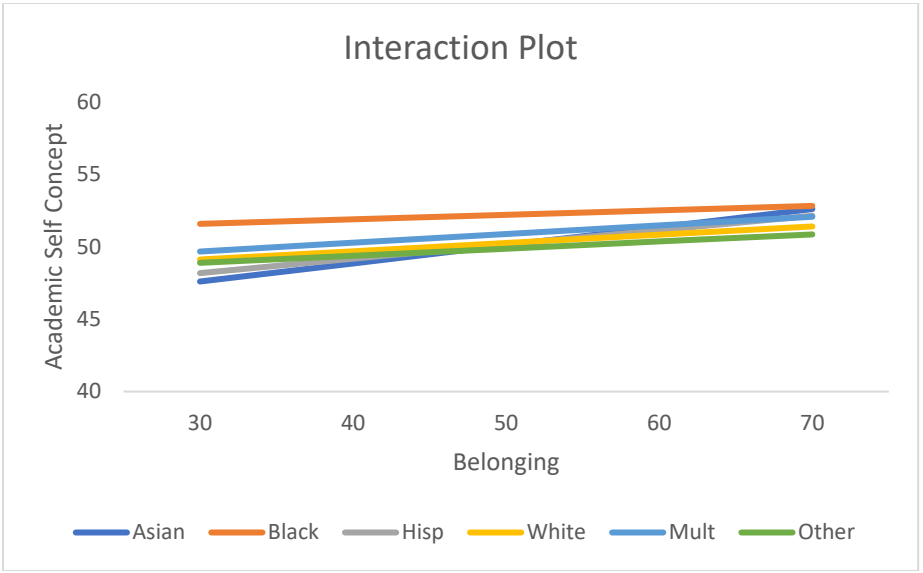

Figure 1: Academic Self-Concept Race-by-Belonging Interaction Plot