

AN EXPLORATION OF DISCRIMINATION, SENSE OF BELONGING, AND
PERSISTENCE AMONG STUDENTS IN HIGHER EDUCATION

A Dissertation

by

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ABSTRACT

Despite the benefits of higher education and increasing enrollment at many universities, a number of students who enroll in postsecondary institutions fail to complete their degree. Data show persistence and degree attainment differ by gender and race, which may indicate social factors or social experiences not addressed within common conceptual persistence and retention frameworks. The objective of this dissertation is to assess the role of discrimination and the sense of belonging in college students' educational persistence through three manuscripts that analyze data obtained from the Health Mind Study (HMS). The central hypothesis is that sense of belonging and discrimination have a significant and unique impact on persistence beyond the influence of relevant demographic and social factors. The results from this dissertation indicated that discrimination and sense of belonging are significant factors in predicting students' confidence in their ability to overcome challenges to graduate. The students who indicated that they were not confident in their ability to finish their degree were 1.42 (95% CI [1.118, 1.79]) times more likely to report experiencing discrimination frequently and were 0.76 (95% CI [0.709, 0.824]) times less likely to score high on the sense of belonging scale.

The frequency of discrimination is racialized, then gendered. White women were likely to report experiencing discrimination more often than White men, but less often than all men of color. The men of color, however, reported more frequently experiencing discrimination compared to women of the same racial identity. There were also

significant racial and gender differences in students' sense of belonging, yet, students' sense of belonging was significantly affected by housing arrangements and participation in extracurricular activities. The findings offer insights into the lived experience of diverse students and prompt rethinking of retention initiatives. Institutions must make additional efforts to decrease discrimination on campus and enhance students' sense of belonging through in order to significantly impact on persistence.

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1. INTRODUCTION

1.1. Statement of Problem

Higher education opens the door to many opportunities that would not otherwise be available to most individuals. College graduates earning a bachelor's or an advanced degree have higher employment rates and higher median earnings, compared to young adults who had not completed high school (Baum, Kurose, & Ma, 2013; Ma, Pender, & Welch, 2016). In addition to increased employment opportunities and earning potential, education also fosters skills, attitudes, and thought patterns that lead to more responsible health-related behaviors (Mirowsky & Ross, 2003). In the United States (U.S.) postsecondary institutions expect an enrollment increase of 15 percent from 2014 to 2025, with larger proportional increases among students of color, compared to white students (Hussar & Bailey, 2017). Despite the benefits of higher education, and increasing enrollment levels, many who enroll in postsecondary institutions do not reap the benefits due to dropping out. The lack of persistence—the act of continuing towards an educational goal—has profound impacts on students individually, as well as higher education and society.

1.2. Lack of Persistence Consequences

1.2.1. Direct Monetary Consequences

College dropouts, from a single cohort of entering students, lost \$3.8 billion in lifetime income, and states and the federal government lost \$730 million in potential tax

revenue (Schneider & Yin, 2011). In addition to lost income potential, those who do not finish their degree also have decreased ability and opportunity to pay back monies borrowed to attend college. For instance, drop-outs are four times more likely to default on their loans, compared to those who complete their post-secondary degree (Casselmann, 2012). Institutions also suffer a financial loss when students do not persist and graduate. Raisman (2013) asserts that “every student equates to a lifetime value for a school that is equal to the amount of money in immediate revenue ... as well as potential future revenue in the form of future tuition fees plus potential alumni-related giving” (p.3). The average public four-year postsecondary institution lost nearly \$10 million in revenue due to attrition, in the academic year of 2010-11 (Raisman, 2013). On a larger scale, the cost of students dropping out of their first year of college is more than nine billion dollars in state and federal funds given as student grants during a five-year period (Schneider, 2010).

1.2.2. Indirect Monetary and Nonmonetary Consequences

Dropping out has several nonmonetary consequences as well. In general, dropouts tend to have poorer health than graduates (Baum et al., 2013; Ross et al., 2012). Higher education is linked to better health behaviors, such as not smoking, drinking less, engaging in vigorous exercise, and use of preventative care (Goldman & Smith, 2011; Montez, Hummer, & Hayward, 2012). The decreased activity and increased obesity rates of dropouts, in turn, raises health care costs (Ma et al., 2016). Dropping out of college also influences the health of relationships. Parents with more education tend to have a higher involvement level with their children than those less educated (Garbacz,

McDowall, Schaughency, Sheridan, & Welch, 2015; Kalil, Ryan, & Corey, 2012; Waanders, Mendez, & Downer, 2007). This is important as parent involvement is significantly associated with a child's academic achievement and performance (Topor, Keane, Shelton, & Calkins, 2010; Wilder, 2014). Also, incarceration risks are highly stratified by education; therefore higher educational attainment reduces the likelihood that an individual will engage in criminal activity or be incarcerated (Carroll & Erkut, 2009).

1.3. Persistence across Populations

Data shows differences in degree attainment and persistence by gender and race (Musu-Gillette et al., 2016; Snyder, de Brey, & Dillow, 2016). 6-year graduation rate is highest for Asian students (71 percent), and lowest for Black and American Indian/Alaska Native (AIAN) students (41 percent for each; (Musu-Gillette et al., 2016; Snyder et al., 2016). Differences in graduation rates become more pronounced when assessed across gender, as women attend and graduate from college at higher rates than their male peers (Bound, Lovenheim, & Turner, 2010; Corbett, Hill, & St. Rose, 2008; Snyder et al., 2016). While both Black and American Indian Alaskan Native (AIAN) students have the lowest graduation rates, the gender gap within these populations differs. For instance, among AIAN students, 43 percent of females graduate within 6-years of enrolling in college compared to 39 percent for males. However, Black students have the largest graduation gap (45 percent for females vs. 35 percent for males) among

all ethnicities (Snyder et al., 2016). Thus, the graduation rates and gender disparities in graduation rates are most pronounced among Black students.

1.4. Role of Discrimination and Sense of Belonging in Persistence

Persistence, typically, refers to the percentage of students who complete a program or maintain their enrollment at any postsecondary institution. However, researchers tend to define persistence as an individual phenomenon that focuses on students' reaching self-determined educational goals (Reason, 2009). Commonly used conceptual frameworks of persistence and completion developed by education researchers are based on Tinto's Student Integration Model (1993) and Bean and Eaton's Psychological Model of College Student Retention (2000). This dissertation is grounded in the academic and social integration and interactions concepts outlined within these models. The importance of attention to student interactions with faculty, engagement in campus activities, and provision of support services for students throughout their college years in persistence has been continually affirmed (Braxton, 2000; Braxton et al., 2014). Social and academic interactions can be influenced by students' perception of discrimination and sense of belonging, affecting formal and informal social integration (i.e., involvement in extracurricular activities and contact with peers) and informal academic integration (i.e. interactions with faculty). A student, who feels like an outsider or experiences frequent discrimination, will be less likely to interact with faculty, staff, and peers and/or join extracurricular activities (Minikel-Lacocque, 2013).

Discrimination and sense of belonging play a role in whether a student chooses to persist and graduate. Research on ‘sense of belonging’ in higher education is emphasized within the area of persistence. Within the Tinto’s Student Integration Model, a students’ level of integration into a university’s academic and social systems depends on perceived shared values with the institution, and commitment to the institution reflects a sense of belonging (Tinto, 1993). Bean and Eaton (2000) detail a form of sense of belonging within their model as well. The Psychological Model of College Student Retention contains a reciprocal deterministic concept where students’ interactions affect and shape their level of integration within the institutional environment, which subsequently affects and shapes the frequency and quality of the students’ interactions. While both models acknowledge sense of belonging as an important factor in persistence, discrimination— unjust treatment of different categories of people or things, especially on the grounds of race, age, or sex — is not emphasized. Almost half of college students report encountering some form of prejudice on campus (Boysen, 2012). These experiences of discrimination can negatively affect persistence among students as perceived discrimination may predict lower levels of interactions over time (Tropp, Hawi, Van Laar, & Levin, 2012). A single negative interaction can alter a student’s perceptions of belonging (Tinto, 2017). Consequently, discrimination in the classrooms, on campus, and/or in the campuses’ communities-at-large has the potential to affect students’ sense of belonging and contribute to reduced persistence among those who experience discrimination (Witkow, Huynh, & Fuligni, 2015).

Furthermore, discrimination and a sense of belonging are closely related. Experiences of discrimination negatively affect students' sense of belonging and persistence, even among the most high-achieving students (Chang, Eagan, Lin, & Hurtado, 2011; Locks, Hurtado, Bowman, & Oseguera, 2008). Cultural and social isolation, negative stereotypes, low expectations from teachers and peers, and non-supportive educational environment affect underrepresented college students' academic performance and persistence decisions (Oseguera, Locks, & Vega, 2009). Students of color and women in science, technology, engineering, and mathematics (STEM) fields experience the greatest rates of discrimination. Johnson and her colleagues (2014) found that observing racism on campus, having comfortable academic interactions, stress related to the academic environment, and feelings about the campus environment had significant direct and indirect effects on persistence of students' of color. Experiencing discrimination is not limited to underrepresented racial groups. Women in STEM share similar experiences of discrimination and lack of belonging (Johnson, 2011), despite the majority of students enrolled in higher education being women (Conger & Long, 2010). Moreover, the more frequent a student perceives discriminatory actions, the less likely he or she will feel accepted or supported at his or her institution and discrimination threatens fundamental social needs for self-esteem and belonging (MacDonald & Leary, 2005). Thus, discrimination and sense of belonging may play more significant roles in college students' persistence than previously expected.

1.5. Limitations of Current Literature

A significant and growing body of literature has explored factors impacting educational outcomes and persistence among students of color, such as discrimination or a sense of belonging (Hurtado & Carter, 1997; Hurtado & Ponjuan, 2005; Strayhorn, 2012). That said, these investigations have several noteworthy limitations. First, samples are often limited to a single institution or small group of institutions (Hausmann, Ye, Schofield, & Woods, 2009; Meeuwisse, Severiens, & Born, 2010; Wells & Horn, 2015). Thus, there is limited generalizability and lack of examinations that feature large-scale nationally representative samples. Many others focus specifically on students of color (DeLaRosby & Jun, 2017; Maramba & Museus, 2013; Strayhorn, Lo, Travers, & Tillman-Kelly, 2015; Tachine, Bird, & Cabrera, 2016; Wells & Horn, 2015). Focusing on one group limits the ability to compare across racial groups. Some recent studies (e.g., Johnson, Wasserman, Yildirim, & Yonai, 2014; Xu & Webber, 2018) have included a comparison of multiple racial groups but did not examine gender differences within these groups. This is noteworthy because there are differences in persistence within racial groups between men and women (Snyder et al., 2016). This limitation is also prominent among research that examines the differences in persistence by gender. For example, a seminal article about the gender differences in persistence by Leppel (2002) did not include race as a factor. In a more recent study, Astorne-Figari and Speer (2018) omitted race in their analysis of persistence rates difference between men and women. These are noteworthy omissions, given men and women have different lived experiences, as do students from different racial groups.

1.6. Purpose of Study

The objective of this dissertation is to assess the role of discrimination and sense of belonging in college students' educational persistence. The central hypothesis is that sense of belonging and discrimination have a significant and unique impact on persistence, above and beyond the influence of relevant demographic and social factors (e.g., age, academic performance, attitudes about academics, and type of institution). The rationale for this proposed research is that quantifying the effects of sense of belonging and discrimination, and identifying who is most affected by these factors, will provide needed foundational knowledge that can then be utilized in the development and formation of interventions to increase the likelihood of persistence. The long-term goal of this research is to improve the persistence and graduation rates of college students, which ultimately increases their quality of life and reduces disparities.

1.7. Dissertation Format

The overall structure of the study takes the form of five distinct sections, which will include three manuscripts. Section 1 serves as the introduction to the dissertation. This section will provide the statement of the problem and brief review of current literature and studies examining persistence. Section 2 (Manuscript #1) compares students' sense of belonging within higher education across different racial groups and genders. Section 3 (Manuscript #2) will identify which groups (gender and racial) experience the most discrimination in higher education. Section 4 (Manuscript #3) determines the extent of the impact of discrimination and college students' sense of

belonging have on their confidence in their ability to graduate, controlling for known persistence factors. Sections 2-4 will utilize secondary data. Specifically, these sections will utilize the Healthy Minds Study (HMS) to examine the effect of discrimination and sense of belonging on persistence and to identify student groups who may be susceptible to not completing their degree as a result of their experiences or feelings of exclusion. HMS is an annual web-based survey study, developed by and collected by the Health Minds Network (HMN) at the University of Michigan, used to examine mental health, service utilization, and other related issues among college students. More details pertaining to HMS will be discussed later in this dissertation. Section 5 concludes the dissertation and outlines the overall contributions of this work, its implications, and future directions.

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2. EXAMINING DIFFERENCES IN STUDENTS' SENSE OF BELONGING BASED ON RACE AND GENDER INTERSECTIONAL IDENTITY

2.1. Introduction

Over the last several decades, retention in higher education has gained considerable attention from administrators and researchers (Demetriou & Schmitz-Sciborski, 2011). During this time, research efforts have transitioned from focusing on solely retention to persistence—a student focused approach (Graham, Frederick, Byars-Winston, Hunter, & Handelsman, 2013; Roberts & Styron, 2010; Zepke, 2015). This transition is characterized by Tinto (2017) as “students ...do not seek to be retained. They seek to persist.” Persistence is defined as continued enrollment (or degree completion) at any institution. Whether or not a student persist has been theoretically and empirically linked to numerous factors, such as academic preparation, demographic characteristics, interactions with peers and faculty, student involvement, and student integration (Astin, 1997; Tinto, 1993). Students’ sense of belonging in higher education settings, in particular, has been strongly linked to students’ ability to succeed academically and their decision to ultimately remain in, and complete, their program of study (Hurtado & Carter, 1997; Meeuwisse, Severiens, & Born, 2010; Morrow & Ackermann, 2012). Thus, sense of belonging, and the factors that could foster and/or inhibit this construct, are worth further investigation.

Students’ sense of belonging refers to their perceived social support on campus, encompassing feelings of connectedness, experience of mattering or feeling cared about,

accepted, respected, valued by, and connection to the groups on campus (Strayhorn, 2012). It is a reflection of the students' perception of social support and connectedness to their social and physical environment and their perception of academic belonging (Tinto, 2017). How a student perceives their belonging may heavily influence students' academic and social involvement at an institution, which in turn may impact their overall retention (Strayhorn, 2008b). The complex relationship between students' sense of belonging and their interactions, integration, and involvement in student life and campus community has resulted in multiple lines of research examining factors that affect college students' sense of belonging. For example, researchers have explored college students' sense of belonging through racial climate and social connectedness (Duru & Poyrazli, 2011; Johnson, Wasserman, Yildirim, & Yonai, 2014; Walton, Cohen, Cwir, & Spencer, 2012; Xu & Webber, 2018). Moreover, students' sense of belonging was found to be associated with academic progress, academic achievement, social acceptance, and intention to persist (Freeman, Anderman, & Jensen, 2007; Meeuwisse et al., 2010; Morrow & Ackermann, 2012; Strayhorn, 2012; Tovar & Simon, 2010; Walton & Cohen, 2007). Sociodemographic characteristics (i.e., race and gender) may influence how other on campus view a student's relative "fit" into the social context on campus, thereby impacting social interaction and ultimately a student's sense of belonging. Thus, this investigation focuses on determining gender and racial differences in students' perception of their belonging in higher education environments.

2.1.1. Race and Gender's Impact on Sense of Belonging

The demographics of higher education institutions have increasingly become more diverse, with women and students of color enrolling at higher rates (Berrey, 2011; Clarke & Antonio, 2012; Hussar & Bailey, 2017). As such, several researchers have investigated associations of race and/or gender with sense of belonging. Studies examining race have found that students of color often express feelings of marginalization and isolation, especially at primarily White institutions (PMIs; Chou & Feagin, 2008; Hurtado & Carter, 1997; Hurtado & Ponjuan, 2005; Maestas, Vaquera, & Zehr, 2007; Strayhorn, 2008a, 2008c; Wells & Horn, 2015). Research that examined the effects of gender on students' sense of belonging have identified field of study as a particularly meaningful context. For example, women in a male-dominated academic settings report feeling undermined, which then negatively impacts their performance and academic motivation (Deemer, Thoman, Chase, & Smith, 2014; Dresden, Dresden, Ridge, & Yamawaki, 2018; Good, Rattan, & Dweck, 2012; Hill, Corbett, & St Rose, 2010). Likewise, men in female-dominated academic disciplines such as library sciences, social work, and nursing, report feeling excluded due to their gender (Carnevale & Priode, 2018; MacWilliams, Schmidt, & Bleich, 2013; Meadus & Twomey, 2011; Morgan, Gelbgiser, & Weeden, 2013).

Though a fair amount of research explores either racial or gender differences among college students, concurrently examining the differences in the sense of belonging by race and gender may provide more detailed information on the influence of each variable. Race and gender are so entangled it is nearly impossible to explore

gendered experiences without linking them to racial identity (Pelzer, 2016; Winkle-Wagner, 2009). Race and gender converge and intersect in ways that simultaneously influence students' sense of belonging (Strayhorn, 2012). Therefore, treating any gender as a homogeneous group obscures racial and ethnic differences (Johnson, 2011) just as treating any race or ethnicity as a homogeneous group obscures gender differences.

Researching the intersectional effects of gender and race on how students perceived their belongingness in academia is becoming increasingly important considering the rapidly changing demographics in higher education. This study performs comparative analyses of the sense of belonging across racial groups and gender jointly as per Strayhorn (2012) suggestion, and aims to identify those population(s) most “at-risk” of not persisting within higher education based on their sense of belonging.

2.2. Methods

2.2.1. Instrument & Procedures

The Healthy Minds Study (HMS) is an annual web-based survey examining mental health, service utilization, and related issues among undergraduate and graduate students. HMS includes at least 180 college and universities, with over 200,000 survey respondents since 2007. HMS includes three standard modules —“Demographics,” “Mental Health Status,” and “Mental Health Service Utilization/Help-Seeking”— and twelve elective modules institutions. Participating institutions have varying student body sizes. On campuses with more 4,000 students, 4,000 students are recruited. At smaller schools (<4,000 enrollment), all students are recruited. Students had to be at least

18 years of age to participate. No other inclusion or exclusion criteria were applied. This study served as a secondary analysis of deidentified national data and was exempted from vetting by an institutional review board.

2.2.2. Sample

The sample reference group consisted of 53,760 student responses from over 54 colleges and universities. The present study examines data from the eight colleges and universities that selected the elective “Campus Climate and Culture” module of the HMS during the 2016–2017 academic year.

2.2.3. Measures

2.2.3.1. Independent variables

2.2.3.1.1. Race

HMS asked two separate questions regarding race and ethnicity. First, respondents were asked to the question “Do you consider yourself to be of Hispanic, Latina/o, or Spanish origin?” with a “Yes” (1) or “No” (2) response option. Second, respondents are asked how they usually describe their race. Respondents are allowed to select any of the following that applies: White or Caucasian (1), Black or African American (2), Asian or Asian American (3) American Indian, Native American or Alaskan Native (AIAN), (4) Middle Eastern, Arab, or Arab American (5), Pacific Islander (6), Hawaiian Native (7), or other (8).

Responses from these two questions were recoded to produce mutually exclusive categories. Four groups (i.e., White, Black, Hispanic, and Asian) were created to align with the four largest racial categories in higher education, according to groups defined in

the National Center for Educational Statistics (NCES). The respondents who identified as Pacific Islander or Hawaiian Native were grouped with Asian or Asian American students, similar to the cluster procedures employed by NCES. Respondents who identified as Middle Eastern, Arab, or Arab American ($n = 33$), AIAN, ($n = 4$), and other ($n = 494$) were excluded due to the small numbers or due the inability to accurately place them within one of the four racial group created for the study.

2.2.3.1.2. Gender

Respondents were asked how they currently identify their gender. The respondents could choose from the following answers: Male (1), Female (2), Trans-male/Trans-man (3), Trans-female/Trans-woman (4), or Genderqueer/Gender non-conforming (5). Respondents who identified as Trans-male ($n = 8$), Trans-female ($n = 3$), or Genderqueer ($n = 25$) were excluded from analysis due to low participation in HMS.

2.2.3.1.3. Race-Gender Groups

Race and gender variables were subsequently combined to create eight groups: White men, White women, Black men, Black women, Hispanic men, Hispanic women, Asian men, and Asian women.

2.2.3.2. Dependent Variable

2.2.3.2.1. Sense of Belonging

Students' sense of belonging was assessed by asking respondents to indicate how much they agree with the following statements: "I see myself as a part of the campus community;" "I fit in well at my school;" "I feel isolated from campus life. Responses for each item included "Strongly agree" (1), "Agree" (2), "Somewhat agree" (3), "Somewhat disagree" (4), "Disagree" (5), and "Strongly disagree" (6). Response scales were reverse-coded (e.g., a response of 6 was recoded as 1), so that higher responses indicated a higher sense of belonging. Next, the three items were then combined to create a composite variable ranging from 3 to 18. The Cronbach alpha for this scale was $\alpha = .853$.

2.2.4. Analytic Strategy

All data were analyzed Using Statistical Package for Social Sciences (SPSS; PASW, Version 25, SPSS, Inc., Chicago, IL). Data were analyzed for descriptive purposes through means, standard deviations, and maximum and minimum values. Then cross-tabulations for race/ethnicity and gender. Lastly, one-way between-groups analysis of variance (ANOVA) were conducted to determine the simultaneous effect of race and gender on the students' composite sense of belonging score. A Tukey's post-hoc test was utilized to examine the pairwise comparisons when overall ANOVA results were significant for group differences.

2.3. Results

Table 2-1 provides a summary of the demographic characteristics and discrimination responses. The subsample used in this investigation included 3,995 students who attend one of the eight institutions that participated in the mandatory modules, as well as the elective “Campus Climate and Culture” module of the HMS. The majority of this subsample were female. 68.2% of students identified as female, whereas 31.8% identified as men. White students were more represented than the other racial groups —72.3% were White, 7.0% were Black, 15.2% were Asian, and 5.5% were Hispanic. Most students were traditional college aged (18-22 years old), involved in extracurricular activities, and lived either on campus or in campus-affiliated housing (92%, 85%, 66%, respectively).

For analyses purposes, Students were divided into eight groups according to their racial and gender identity: White men, White women, Black men, Black women, Hispanic men, Hispanic women, Asian men, and Asian women. *Table 2-2* shows the percentage of the groups mentioned above in each field of study. Social sciences were a common field among the eight groups. Hispanic women, in particular, were more likely to major in a social science discipline than any other area of study (25.6%). Men majored in an engineering field of study more than other disciplines. Higher percentages of Asian men and women were in natural science or mathematics fields compared to percentages of other groups.

Table 2-1. Age, Extracurricular Participation, and Housing Demographic Frequency by Racial-Gender Groups

	White		Black		Hispanic		Hispanic		Asian	
	Men N = 904	Women N = 1985	Men N = 77	Women N = 203	Men N = 58	Women N = 160	Men N = 231	Women N = 377		
Age										
18	119	343	5	31	4	17	57	71		
19	189	416	18	47	11	25	65	85		
20	212	480	18	41	12	46	51	102		
21	219	472	21	35	13	30	34	81		
22	97	152	3	13	8	19	9	18		
23+	68	122	12	36	10	23	15	20		
Extracurricular										
Yes	783	1710	63	159	39	107	201	317		
No	121	275	14	44	19	53	30	60		
Housing										
Residence hall	473	1027	52	101	19	54	179	226		
On-campus, apartment	98	230	3	20	2	3	19	38		
Greek Org. house	27	59	1	0	1	4	0	1		
Co-operative housing	9	19	0	7	1	5	3	8		
non-university housing	246	486	12	46	22	58	18	49		
With my relatives	44	131	8	26	13	33	12	52		

Table 2-2 *Fields of Study by Race-Gender Identity*

Major	White		Black		Hispanic		Asian	
	Men N = 904 (%)	Women N = 1985 (%)	Men N = 77 (%)	Women N = 203 (%)	Men N = 58 (%)	Women N = 160 (%)	Men N = 231 (%)	Women N = 377 (%)
Humanities	44 4.90%	78 3.90%	1 1.30%	9 4.40%	3 5.20%	5 3.10%	4 1.70%	9 2.40%
Natural Science/Math	80 8.80%	161 8.10%	4 5.30%	8 3.90%	3 5.20%	8 5.00%	31 13.40%	47 12.50%
Social Sciences	140 15.50%	305 15.40%	14 18.40%	26 12.80%	10 17.20%	41 25.60%	31 13.40%	48 12.70%
Architecture/Urban Planning	0	1 0.10%	0	0	0	0	0	0
Art & Design	8 0.90%	27 1.40%	3 3.90%	2 1.00%	0	6 3.80%	2 0.90%	5 1.30%
Business	147 16.30%	230 11.60%	4 5.30%	15 7.40%	9 15.50%	22 13.80%	20 8.70%	22 5.80%
Education	22 2.40%	145 7.30%	2 2.60%	10 4.90%	0	3 1.90%	1 0.40%	30 8.00%
Engineering	193 21.30%	132 6.70%	15 19.70%	15 7.40%	11 19.00%	5 2.20%	70 30.30%	50 13.30%
Music, Theatre, or Dance	50 5.50%	71 3.60%	3 3.90%	0	1 1.70%	2 1.30%	1 0.40%	11 2.90%
Nursing	10 1.10%	112 5.70%	1 1.30%	27 13.30%	0	11 6.90%	5 2.20%	29 7.70%
Pharmacy	5 0.60%	14 0.70%	0	1 0.50%	1 1.70%	1 0.60%	0	6 1.60%
Pre-Professional	79 8.70%	266 13.40%	15 19.70%	30 14.80%	6 10.30%	14 8.80%	37 16.00%	62 16.40%
Public Health	19 2.10%	102 5.10%	2 2.60%	22 10.80%	1 1.70%	5 3.10%	6 2.60%	23 6.10%
Public Policy	31 3.40%	72 3.60%	3 3.90%	5 2.50%	5 8.60%	3 1.90%	3 1.30%	9 2.40%
Undecided	6 0.70%	28 1.40%	1 1.30%	9 4.40%	1 1.70%	4 2.50%	6 2.60%	8 2.10%
Other	70 7.70%	237 12.00%	8 10.50%	24 11.80%	6 10.30%	29 18.10%	14 6.10%	18 4.80%

A one-way between-groups ANOVA was conducted to explore the impact of identity (i.e., race and gender) on students' sense of belonging, as measured by the created composite variable. Students were divided into eight groups according to their racial and gender identity: White men, White women, Black men, Black women, Hispanic men, Hispanic women, Asian men, and Asian women. There was a statistically significant difference at the $p < .05$ level in sense of belonging among the eight groups $F(7, 3958) = 4.28, p < .001$ (see *Table 2-3*). It is noteworthy that there is greatest variability among Black students (see *Figure 2-1*).

Table 2-3 *Distribution of Sense of Belonging according the Racial and Gender Identity*

	Sense of Belonging Mean	SD	F value	P value
White Men	12.7086	3.56106	4.276	<.001
White Women	13.0289	3.35729		
Black Men	13.0132	3.729		
Black Women	12.0149	3.469		
Hispanic Men	12.4561	3.813		
Hispanic Women	12.4088	3.196		
Asian Men	12.7130	3.129		
Asian Women	12.3636	3.05997		

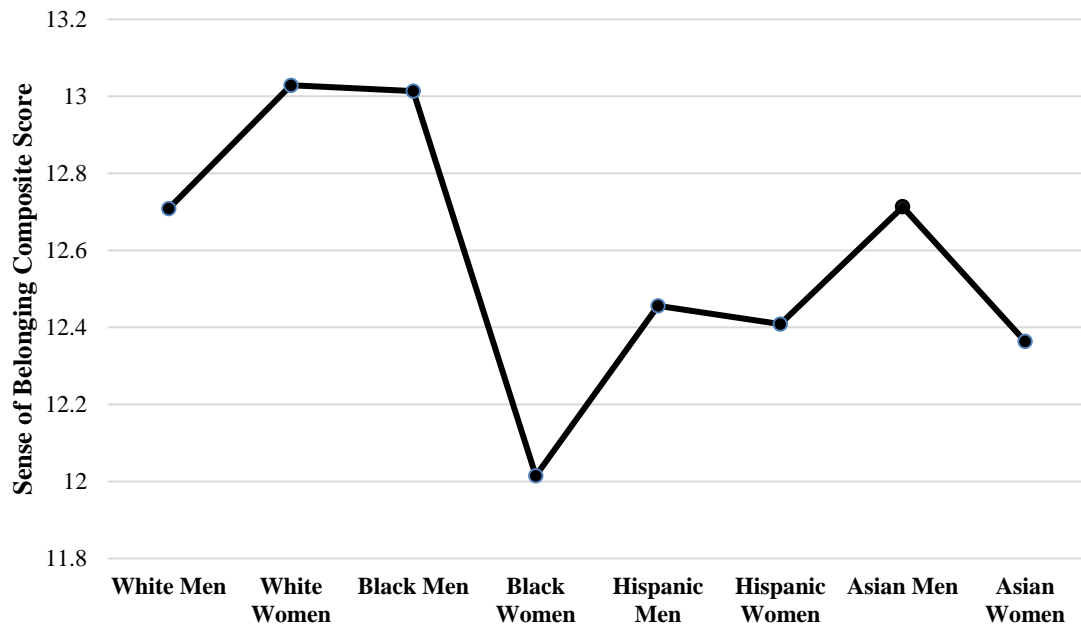


Figure 2-1 This is a mean plot graph depicting the mean sense of belonging composite score by race-gender group.

Despite reaching statistical significance, the actual difference in mean scores between the groups was quite small. The effect size, calculated using eta squared, was 0.008. White women reported the highest sense of belonging and Black women reported the lowest. *Table 2-4* shows significant differences between groups from the Post-hoc comparisons using the Tukey HSD test. White women ($n = 1970, 13.03 \pm 3.36$) significantly differed from Black women ($n = 201, 12.01 \pm 3.47$) and Asian women ($n = 374, 12.36 \pm 3.06$).

Table 2-4 Tukey HSD Post Hoc Test for comparisons: Dependent variable: Sense of Belonging Composite

		Mean Difference (I-J)	Standard Error	Sig	95% C.I.
White Women					
	Black women	1.014	0.25	0.001	[0.255, 1.773]
	Asian Women	.665	0.191	0.11	[0.087,1.243]

2.4. Discussion

Students' sense of belonging on campus influences their academic and social involvement and vice versa (Strayhorn, 2008b). Students perceive their belonging based on their daily interactions with other students, faculty, staff, and administrators on campus (Stebbleton, Soria, Huesman Jr, & Torres, 2014). Negative experiences and interactions can increase students' risks of interpersonal conflict, loneliness, anxiety, and depression. Ultimately, students' sense of belonging can affect their decision to persist in their degree program (Hausmann, Ye, Schofield, & Woods, 2009; Morrow & Ackermann, 2012; O'Keeffe, 2013). Thus, this study sought to examine the differences in students' sense of belonging between groups to better inform retention efforts.

The results of this study showed that there were significant differences between the groups analyzed. Most notably, White women report the highest sense of belonging of all the groups. Their high sense of belonging may be a result of White women making up the largest population in higher education, which is a relatively new demographic change in higher education (Snyder, de Brey, & Dillow, 2016). Historically, men have represented the majority of students in higher education and composed a higher percentage of college professors and administrators in the US, as compared to women

(McFarland et al., 2018; Parker, 2015). That said, compared to their male counterparts women have demonstrated increasing enrollment and higher graduating since 1980 (Goldin, Katz, & Kuziemko, 2006). This explanation has led researchers to examine the effects of the increased enrollment on the integration of men socially and academically to explain the gender gap in college (Ewert, 2012). However, it is important to note that in this study there were no statistically significant differences found between White women and any group of men included in this analysis.

Among our sample, Black men were found to have one of the highest sense of belonging, only scoring lower than White women. This finding was unexpected considering comparative studies that explore racial differences found Black students to have a lower sense of belonging than their peers (Baker & Robnett, 2012; Johnson et al., 2007). It is important to note that most studies separate students by race only; hence, this study grouped sample by both race and gender identity. Given that the findings of this study contrast others, the associations identified herein warrant additional examination. One possible explanation may be the high participation in extracurricular activities of the Black college men included in the analyses, given extracurricular activities have been found to encourage, foster, and increase students' sense of belonging (Murphy & Zirkel, 2015). All student who participated in the qualitative study conducted by Vaccaro and Newman (2016) stated that getting involved in out-of-class activities was connected to their sense of belonging. These activities include participating and/or taking roles in college clubs, communities or associations, and attending art, sport and music activities (Bartkus, Nemelka, Nemelka, & Gardner, 2012; Strayhorn, 2012). Another explanation

for this is the type of institutions the Black men included in the sample attend. For example, attending a minority-serving is associated with fewer mental health conditions and lower levels of alcohol consumption among Black men (Barry, Jackson, Watkins, Goodwill, & Hunte, 2017). Similarly to the effect of minority-serving institutions have on Black men's health, the type of institution students attend may also influence their belongingness. This possibility warrants further investigation to explore student's sense of belonging across different types of institutions (e.g., Predominantly White Institutions [PWIs], Historically Black College and universities [HBCUs], and Hispanic Serving Institutions [HSIs]).

Black women, on the other hand, were found to have the lowest sense of belonging when compared to their peers despite also exhibiting high participation in extracurricular activities. These findings align with previous works focusing solely on women of color in academia and their social and developmental needs based on their intersectional identity (e.g., Crenshaw, Ocen, & Nanda, 2015; Patton, Haynes, & Croom, 2017; Winkle-Wagner, 2009). This study, in addition to many others, reinforce the importance of research examining differences in students' sense of belonging, However, Black women's experience differs from Asian women, in our sample, who report the second lowest sense of belonging. Asian women tend to major in STEM disciplines that are heavily male-dominated, whereas a similar pattern for Black women cannot be ascertained from this sample. Thus, this study highlights the need for research that extends beyond STEM fields, particularly for Black women who report the lowest

sense of belonging despite a high percentage majoring in non-male dominated fields (e.g., nursing).

2.4.1. Limitations

There are limitations to consider when interpreting the results of this study. First, this investigation analyzed secondary cross-sectional data; therefore, there are limitations associated with temporality. Another limitation is that the composite variable was composed of three questions that pertained to student's sense of belonging. It is possible using a full-fledged scale specifically designed to assess sense of belonging may allow for more nuanced assessment. Lastly, this study was unable to examine all racial groups participating in the HMS (e.g., AIAN, Middle Eastern, Arab, or Arab American, and Hawaiian Native) as the representation of these populations were too small to warrant inclusion in the analyses. More participation of these underrepresented populations would allow their inclusion, thereby shedding more light on their perceived fit in higher education.

2.4.2. Conclusions

The present study indicates that Black women have the lowest sense of belonging when compared to their peers. Though additional examinations are warranted, Black women seem to have a particular need for campus strategies and spaces that affirm their experiences and presence (Steele, 2017). Students' sense of belonging in higher education is crucial as it affects their satisfaction and persistence, which is why student affairs professionals, program coordinators, and administrators have strived to improve students' sense of belonging. There have been numerous

programs developed and space created for underserved populations based on the understanding that students' identity may shape their perception of belonging to improve persistence. These "cultural enclaves" help students negotiate the psychological distance between their home cultures and an academic environment that is potentially hostile (Braxton, 2000). Note that these types of "enclave" or interventions often focus on black college men (e.g., Black Male Initiatives [BMI]) as they have one of the lowest 6-year graduation rates among all students. Findings of this study, however, highlight Black women as having especially low sense of belonging. Student's sense of belonging is related to negative mental health when it provides the means through which one is not integrated into a community and feels unneeded or unvalued (Fink, 2014; Stebleton, Soria, & Huesman Jr, 2014). Accordingly, the purpose of programs and spaces for Black women should extend beyond attempting to improve their academic performance and incorporate mental health promotion to foster individual competencies, resources, and psychological strengths, and enhance well-being (Kobau et al., 2011).

Overall, this study calls attention to the needs of Black women (Patton & Croom, 2017). Addressing these needs requires the efforts of administrators, professionals, and researchers in higher education as well as college health practitioners and researchers because mental health affects academic success and persistence (Eisenberg, Golberstein, & Hunt, 2009; O'Keeffe, 2013). With more students of color and women continuing to enroll in universities at higher rates, understanding the lack of belonging among Black women, and intervening to improve

their belongingness, will become increasingly important. Thus, institutions should continue increasing their support of women of color and organizations serving these populations to develop students' sense of belonging further and better their overall wellbeing.

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3. THE ROLE OF GENDER AND RACIAL IDENTITY IN PERCEIVED DISCRIMINATION AMONG COLLEGE STUDENTS

3.1. Introduction

Subtle and pervasive forms of discrimination exist in everyday public interactions. Researchers have discovered racial and gender biases across several settings, including consumer markets (e.g. negotiations at a car dealership, hailing a taxi, and customer service), housing (e.g. housing searches and mortgage lending), and labor markets (Brewster, 2012; Gabbidon & Higgins, 2007; Pager & Shepherd, 2008). College campuses represent a microcosm of society and reflect similar issues of racism and sexism noted in the broader society (Hurtado, Alvarado, & Guillermo-Wann, 2015). While students and faculty, alike, may experience discrimination based on their ethnicity, race, and gender, herein the focus is on discrimination experienced by students.

Discourse to improve campus climate and diversity and reduce and eliminate discrimination in higher education has gained increasing attention (Berrey, 2011; Clarke & Antonio, 2012). Undergraduate enrollment of racially/ethnically diverse students (non-White) at United States (U.S.) postsecondary institutions has nearly doubled from 20 percent in 1980 to over 40 percent in 2016 (Musu-Gillette et al., 2016). Furthermore, across all racial groups there is an expected enrollment increase of 15 percent by 2025, with larger proportional increases among students of color compared to White students (Hussar & Bailey, 2017). This increased diversity in higher education means more

interactions amongst racially/ethnically diverse students and increased opportunities for experiences of racial discrimination (Johnson, Wasserman, Yildirim, & Yonai, 2014). Moreover, there is an increasing need to prepare students to operate within a complex society including many various cultural groups, customers, and clients (Bednarz, Schim, & Doorenbos, 2010). In addition to preparing students for a diverse workforce, diverse learning environments in higher education help students sharpen their critical thinking and analytical skills, break down stereotypes, reduce biases, and increase the likelihood of students graduating from college (Hurtado, 2013).

Despite efforts to improve campus climate and diversity in higher education, college students continue to experience bias, discrimination, harassment, and negative cross-racial interactions based on their socially constructed identities (e.g., race and gender; Hurtado et al., 2015; Johnson, 2012; Laird & Niskodé-Dossett, 2010). Discriminatory experiences are risk factors for a number of health-risk behaviors, including alcohol abuse, mental health, and risky sexual behavior (Fitz & Zucker, 2015; Hatzenbuehler, Corbin, & Fromme, 2011; Schmitt, Branscombe, Postmes, & Garcia, 2014; Williams & Mohammed, 2009). In addition to negatively affecting the health and health behaviors of college students, discrimination also affects academic persistence. Relative to White college students, students who identify as Black, Hispanic, or American Indian/Alaskan Native (AIAN) show lower levels of academic persistence (Stevens, Liu, & Chen, 2018). However, these adverse effects of discrimination pose a pressing issue for researchers, practitioners, and administrators in health and higher

education administrators as all college students are not affected equally by discrimination.

Increased discriminatory experiences appear to be common across undergraduate students from non-majority racial/ethnic groups of color, compared to their White counterparts (Mallett et al., 2011; Mallett & Swim, 2009; Navarro, Worthington, Hart, & Khairallah, 2009; Rankin & Reason, 2005). Both qualitative and quantitative studies have examined discrimination among students of color (Gee, Spencer, Chen, Yip, & Takeuchi, 2007; Greer & Chwalisz, 2007; Park, Schwartz, Lee, Kim, & Rodriguez, 2013; Wagner, 2015). Although investigations of discrimination have primarily been focused on people of color, studies that include White students reveal that this group also reports experiencing racial discrimination (Pieterse, Carter, Evans, & Walter, 2010).

Racial discrimination is not the only form of discrimination present in higher education. Gender discrimination (e.g., sexism) is commonly reported by college women (Brinkman & Rickard, 2009; Fields, Swan, & Kloos, 2010). Many women experience discrimination in impersonal ways, as well as interpersonally in the form of hostility, harassment, and unjust treatment in their daily lives (Zucker, Fitz, & Bay-Cheng, 2016). Researchers have found sexist discrimination decreases women's psychological well-being (i.e., increase anxiety, stress, and depression) and negatively impacts their physical health and health behaviors (Fitz & Zucker, 2015; Pilver, Desai, Kasl, & Levy, 2011; Szymanski & Stewart, 2010; Zucker & Landry, 2007). Additionally, students who experience sexism tend to underperform academically. Women in male-dominated academic majors have high rates of attrition due to their experiences dealing with sexist

discrimination (Hill, Corbett, & St Rose, 2010; Smith, 2011). For example, within science, technology, engineering, and mathematics (STEM) fields, many college women report experiencing sexism and stereotypes about their academic ability in the classroom (Boysen, 2013; Moss-Racusin, Dovidio, Brescoll, Graham, & Handelsman, 2012). College women's experiences of gender discrimination may be one reason explaining the small percentage of female engineering and math majors (Landivar, 2013; Morgan, Gelbgiser, & Weeden, 2013).

Although gender discrimination research typically focuses on women's experiences, growing research examines the gender prejudice college men experience based on their gender and masculine identity (Brinkman, Isacco, & Rosén, 2016). While women are a small percentage of STEM majors, they represent the majority in nursing and education majors (Morgan et al., 2013). In female-dominated fields (e.g., nursing and education), men report being uncomfortable due to the prevalent stereotypes and gender bias (McLaughlin, Muldoon, & Moutray, 2010). Considering how gender can affect students' collegiate experience, it is important to include gender in analyses when determining who is most frequently discriminated against in higher education.

Experiences of discrimination – whether real or imagined – adds to the psychological stress adversely affecting educational outcomes (i.e., academic success and student retention; Ancis, Sedlacek, & Mohr, 2000; Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999; Museus, Nichols, & Lambert, 2008). These experiences shape student perceptions of prejudice and discrimination on campus, inside as well as outside of the classroom, which contribute to reduced persistence (Crisp, Taggart, &

Nora, 2015; Nora & Crisp, 2009; Stevens et al., 2018; Witkow, Huynh, & Fuligni, 2015). Despite the numerous studies investigating the role of discrimination and its effect on the persistence in higher education and health outcomes, seldom are the frequency of experienced discrimination discussed. While studies have previously compared the differences of perceived discrimination among college students of various racial groups (e.g., Stevens et al., 2018), these investigations tend to control for sex focusing only on racial discrimination. This approach is problematic as race and gender entangle making it nearly impossible to explore one without the other (Pelzer, 2016; Winkle-Wagner, 2009). Examining this intersectionality of race and gender becomes necessary to explore and explain the complex and interconnected nature of inequalities (Crenshaw, 1991). Thus, the objective of this study is to determine which students experience the most discrimination in higher education, taking race, gender, and the intersectionality of both, into account.

3.2. Methods

3.2.1. Instrument & Procedures

The Healthy Minds Study (HMS) is an annual web-based survey examining mental health, service utilization, and related issues among undergraduate and graduate students. HMS includes at least 180 college and universities, with over 200,000 survey respondents since 2007. HMS includes three standard modules —“Demographics,” “Mental Health Status,” and “Mental Health Service Utilization/Help-Seeking”— and twelve elective modules institutions. Participating institutions have varying student body

sizes. On campuses with more 4,000 students, 4,000 students are recruited. At smaller schools (<4,000 enrollment), all students are recruited. Students had to be at least 18 years of age to participate. No other inclusion or exclusion criteria were applied. This study served as a secondary analysis of deidentified national data and was exempted from vetting by an institutional review board.

3.2.2. Sample

The sample reference group consisted of 53,760 student responses from over 54 colleges and universities. The present study examines data from the eight colleges and universities that selected the elective “Campus Climate and Culture” module of the HMS during the 2016–2017 academic year. The subsample used in this investigation included students who attend one of the institutions mentioned above.

3.2.3. Measures

3.2.3.1. Independent variables

3.2.3.1.1. Race

HMS asked two separate questions regarding race and ethnicity. First, respondents were asked to respond to the question “Do you consider yourself to be of Hispanic, Latina/o, or Spanish origin?” with a “Yes” (1) or “No” (2). Second, respondents are asked how they usually describe their race. Respondents are allowed to select any of the following that applies: White or Caucasian (1), Black or African American (2), Asian or Asian American (3) American Indian, Native American or Alaskan Native (AIAN), (4) Middle Eastern, Arab, or Arab American (5), Pacific Islander (6), Hawaiian Native (7), or other (8). Responses from these two questions were

recoded to produce mutually exclusive categories. Four groups (i.e., White, Black, Hispanic, and Asian) were created to align with the four largest racial categories in higher education according to racial groups defined in the National Center for Educational Statistical (NCES). The respondents who identified as Pacific Islander or Hawaiian Native were grouped with Asian or Asian American students, similar to how the NCES groups these students together. Respondents who identify as Middle Eastern, Arab, or Arab American ($n = 33$), AIAN, ($n = 4$), and other ($n = 494$) were excluded due to the small numbers or due the inability to accurately place them within one of the four racial group created for the study.

3.2.3.1.2. Gender

Respondents were asked how they currently identify their gender. The respondents could choose from the following answers: Male (1), Female (2), Trans-male/Trans-man (3), Trans-female/Trans-woman (4), or Genderqueer/Gender non-conforming (5). Respondents who identified as Trans-male ($n = 8$), Trans-female ($n = 3$), or Genderqueer ($n = 25$) were excluded from analysis due to low participation in HMS.

3.2.3.2. Dependent Variable

3.2.3.2.1. Discrimination

Respondents were asked, “In the past 12 months, how many times have you been treated unfairly because of your race, ethnicity, gender, sexual orientation, or cultural background?” Possible response options for this question include “Never” (1), “Once in a while” (2), “Sometimes” (3), “A lot” (4), “Most of the time” (5), and “Almost all of the time” (6).

3.2.4. Analytic Strategy

Using Statistical Analysis System (SAS; Version 9.4., SAS Institute Inc., Cary, NC), several descriptive analyses (i.e., frequency, cross-tabulations), were run to provide sample demographic information. An ordinal logistic regression was conducted to determine whether gender and race predict the frequency of discriminatory experiences within the past year. Odds ratios and 95% confidence intervals are reported.

3.3. Results

Table 3-1 provides a summary of the demographic characteristics and discrimination responses. The subsample used in this investigation included 3,995 students who attend one of the eight institutions that participated in the elective “Campus Climate and Culture” module of the HMS. The majority of the students were identified as female (68.2%), whereas 31.8% identified as men. White students were more represented than the other racial groups. 72.3% were White, 15.2% were Asian, 7.0% were Black, and 5.5% were Hispanic. The table shows that slightly over three percent report experiencing discrimination “A lot,” “Most of the Time,” “Almost All the Time”. A higher percentage of Black students report experiencing discrimination compared to other students.

Table 3-1 Gender and Discrimination by Race

	All	White	Black	Hispanic	Asian
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
Gender					
Female	2725 (68.2)	1985 (68.7)	209 (72.5)	160 (73.4)	377 (62.0)
Male	1270 (31.8)	904 (31.3)	77 (27.5)	58 (26.6)	231 (38.0)
Discrimination					
Never	2168 (53.7)	1766 (60.4)	75 (26.3)	117 (53.2)	210 (34.2)
Once in a while	1267 (31.4)	826 (28.3)	112 (39.3)	72 (32.7)	257 (41.9)
Sometimes	460 (11.4)	257 (8.8)	72 (25.3)	20 (9.1)	111 (18.1)
A Lot	110 (2.7)	58 (2.0)	20 (7.0)	8 (3.6)	24 (3.9)
Most of the Time	25 (0.6)	8 (0.3)	5 (1.8)	2 (0.9)	10 (1.6)
Almost All the Time	11 (0.3)	7 (0.2)	1 (0.4)	1 (0.5)	2 (0.3)

The results of ordinal logistic regression indicated that reported frequency of discrimination significantly varies (*see Table 3-2*). Women had 1.49 (95% CI [1.208, 1.841]) times the odds of experiencing discrimination compared to men, and students of color significantly reported more discrimination than White students. Overall, Black students reported experiencing discrimination most frequently. Black students had 4.294 (95% CI [3.32, 5.554]) times the odds of experiencing discrimination more frequently, compared to White students. Hispanic students had increased odds (OR: 1.78, 95% CI [0.972, 1.805]) of reporting discrimination than White students, but not statistically significantly more. Lastly, Asian students had a 2.833 (95% CI [2.381, 3.371]) increased odds of experiencing discrimination than White students. Despite students of color experiencing discrimination more often compared to White students, there are significant differences between Black, Hispanic, and Asian students. Black students had a 3.242 (95% CI [2.205, 4.764]) times increase in their odds of reporting more frequent

discrimination than Hispanic students and a 1.516 (95% CI [1.139, 2.017]) times increase in their odds of reporting a higher frequency of discrimination. Hispanic students has a 0.468 (95% CI [0.334, 0.654]) times decrease in the odds of reporting a higher frequency.

Table 3-2 Summary of Ordinal Logistic Regression Analysis

		Estimate	Standard Error	Odds Ratio	Z	Pr > z 	95% C.I
Gender							
	Female	0.3998	0.1074	1.4915	3.72	<.001	[1.208, 1.841]
<i>Note. Male is the reference group. *p<.05 **p<.001</i>							
Race							
	Black	1.4573	0.1312	4.294	11.11	<.0001	[3.32, 5.554]
	Hispanic	0.281	0.157	1.325	1.78	0.0746	[0.972, 1.805]
	Asian	1.0413	0.0887	2.833	11.74	<.0001	[2.381, 3.371]
<i>Note. White is the reference group. *p<.05 **p<.001</i>							

There were differences in frequency of reported perceived discrimination based on students' intersectional identity. White women had a 1.482 (95% CI [1.26, 1.742]) times increase in their odds of experiencing discrimination than White men; however, when compared to other male groups they faced less discrimination. Compared to Black men, White women report 0.324 times the discrimination (95% CI [0.213, 0.494]). Compared to Hispanic men, White women report 1.13 times the discrimination (95% CI [0.669, 1.912]); and compared to Asian men, White women report 0.558 times the discrimination (95% CI [0.432, 0.721]). Similarly to the significant differences in

reported discrimination between White men and White women, women of color reported more discrimination than their male counterparts of the same racial identity, Compared to Hispanic men, Hispanic women report a 1.515 times increased odds of discrimination (95% CI [0.834, 2.751]). Asian women reported a 1.68 times increase in the odds of discrimination (95% CI [1.243, 2.286]) compared to Asian men.

3.4. Discussion

The objective of this study was to determine which students experience the most discrimination in higher education. The findings highlight the differences in the frequency groups of students encounter discrimination based on their racial, gender, and intersectional identity. White students (men and women alike) experienced discrimination less often than men and women of color (i.e., Black, Hispanic, and Asian). This corroborates previous work comparing the frequency of discriminatory experiences among different races of students (e.g., Pieterse et al., 2010; Stevens et al., 2018).

While women within this sample generally report experiencing discrimination more frequently than their male counterparts of the same racial identity, this trend did not reflect the experiences of Black student respondents. Black students in this sample (both men and women) reported a similar frequency of discrimination. In other words, discrimination differs based on students' gender identity for the other three ethnic groups included in the analyses, yet was consistently experienced by Black students.

The current study found that students' odds of experiencing discrimination varied based on their students' intersectional identity. Black men report a significantly higher frequency of discriminatory experiences compared to their other male counterparts. Black men report experiencing discrimination almost twice as frequently than Asian men (95% CI [1.068, 2.773]), nearly three and half times as often as Hispanic men (95% CI [1.798, 6.766]), and almost four and half times more frequently than White men [2.957, 7.061]). Similarly, Black women have higher odds for experience discrimination than other female counterparts. Compared to Asian women, Black women are 1.335 (95% CI [0.976, 1.827]) more likely to perceive discrimination. While that comparison was not significant, the differences between Black women and the other two groups of women are significant. Black women report experiencing discrimination three times as frequently as Hispanic women (95% CI [2.04, 4.449]), and nearly four times as often as White women (95% CI [3.083, 5.283]).

These findings suggest Black students experience discrimination significantly more than their peers. The discriminatory experience these students face can have a profound impact on their psychological and physical health, as well as their odds of graduating (Carter, Lau, Johnson, & Kirkinis, 2017; Pascoe & Smart Richman, 2009; Stevens et al., 2018). While it is important to acknowledge the impact discrimination has on Black students, as they are more likely to experience discrimination directly, it is also important to note that effects are not limited to this group. Discrimination was experienced, to some degree, for all student groups examined. Smith, Jaurique, and Ryan (2016) found that even students who observed, but did not experience, discrimination

reported more depression, more anxiety, and lower academic engagement. People who are not the targets of discrimination may be more likely to witness prejudice and discrimination (Sabat, Martinez, & Wessel, 2013). Therefore, discrimination can affect the health and performance of the whole student body as well as change students' perception of the effects campus climate and morale.

3.4.1. Limitations

While the present study has many strengths, including randomly selected undergraduates from multiple campuses, there are limitations to consider when interpreting the results of this study. First, this investigation analyzed secondary cross-sectional data; therefore, there are limitations associated with the survey question as well as self-reporting. For example, the discrimination question, used as the dependent variable in this study, was the only one included in HMS. It was not specific to racism or sexism nor does it specify the locale of these experiences (i.e., occurring in the classroom or campus setting), all of which would add depth to the investigation and help provide better recommendations for administrators and practitioners in higher education. Thus, we cannot untangle the nuances of the discrimination experienced, or identify the perceived source (i.e., race, culture, sexual orientation) of the discrimination. Second, this study was unable to examine all the racial groups who participated in the HMS (e.g., American Indian, Native American or Alaskan Native (AIAN), Middle Eastern, Arab, or Arab American, and Hawaiian Native) as these populations were too small to include in the analyses. Having more substantial participation of these smaller populations would shed additional light on the lived experiences of these populations in higher education as

AIAN students' six-year graduation rates are almost as low as Black students (Snyder, de Brey, & Dillow, 2016). Determining whether AIAN experience discrimination as often as Black students may elucidate the connection between perceived discrimination and persistence in higher education.

3.4.2. Conclusion

With institutions of higher education becoming increasingly diverse, it is critical to understand how the lived experiences of discriminated peoples affect their academic outcomes and well-being. Discriminatory experiences impact both the students who directly experience discrimination, as well as persons who witness the prejudice and discrimination. Universities nationwide have taken efforts to provide a hospitable, safe, and non-discriminatory learning, living, and working environment to improve campus climate and retention; however, researchers have recognized the difficulty in finding actionable implications from studies focused on race, ethnicity, and gender (Reason, 2009). The present study explored the frequency in which a student perceived discrimination based on their racial and gender identity. Generally, the results indicate that identifying as a woman was associated with experiencing more frequent discrimination among all racial groups, except for Black men and women who equally perceive the most discrimination. Overall, Black college students participating in this investigation reported far and away the highest rates of discrimination experiences. Future investigations must unpack discrimination experiences so that more fine-grain interventions can be developed. Specifically, it is important to determine whether persons experience discrimination as a result of physical (skin color), social (sexual

orientation) or cultural characteristics. Understanding campus climate and the combined impact of race and gender identity that may manifest in gendered racism is important for researchers, practitioners, and administrators to continue working to improve the wellbeing of college students and ensure retention of underrepresented students in higher education.

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4. PERCEIVED DISCRIMINATION, SENSE OF BELONGING, AND COLLEGE STUDENTS' CONFIDENCE IN THEIR ABILITY TO GRADUATE

4.1. Introduction

Student persistence in college is one of the central issues in higher education. Researchers, practitioners, and administrators alike have devoted a substantial amount of time examining student persistence and improving degree completion in postsecondary education (Aljohani, 2016; Braxton et al., 2014; Habley, Bloom, & Robbins, 2012). Research to understand persistence and efforts to improve retention continue is becoming increasingly important as more people of color and women enroll in higher education. (Hussar & Bailey, 2017; Reason, 2009). However, many students who enroll in higher education fail to persist until graduation. Several factors, such as academic preparation, demographic information, interactions with peers and faculty, institutional fit, socioeconomic status, student involvement, and student integration, influence the decision of students to persist (Astin, 1997; Bean & Eaton, 2000; Tinto, 1993).

4.1.1. Discrimination and Persistence

Discrimination, though not explicitly mentioned in retention theories such as Tinto's Model of Student Departure (1975, 1993) and Bean and Eaton's Psychological Model of Student Retention (2000), is an important factor influencing students and their decision to continue in higher education. For instance, perceptions of discrimination on campus, (both inside and outside of the classroom), contribute to reduced persistence (Nora & Crisp, 2009; Witkow, Huynh, & Fuligni, 2015). Moreover, research has found

that students who experience discrimination second-hand-hand (i.e., observe or witness discrimination) are similarly affected as the students who experienced it themselves (Smith, Jaurique, & Ryan, 2016). Whether experiences first- or second-hand, discrimination increases students' academic stress and diminishes their feelings about the campus environment, which can ultimately impact their intention to persist (Johnson, Wasserman, Yildirim, & Yonai, 2014).

Common forms of discrimination examined in published higher education persistence literature include racial discrimination, gender discrimination, and heterosexist discrimination. Race-based discrimination adds psychological stress that adversely affects academic success and intent to persist (Museus, Nichols, & Lambert, 2008; Stevens, Liu, & Chen, 2018; Wei, Ku, & Liao, 2011). College women who experience gender discrimination or sexism within their field of study tend to underperform academically (Lewis et al., 2017; Lord et al., 2009). Students who identify as lesbian, gay, bisexual, queer, and other sexual minority students (LGBQ+) experience interpersonal sexual orientation discrimination, ranging from subtle insults to blatant physical violence, on college campuses, which can interfere with their academic development and persistence (Mathies et al., 2019; Rankin, Weber, Blumenfeld, & Frazer, 2010; Silverschanz, Cortina, Konik, & Magley, 2008; Woodford & Kulick, 2015). Perceived and experienced discrimination have been found to negatively impact even the most high-achieving students (Chang, Eagan, Lin, & Hurtado, 2011; Locks, Hurtado, Bowman, & Oseguera, 2008).

4.1.2. Students' Sense of Belonging and Persistence

Students' sense of belonging in higher education refers to how they perceived social support on campus and whether they feel connected (Johnson et al., 2014; Strayhorn, 2012). Sense of belonging is shaped by the broader campus climate and the perceptions of belonging that students derive from their daily interactions with other students, faculty, staff, and administrators on campus, as well as the verbal and nonverbal messages conveyed during those interactions (Hurtado & Ponjuan, 2005; Stebleton, Soria, Huesman Jr, & Torres, 2014; Tinto, 2017). The more frequent students perceive discrimination within these interactions, the less likely they will feel accepted or supported at their institution. In turn, there is an increased likelihood these students may experience cultural and social isolation and think of their environment as non-supportive (Oseguera, Locks, & Vega, 2009; Xu & Webber, 2018). Students' perception of their belonging influences their academic progress, academic achievement and social acceptance (Freeman, Anderman, & Jensen, 2007; Meeuwisse, Severiens, & Born, 2010; Walton & Cohen, 2007). Students who perceive themselves as belonging are more likely to persist due to an increased willingness to engage help seeking behaviors, such as going to professor office hours, meeting with academic advisor(s), and utilizing academic support services (Hausmann, Schofield, & Woods, 2007; Walton, Cohen, Cwir, & Spencer, 2012). The relationship between students' sense of belonging and a myriad of academic outcomes is why O'Keeffe (2013) emphasizes the importance of developing a 'sense of belonging' for the retention of students, especially for those who are considered to be at risk of non-completion (i.e., students of color, academically

disadvantaged students, students with disabilities, students of low socioeconomic status, probationary students, first generation college students, and students with mental illness).

According to Bean and Eaton (2000), when students are academically and socially integrated, they form positive attitudes about the institution which influences their intent to persist, and ultimately, their actual persistence (as cited in Rodgers & Summers, 2008). Discrimination and sense of belonging influence students' integration and persistence. A number of studies have previously examined how students' sense of belonging impacts their overall persistence (Hausmann, Ye, Schofield, & Woods, 2009; Meeuwisse et al., 2010; Morrow & Ackermann, 2012; Vaccaro & Newman, 2016), and a few seek to understand how discrimination uniquely impacts academic performance and persistence (Hartley, 2011; Roberts & Styron, 2010; Stevens et al., 2018).

Discrimination and sense of belonging, to the author's knowledge, have not been analyzed within the same study. As such, it is not yet clear if the impact of discrimination exists, above students' sense of belonging—the more well-established predictor of persistence. Therefore, this study aims to establish the extent to which discrimination influences students' confidence in their ability to graduate, beyond sense of belonging and other known factors impacting student persistence.

4.2. Methods

4.2.1. Instrument & Procedures

The Healthy Minds Study (HMS) is an annual web-based survey examining mental health, service utilization, and related issues among undergraduate and graduate students. HMS includes at least 180 college and universities, with over 200,000 survey respondents since 2007. HMS includes three standard modules —“Demographics,” “Mental Health Status,” and “Mental Health Service Utilization/Help-Seeking”— and twelve elective modules institutions. Participating institutions have varying student body sizes. On campuses with more 4,000 students, 4,000 students are recruited. At smaller schools (<4,000 enrollment), all students are recruited. Students had to be at least 18 years of age to participate. No other inclusion or exclusion criteria were applied. This study served as a secondary analysis of deidentified national data and was exempted from vetting by an institutional review board.

4.2.2. Sample

The sample reference group consisted of 53,760 student responses from over 54 colleges and universities. The present study examines data from the eight colleges and universities that selected the elective “Campus Climate and Culture” module of the HMS during the 2016–2017 academic year. The subsample used in this investigation included students who attended one of the institutions mentioned above and full completed the corresponding questions to the variables listed below.

4.2.3. Measures

4.2.3.1. Independent Variables

4.2.3.1.1. Sense of Belonging

Students' sense of belonging was assessed by asking respondents to indicate how much they agree with the following statements: "I see myself as a part of the campus community;" "I fit in well at my school;" "I feel isolated from campus life. Responses for each item included "Strongly agree" (1), "Agree" (2), "Somewhat agree" (3), "Somewhat disagree" (4), "Disagree" (5), and "Strongly disagree" (6). Positively worded items were reverse-coded (e.g., a response of 6 was recoded as 1). After recoding, the three items were then combined to create a composite variable ranging from 3 to 18, with higher scores indicated a higher sense of belonging. The Cronbach alpha for this scale was .833.

4.2.3.1.2. Discrimination

Respondents were asked, "In the past 12 months, how many times have you been treated unfairly because of your race, ethnicity, gender, sexual orientation, or cultural background?" Possible response options for this question include "Never" (1), "Once in a while" (2), "Sometimes" (3), "A lot" (4), "Most of the time" (5), and "Almost all of the time" (6).

4.2.3.2. Dependent Variable

4.2.3.2.1. Confidence in Finishing Degree

Student persistence was assessed by asking respondents to indicate how much they agree with the statement "I am confident that I will be able to finish my degree no

matter what challenges I may face.” Possible response options for each item included “Strongly agree” (1), “Agree” (2), “Somewhat agree” (3), “Somewhat disagree” (4), “Disagree” (5), and “Strongly disagree” (6).

4.2.4. Analytic Strategy

Using Statistical Package for Social Sciences (SPSS; PASW, Version 25, SPSS, Inc., Chicago, IL) a hierarchal (sequential) multiple regression assessed the relationship between sense of belonging, frequency of discriminatory experiences and students’ confidence in his or her ability to graduate despite any obstacles, while controlling for the influence of numerous confounding variables. Specifically, five control variables—age, number of years in program, extracurricular involvement, average number of hours worked per week, and housing—were included in the model to account for potential confounding effects. Age was included as a control variable given traditionally aged students, who range in age from 18-24, are more likely to persist due to less work and family constraints compared to their non-traditional peers (Lord, Bjerregaard, & Hartman, 2013). Number of years in program were also controlled because the longer a student is in their degree the higher the likelihood they will graduate, which may be why numerous focus their efforts on first-year students and there is less research examining retention and graduation after that initial year (Astin et al., 2012). Whether a respondent lived on or off campus was included as a control variable, as residency impacts persistence among college students (Schudde, 2011). Extracurricular involvement was included as a control given as participation in intramural sports teams, fraternities, and learning communities encourage a sense of belonging (Hu, 2011). Finally, the average

number of hours worked per week during the school year was included as a control variable. Some research finds the more hours students work, the more they are pulls them away from accomplishing their educational goals (Arana, Castañeda-Sound, Blanchard, & Aguilar, 2011; Palmer, Davis, & Hilton, 2009; Perna, 2010).

4.3. Results

Table 4-1 provides a summary of the demographic characteristics and discrimination responses. The subsample used in this investigation included 3,995 students who attend one of the eight institutions that participated in the mandatory modules as well as the elective “Campus Climate and Culture” module of the HMS. 72.6% of students identified as female, whereas 27.4% identified as men. White students were more represented than the other racial groups —71.6% were White, 5.4% were Black, 10.5% were Asian, and 11.5% were Hispanic. The sample included 57% of students who worked, 70% who participated in extracurricular activities than those who were not involved, and 64% who lived off-campus. Asian and Black students report more frequent discrimination than Hispanic and White students, yet Black and Hispanic students score a lower sense of belonging compared to Asian and White students.

Table 4-1 Control Variable Frequency by Race

	All <i>N</i> = 1226	White <i>N</i> = 878	Black <i>N</i> = 67	Hispanic <i>N</i> = 142	Asian <i>N</i> = 129
Gender					
Female	890	632	53	117	88
Male	336	246	14	35	41
Housing					
On-campus	443	365	12	30	36
Off-campus	783	513	55	122	93
Extracurricular Activities					
Yes	869	661	34	94	80
No	357	217	33	58	49
Work					
No Job	529	393	21	50	65
Less than 20 hours	383	280	13	49	41
More than 20 hours	314	205	33	53	23
Discrimination					
Mean	1.65	1.53	2.17	1.65	1.97
<i>SD</i>	.849	.779	.961	.857	.934
Sense of Belonging					
Mean	12.77	12.32	12.12	12.16	12.48
<i>SD</i>	3.40	3.40	3.55	3.40	3.05

Table 4-2 shows the correlations among all the variables included in the study. A higher confidence in ability to graduate was consistently associated with greater number of years in school, participation in extracurricular activities, a higher sense of belonging, and lower perceived discrimination. Age, housing, and number of hours worked per week were not significantly associated with student's confidence in their ability to

graduate. In summary, student’s sense of belonging and discrimination were found to be potent predictors of confidence in student’s ability to graduate despite any obstacle.

Table 4-2 *Correlation Matrix of Study Variables.*

Variables	Intent to persist	Age	Year in School	Housing	Extra-curricular	Work	Discrimination	Sense of belonging
Intent to persist	—	-0.012	-0.105	0.033	-0.097	0.021	0.089	-0.232
Age	-0.012	—	0.357	-0.336	-0.252	0.359	-0.028	-0.081
Year in School	-0.105	0.357	—	-0.495	-0.068	0.251	0.012	-0.088
Housing	0.033	-0.336	-0.495	—	0.280	-0.297	0.007	0.164
Extracurricular	-0.097	-0.252	-0.068	0.280	—	-0.296	0.088	0.297
Work	0.021	0.359	0.251	-0.297	-0.296	—	0.066	-0.116
Discrimination	0.089	-0.028	0.012	0.007	0.088	0.066	—	-0.068
Sense of belonging	-0.232	-0.081	-0.088	0.164	0.297	-0.116	-0.068	—

Hierarchical multiple regression assessed the ability of discrimination and students’ sense of belonging to predict to students’ confidence in their ability to persist through graduation, after controlling for age, extracurricular activity participation, housing, and number of years in their degree program. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Age, extracurricular activity participation, housing, and number of years in their degree program were entered at Step 1, explaining 2.3% of the variance in persistence. After entry of students’ sense of belonging at Step 2,

the total variance explained by the model as a whole was 7.2%, $F(6, 1178) = 15.104$, $p < .001$. The sense of belonging measure explained an additional 4.9% of the variance in intention to persist, after controlling for age, number of years in their degree program, extracurricular activity participation, housing, and numbers of hours worked, R squared change = .049, F change (1, 1172) = 62.223, $p < .001$. After entering discrimination at Step 3, the total variance explained by the model as a whole was 7.8%, $F(7, 1171) = 14.112$, $p < .001$. In the final model, three measures were statistically significant: number of years in school, students' sense of belonging, and discrimination. See *Table 4-3*.

Table 4-3 Summary of Regression Analysis for Variables Predicting Intention to Persist

Variables	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Constant	1.929	0.147		2.54	0.163		2.401	0.17	
How old are you?	0	0.006	-0.002	0.001	0.006	0.006	0.002	0.006	0.009
What year are you in your current degree program?	-0.084	0.026	-0.111**	-0.092	0.025	-0.121**	-0.092	0.026	-0.121**
Do you live on-campus? (Yes)	0.022	0.064	0.012	0.053	0.062	0.029	0.053	0.062	0.029
Do you participate in any extracurricular activities? (Yes)	-0.196	0.06	-0.102**	-0.071	0.061	-0.37	-0.092	0.061	-0.048
What is the average number of hours you work per week during the school year?	0.002	0.002	0.023	0.001	0.002	0.02	0.001	0.002	0.012
Composite Sense of Belonging Score				-0.059	0.008	-0.234**	-0.057	0.008	-0.226**
In the past 12 months, how many times have you been treated unfairly because of your race, ethnicity, gender, sexual orientation, or							0.079	0.029	0.079**
R^2		0.023			0.072			0.078	
F		5.400**			15.106**			14.112**	

Note. SE = standard error;
* $n < .01$ ** $n < .001$

4.4. Discussion

The goal of this study was to assess if discrimination impacted students' confidence in their ability to persist, after controlling for known factors such as students' sense of belonging. The results indicate that discrimination is significantly related to students' belief that they will graduate no matter the obstacles they face. This finding broadly supports the work of other studies in linking discrimination to persistence. Researchers found that college student perceptions of prejudice and discrimination on campus and within the classroom influence persistence—in this case students' confidence in their ability to graduate (Museus et al., 2008; Witkow et al., 2015).

Overall, findings have clear implications for higher education, highlighting the need to engage in meaningful efforts to reduce perceived and experienced discrimination. In particular, non-majority racial/ethnic groups of color report more discriminatory experiences, compared to their White counterparts (Mallett et al., 2011; Mallett & Swim, 2009; Navarro, Worthington, Hart, & Khairallah, 2009; Rankin & Reason, 2005). Moreover, students of color persist at even lower rates than their White peers (Musu-Gillette et al., 2016; Snyder, de Brey, & Dillow, 2016). Thus, programs and strategies designed to foster communities that embrace diversity of race and culture would be particularly impactful. For example, Black Male Initiatives (BMI) programs have been found to serve a critical role in supporting Black males' retention and persistence efforts, providing a space where they could develop close-knit bonds and garner academic and social support (Brooms, 2018; Brooms & Davis, 2017; Harper &

Kuykendall, 2012). While more of these programs and spaces are being created, future research should evaluate these programs' effectiveness.

Lesbian, gay, bisexual, queer, and other sexual minority students (LGBQ+) also report frequent discrimination, which may explain the lower educational attainment of sexual minority women and students who identify as bisexual (Fine, 2014; Mollborn & Everett, 2015). Thus, strategies to foster acceptance of students of varying sexual and gender identities would also help foster sense of belonging and greater educational achievement. These strategies involve careful consideration given the growing complexities of LGTQ+ students. Bazarsky, Morrow, and Javier (2015) point out examples of how higher education professionals who are trying to support sexual minority students sometimes may help them feel alienated such as the use of "binary" pronouns and well-intentioned sexual health programs that assumes all students are or desire to be sexually active. Luckily, there are programs similar to the BMI programs develop for LGBQ+ college students such as Campus Pride that support enhance student leaderships involvement and create inclusive college environments for sexual minority college students (Garvey, Rankin, Beemyn, & Windmeyer, 2017). Beyond these spaces, more colleges and universities are using more inclusive language (i.e., non-binary pronouns), adding "gender identity and/or expression" to their nondiscrimination policies; creating gender-inclusive bathrooms, locker rooms, and housing options (Airton, 2018; Rankin & Beemyn, 2012). According to anonymous online surveys, sexual minority college students at institutions offering courses related to LGBQ+ issues

were reported with lower levels of perceived discrimination (Woodford, Kulick, Garvey, Sinco, & Hong, 2018).

Influences on students' persistence decisions and behaviors are not unidimensional; therefore our solutions cannot be either (Reason, 2009). Braxton (2000) suggest the importance of subcultures to the persistence of student from traditionally underrepresented student groups—"cultural enclaves"— to help students to negotiate the psychological distance between their home cultures and an academic environment that is potentially hostile. Student affairs professionals, program coordinators, and administrators have strived to improve persistence by improving students' sense of belonging and creating a more inclusive environment.

4.4.1. Limitations

While the present study has many strengths including randomly selected undergraduates from multiple campuses, there are limitations to consider when interpreting the results. First, this investigation analyzed secondary cross-sectional data. Second, this investigation inherits the limitations of the HMS. For example, the discrimination question, used as the dependent variable in this study, was the only one included in HMS. It was not specific to racism or sexism or heterosexism, which would add depth to the investigation and help provide better recommendations for administrators and practitioners in higher education. Additionally, this investigation used a single item to capture student's confidences in their ability to graduate. Using validated scales such as Academic Resilience Scale (ARS-30) may provide more realistic measure for persistence opposed to the construct used in this study.

4.4.2. Conclusions

A natural progression of this work is to utilize more nuanced measures to examine differences in student's sense of belonging and perceived discrimination across racial, gender, and sexual orientation groups. These future studies can help identify students who may be at risk of dropping out of higher education. Looking beyond just demographics and academic preparedness will enable college personnel to modify the university environment to better prepare our students for degree attainment (Morrow & Ackermann, 2012). Students in this current sample who experienced discrimination on their campus reported less confidence in persisting through graduation than those who experience less discrimination. College administrators who seek to improve graduation and retention rates should consider implementing strategies and programs designed to decrease discrimination and foster sense of belonging among all students.

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5. CONCLUSIONS

The objective of this dissertation is to assess the role of discrimination and the sense of belonging in college students' educational persistence. The central hypothesis is that sense of belonging and discrimination have a significant and unique impact on persistence above and beyond the influence of relevant demographic and social factors (e.g., age, academic performance, attitudes about academics, and type of institution). The secondary objective was to identify populations who experience the most discrimination and report the lowest sense of belonging when compared to their peers. The rationale for this proposed research is that quantifying the effects of sense of belonging and discrimination, and identifying college students most affected by these factors, will provide needed foundational knowledge that can be utilized to develop interventions to increase persistence among college students. The long-term goal of this research is to improve the persistence and graduation rates of college students.

This dissertation utilized the Healthy Minds Study (HMS) to accomplish two goals: 1) identify student groups who might be at risk of not completing their degree as a result of their experiences or feelings of exclusion and 2) examine the effects of discrimination and sense of belonging on persistence. HMS is an annual web-based survey study, developed by and collected by the Health Minds Network (HMN) at the University of Michigan, used to examine mental health, service utilization, and other related issues among college students. Three standard modules (i.e., Demographics, Mental Health Status, and Mental Health Service Utilization) were fielded at all

participating institutions. Beyond the module mentioned above, participating institution could choose two of the twelve elective modules that follow: Substance Use, Sleep (half module) Eating and Body Image, Sexual Assault, Overall Health, Knowledge and Attitudes about Mental Health and Mental Health Services, Upstander/Bystander Behaviors (half module), Campus Climate and Culture, Competition, Resilience and Coping, Persistence and Retention, and Financial Stress. The institutions that elected to field the “Campus Climate and Culture” module were included in the analyses.

5.1. Summaries of Studies

Section 2 (Manuscript #1) compared students’ sense of belonging within higher education across different race and gender groups. To do so, eight groups— White men, White women, Black men, Black women, Hispanic men, Hispanic women, Asian men, and Asian women— were created. One-way between-groups analysis of variance (ANOVA) was conducted to determine if group differences were based on racial and gender identity based on the students’ composite sense of belonging score. There were significant differences between the Post-hoc comparisons using the Tukey HSD test. White women ($n = 1970$, 13.03 ± 3.36) significantly differed from Black women ($n = 201$, 12.01 ± 3.47) and White women also significantly differed from Asian women ($n = 374$, 12.36 ± 3.06). These results reveal that White women have the highest sense of belonging though no statistically significant differences found between White women and any group of men included in this analysis. Black men reported the second highest sense of belonging, which is a difference to Black women who reported the lowest of all

groups. This study, in addition to many others, reinforces the importance of research examining differences in students' sense of belonging based on their intersectional identity (i.e., race and gender).

Section 3 (Manuscript #2) aimed to identify which students experience the most discrimination in higher education, taking both race and gender into account. An ordinal logistic regression was conducted to determine whether gender, race, and the intersection of race and gender predict the frequency of discriminatory experiences within the past year. Those who identified as a woman had higher odds of experiencing discrimination compared to men, and those who identified as a student of color had significantly higher odds of discrimination when compared to White students. Black students had 4.294 (95% CI [3.32, 5.554]) times the odds of experiencing discrimination more frequently, compared to White students. Asian students had a 2.833 (95% CI [2.381, 3.371]) increased odds of experiencing discrimination than White students.

When considering both gender identity and racial identity, there were considerable differences. White women had a 1.482 (95% CI [1.26, 1.742]) times increase in their odds of experiencing discrimination than White men; however, when compared to other male groups they faced less discrimination. Asian and Hispanic women reported more discrimination than their male counterparts of the same racial identity, while Black women report similar odds of discrimination as Black men. The findings indicate Asian women, Black women, and Black men similarly experience a higher chance of discrimination compared to their peers.

Section 4 (Manuscript #3) aimed to determine the extent of the impact of discrimination and college students' sense of belonging on their confidence in their ability to graduate. To achieve this aim, this section employed a hierarchical (sequential) multiple regression to assess the ability of sense of belonging and frequency of discriminatory experiences to predict the student's confidence in his or her ability to graduate despite any obstacles. Three models were run. The first model included the control variables age, number of years in their degree program, housing, extracurricular activity participation, and the average number of hours worked per week during the school year and explained 2.3% of the variance in students' confidence in their ability to graduate. College students' sense of belonging was added in Model 2, explaining an additional 4.9% of the variance. Lastly, discrimination was added in Model 3, in total, the regression model explained a significant proportion (8%, $R^2 = .078$) of the variance associated with students' confidence in their ability to graduate despite any challenges $F(7, 1171) = 14.112, p < .001$. Of the two variables of interest, both were statistically significant predictors of students' confidence in their ability to graduate despite any challenges with students' sense of belonging recorded a higher beta value ($\beta = -.226, p < .001$) than discrimination ($\beta = .079, p = .006$). Notably, Discrimination is significantly related to student' belief that they will graduate no matter the obstacles they may face, over and beyond students' sense of belonging and other known factors associated with persistence.

5.2. Limitations

The findings from this dissertation should be interpreted in light of several limitations. First, like all secondary analyses, these studies inherited the limitations associated with the data set examined. Accordingly, this investigation is limited by the self-report nature of the HMS data. Even though participating students are randomly selected, institutions self-select to participate in the HMS. For example, beyond the standard three modules: demographics, mental health status, and mental health service utilization and help-seeking, the participating school choose the elective modules, if any, they would like to include. Thus, the sample was limited to the eight postsecondary institutions who selected to participate in the “Campus Climate and Culture” module. Additionally, the participating institutions are expected to compile an accurate and inclusive sample, which is not always the case. Despite students of color account for a growing population within higher education, they were continuously underrepresented. Consequently, the findings are not generalizable to college students nationally nor can the findings accurately represent students of color (Jackson & Sherman, 2018).

Second, this examination was also limited by how the selected measures were assessed in the HMS. In other words, changes could not be made to how questions were asked or the response scales associated with each item. For example, the discrimination question, used as the dependent variable in Section 3, was the only one included in HMS. It was not specific enough to the identify the form of discrimination nor does it specify the locale of these experiences (i.e., occurring in the classroom or campus setting), all of which would add depth to the investigation and help provide better

recommendations for administrators and practitioners in higher education. Thus, we cannot untangle the nuances of the discrimination experienced, or identify the perceived source (i.e., race, culture, sexual orientation) of the discrimination. In Section 4, has the same limitation as both its “confidence’ in their ability to graduate” variable and discrimination variable drawn from only one question.

5.3. Future Directions for Research

This dissertation sparks several more questions that should be investigated. Based on these findings, we would expect that Black men, Black women, and Asian women would have the highest risk of dropping out or stopping out. While discrimination may be a factor in lower graduation rates and lower educational attainment for Black men and Black women, this is indeed not the case for Asian women as they have the highest 6-year graduation rate (i.e., 74%) compared their peers (Musu-Gillette et al., 2016). Future research may examine what protective factors enable Asian women to persist despite perceiving frequent discrimination. This line of research may identify a significant factor to implement for other students of color who frequently experience discrimination.

Another future line of research would be a qualitative investigation of the paradox found among Black men in Section 4 (Manuscript #3). Though reporting significantly higher odds of experiencing discrimination, somehow these students report a high sense of belonging, comparable to that of White women. This inconsistency is noteworthy as both discrimination and students’ sense of belonging were found to be

significant predictors of student's confidence in their ability to graduate. Understanding which has more of an impact on their persistence and gaining first-hand knowledge from what student think enhances their experiences as students may improve current projects (i.e., Black Male Initiative) designed to increase, encourage, and support the inclusion and educational success of male students of color.

Additionally, a natural progression of this work is to examine differences in students' sense of belonging and perceived discrimination in higher education among racial and gender, and sexual orientation groups. Growing literature explores how students identifying as a sexual minority can affect their educational outcomes (Kosciw, Palmer, & Kull, 2015; Oswalt & Wyatt, 2011). Investigating the intersection of these three identities (i.e., race, gender, and sexual orientation) would yield interesting findings and shed more light on the experiences of students based on their identity.

Future examinations should also seek to further flesh out the current findings should systematically identify and select institutions (e.g., PWIs, HHE, HS, HBCUs) for comparison. While theories and models have concepts that hold across most campuses, researchers, practitioners, and administrators must be aware that there may not be a one-size-fits-all solution. It is important to note the differences in institutions. Tinto (2006) emphasizes distinguishing among different institutional settings and characteristics. For example, Black men at an HBCU may not report discrimination as frequently as Black men at PWIs. Thus, a retention problem among that population at an HBCU may stem from issues other than discrimination or sense of belonging. Therefore, institutions

should use findings and theories to supplement and inform campus-specific initiatives aimed at improving retention and persistence.

Overall, this dissertation further investigates factors that may inhibit educational attainment and identifies specific populations who may be at-risk of dropping out. This dissertation studies an important area of research given that education has long-held as a social determinant of health (Marmot & Wilkinson, 2005). The more education, the longer the life expectancy due to increased economic and social resources, better access to food, better access to care, and less environmental exposure to toxins, among other benefits (Zimmerman, Woolf, & Haley, 2015) Taking this relationship further, health impacts education as well. The behaviors and health status (e.g., drinking and mental health) of college students affect their academic performance and attendance, which ultimately affects educational attainment (Eisenberg, Golberstein, & Hunt, 2009; El Ansari, Stock, & Mills, 2013). Thus, striving to improve educational attainment is not only a higher education issue but a public health issue as well. We, as health educators, health practitioners, and health researchers, should work with higher education researchers and administration and support increased efforts to evaluate and implement educational interventions in order to reduce health disparities and encourage health equity.

5.4. References

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