A study of sense of belonging and its relationship with engagement, persistence, and intersectionality in higher education

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A Study of Sense of Belonging and its Relationship with Engagement, Persistence, and Intersectionality in Higher Education

by

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Dissertation
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Abstract

A majority of institutions of Higher Education are seeking ways to provide environments that support student persistence in light of the overwhelming evidence of the impact of postsecondary degree attainment and life opportunities for individuals and communities. This study examines the relationships between student engagement, sense of belonging, identity, intersectionality, and student success indicators. For purposes of this study, 561 undergraduate students at a public regional institution provided demographic information, access to student success indicators, and completed a 47-question survey on student engagement and sense of belonging. Factor analysis determined five distinct dimensions of sense of belonging. Structure equation modeling suggests interactions with dimensions of sense of belonging and student engagement enable or inhibit each other and influence student success. In particular, students’ engagement was influenced by the level of sense of belonging they felt with other students and community as well as their sense of belonging with faculty and staff. In turn, time with faculty as well as engagement in activities related to the student’s academic major and minor influenced sense of belonging as well as student success indicators. Continued studies further exploring dimensions of belonging with diverse populations using the tenets of QuantCrit are recommended.
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Chapter One: Introduction

Persistence in Higher Education

More students leave college prior to degree completion than stay (Tinto, 1993). The 2018 College Scorecard showed the national graduation rate to be at 42% (United States Department of Education, 2018). Student persistence, an individual completing college, has an impact on individuals and communities. Completion of a bachelor’s degree has been shown to improve lives and communities through greater personal, social, and economic opportunities (Pascarella & Terenzini, 2005). Retention numbers, the institution’s student persistence rate, are a challenge for colleges as well. The U.S. Department of Education (2015) has called for greater focus on student success outcomes. Similarly, state, federal, and accrediting bodies request data on graduation rates as a marker of accountability. Lastly, a change in financial structures and a reduction of financial resources make retention of college students an important topic to administrators in higher education. For these reasons, universities and colleges dedicate resources to address the concern of college student persistence.

Factors Influencing Persistence

Complex factors contribute to a student’s decision to stay or to leave college. Pre-college factors, such as family influences, academic preparation, and academic disposition, impact learning and persistence (Tinto, 1993). These same factors may influence other markers of student success, such as grade point average (GPA) and cumulative completion rate (CCR), as well. Frameworks on student retention include: the student attrition model (Bean, 1982); the student engagement model (Nora, 2004); an explanatory sociological model of the dropout process (Spady, 1970); Swail Watson’s
geometric model of student persistence and achievement (Swail, Redd, & Perna, 2003); and a conceptual schema for dropout from college (Tinto, 1975). Many of the frameworks include social integration or academic integration, focusing on engagement and influence on retention. Other studies show the connection between engagement and GPA (Carini, Kuh, & Klein, 2006).

**Integration as Engagement in Higher Education**

Tinto’s (1975, 1993) seminal work and development of the integration model of student departure included both social and academic integration. Integration at this time was largely defined as engagement/participation. Tinto’s work greatly influenced the national dialogue on college student retention and continues to influence the study of retention. Tinto theorized that students’ decision to stay or leave college is based on attitudes and commitments, which are influenced by the student’s success in integrating academically and socially into the institution. Further, he theorized that pre-college characteristics and goals, interactions with peers and faculty, and out-of-classroom factors impact integration. Tinto’s interactionalist theory of college student departure includes the idea that students need to leave their old culture to fully integrate into the new college culture and norms. This has been criticized for assimilationist language, especially with respect to students of color. In later work, Tinto (2006) writes, “Where it was once argued that retention required students to break away from past communities, we now know that for some if not many students the ability to remain connected to their past communities, family, church, or tribe is essential to their persistence” (p. 4). Despite criticisms, Tinto’s work is seminal in retention theory and is influential as a basis for many retention theories today.
Sense of Belonging in Higher Education

Contemporary retention theorists are moving the focus away from a deficit model of a student’s responsibility to integrate into the institution. Instead, current researchers are looking more closely at the institution’s role in social and academic integration with the student. One of the ways researchers are doing this is by further developing the concept of sense of belonging in relation to retention and student persistence. Sense of belonging emphasizes perceived integration, the sense that one belongs socially and academically with the institution community (Hausman, Schofield, & Woods, 2007; Hurtado & Carter, 1997; Strayhorn, 2012).

One such researcher is Terrell Strayhorn (2008). Strayhorn used Tinto’s interactionalist theory of college student departure as a framework in his research on retention of college students. He found Tinto’s theory useful but also limiting, especially with marginalized student populations. Due to this, Strayhorn included theory from Hurtado and Carter (1997) on sense of belonging in his research. Sense of belonging includes elements of cognitive assessments and perceptions of integration as well as affective outcomes. In other words, the idea of sense of belonging on retention is that the sense that one fits, matters, or belongs on the college campus and in the college community (cognitive assessments) influences student behaviors that lead to a higher probability of returning to college and to higher GPA (affective outcomes).

Sense of belonging is one of the complex factors that impacts college retention (Hurtado & Carter, 1997; Strayhorn, 2012). Assessing sense of belonging includes measures of perceived social, academic, and psychological integration to the institution. This includes components of value and fit (Hurtado & Carter, 1997). Value is the feeling
of being needed and accepted. Fit is the feeling that one’s characteristics align with the system (Hagerty & Patusky, 1995). Included in most research on sense of belonging are both social and academic contexts. Ingram (2012) further developed the construct of sense of belonging by adding perceived institutional support. Institutional support includes perception of fit with programs and departments on the college campus designed to promote academic and personal student success.

The concept of sense of belonging as a human need begins with Maslow’s (1954) hierarchy of needs. The hierarchy shows factors that impact motivation. Maslow explains a hierarchy starting from physiological needs, such as food, water, and sleep, and progressing to higher needs, such as belonging, esteem, and self-actualization. Maslow’s work describes a sense of belonging as a basic human need and motivation, which suggests that the need for belonging must be met prior to motivation for esteem and personal accomplishment. Strayhorn’s (2008) model of college students’ sense of belonging uses this concept. It shows students entering the college context where physiological needs emerge, and, once met in the context of classrooms and the campus at large, higher social motives, including a sense of belonging, can manifest.

Identity and Intersectionality in Higher Education

A critical piece of Strayhorn’s (2008) as well as Hurtado and Carter’s (1997) work in sense of belonging is the inclusion of student identity. Tinto’s (1975) idea of integration is further modified by considering who a person is, where they come from, what they bring with them, and how they identify themselves outside and within the culture of the institution. Valuing identity and intersectionality of identities is another way research can move away from the deficit model in redefining integration.
This section provided an introduction to persistence as a critical issue in higher education and identified three factors which the literature links to persistence: engagement, sense of belonging, and identity. The following section discusses why it is important for practitioners, researchers, and theorists to understand more about the impact of these complex factors on college student persistence, GPA, and CCR.

**Problem Statement**

College degree attainment impacts students, institutions, and communities. Occupational, monetary, and societal benefits of education are contingent on earning the degree (Tinto, 1993). Retention rates impact higher education institution’s academic and financial plans (Aljohani, 2016). Benefits to institutions include higher reporting on federal programs, such as the College Scorecard. The College Scorecard is a program initiated under the Obama Administration that provides information on graduation rates for students and parents to use when selecting colleges and universities. Further, efforts towards degree completion that increase retention and, therefore enrollment, assist financial resources for institutions that have had a reduction of federal and state financial support. This makes retention not only the right thing for institutions of higher education to focus on, but also a necessity for institutional survival. Communities benefit from student persistence and degree completion by higher levels of income, better health, and less dependence on welfare in the community (Belfield & Bailey, 2011).

Despite these benefits, institutions of higher education lose students to voluntary and involuntary departure. Less than half of all freshmen graduate from the college where they began within 150% of the expected graduate time. According to the College Scorecard data retrieved April 24, 2018, the national average graduation rate for all post-
secondary institutions is 42% (United States Department of Education, 2018). This includes two-year, four-year, private, and public institutions. Although there is a general sense of what causes student departure, such as financial, academic, and family concerns, administrators are unsure why different actions impact staying in college on different campuses with different populations (Tinto, 1993). What is known is that different institutions have different retention and graduation patterns. For example, 2017 numbers show a much higher retention rate for public and private schools who are highly selective (National Center for Education Statistics, 2018). Highly selective schools accept less than 25% of applicants. The same data show higher education four-year institutions with various admission rates below 25% have lower retention and graduation rates. Persistence is a particularly acute issue at universities with a Carnegie Classification below R3: Doctoral University - Very high research activity, commuter schools, and suitcase schools, and schools with a diverse population.

Complex factors impact graduation rates and student success factors that lead to degree completion such as student persistence, GPA, and CCR. Sense of belonging may be a factor in student’s choice to remain at an institution.

Purpose of the Study

Persistence and academic success impact students, higher education institutions, and communities. Fostering students’ sense of belonging and strengthening connection to the institution are key factors in increasing likelihood of student persistence.

The purpose of this study is to examine the four variables outlined in the introductory paragraph: persistence, engagement, sense of belonging, and identity. Identity is defined using the constructs of intersectionality. Recent studies on sense of
belonging are prevalent. However, the majority of studies focus on sense of belonging related a student population identified by one race or social class. Few studies exist that assess sense of belonging and its impact on student success factors delineated by different student populations. Even fewer studies take into consideration the intersections of a person’s multiple identities (Goward, 2018). This study examines the influence of sense of belonging delineated by student populations as well as interactionary effects of student population indicated by student demographic, family background, economic status, and first/continuing-generation status.

Extensive literature provides information on retention and student dropout. Yet administrators and stakeholders do not understand the interplay of multiple variables influencing staying and leaving college (Tinto, 1993). This study looks for concrete answers to the complex questions of student departure such as sense of belonging. As Strayhorn (2012) stated, “We need to know more about those characteristics and conditions that promote or prevent belonging” (p. 64). This study seeks to assess what student background and institutional environmental factors influence sense of belonging for college students. Further, it seeks to understand if sense of belonging moderates the influence of institutional environmental factors on student persistence. As indicated by Museus, Yi, and Saelua (2017), “Evidence reinforces the importance of understanding how institutions can cultivate a sense of belonging, which might ultimately lead to greater likelihood of success” (p. 190). This study is conducted in order to assist campus leaders in ways to create campus conditions that promote student success.

Several researchers, including Hurtado and Carter (1997), Strayhorn (2012), and Velasquez (1999), have studied sense of belonging in higher education. There is a need,
however, to study influences on sense of belonging and student success factors across and among student populations (Goward, 2018). Tefera, Powers, and Fischman (2018) stated, “Education researchers need to move beyond one-dimensional or single-axis analyses that focus on a specific category (e.g., race, class, gender, or ability) or that treat other categories as epiphenomenal more often” (p. vii). This study, therefore, seeks to broaden the understanding of sense of belonging and student success outcomes for students across demographic, social, and economic identities, including the intersectionality of these multiple identities. Using the constructs of intersectionality allows researchers to acknowledge and validate communities whose identities and experiences may have been suppressed or ignored due to a reliance on singular or additive identity in research (Tefera et al., 2018). Understanding to what extent student input factors and social and academic engagement impact sense of belonging provides academic leaders with information valuable in influencing opportunities for student persistence, academic success, and institutional retention.

As mentioned previously, information on retention has been studied in depth; however, studies have not distinguished what works at particular institutions (Tinto, 1993). This study looked at one institution to determine what would be impactful at that institution. Focusing on one institution has the potential to inform administrators and policy makers at that particular institution what programs might contribute or not contribute to student success. This study will focus on an institution with a Carnegie R2 designation, with a relatively open admission, that serves a diverse student population, and that has a high number of commuter students and students who leave campus on the weekends, sometimes referred to as suitcase schools. This will provide an opportunity to
study persistence, engagement, sense of belonging, and identity at an institution representative of institutions where persistence can be an acute concern.

The institution in this study is Eastern Michigan University (EMU). Traditionally comprehensive, the institution recently reached R2 Carnegie designation. The institution had a Fall 2017 enrollment just over 20,000 students (Eastern Michigan University, 2018a). Based on institutional data, there is disparity in graduation rates among different student populations based on gender, ethnicity, Pell eligibility, and first/continuing-generation status at this institution (Eastern Michigan University, 2018c). Disparity among different student populations could be impacted by sense of belonging. Walton and Cohen (2007) studied what they called belonging uncertainty and found that belonging uncertainty led to a greater need for social belonging and contributed to racial disparities in achievement both academically and professionally. Attainment gaps create desperate opportunity for students, families, and communities.

**Research Questions**

Given the problem and significance, the research questions are as follows:

R1. To what extent does sense of belonging influence persistence?

R2. What is the role of engagement in the relationship between sense of belonging and persistence?

R3. To what extent do student demographics and other student background information influence engagement, sense of belonging, and persistence?
Conceptual Framework

To address these research questions, this study will use a conceptual framework synthesizing Tinto’s integration theory on student departure (see Figure 1) and Strayhorn’s model of college students’ sense of belonging (see Figure 2). The conceptual frameworks are designed similar to the framework of Astin’s inputs-environment-outcome model of change.

Figure 1. Tinto's Theory on Student Departure. From Tinto, V. (1993). Leaving college: Rethinking the causes and cures of student attrition (2nd ed.). Chicago: University of Chicago Press.

Vincent Tinto (1975) theorized that family and academic background influences student intentions and commitments. Those intentions and commitments influence student engagement and integration. Integration further influences intentions and commitments that cause a decision stay or leave college. He found that students who academically and socially integrate into the campus community are more likely to
graduate. Tinto’s work in the 1970’s further theorized that to be successful, students must separate from the group they were formerly associated with to transition and adopt new normative behaviors.

Tinto’s (1975) theory is conceptualized in a way that relates to Astin’s (1991) Inputs-Environment-Outcome (I-E-O) model of change. In Astin’s model, outcomes (such as departure decision) are functions of inputs (such as student demographics) and environment (such as institutional experiences and integration).

While Terrell Strayhorn (2008) used Tinto’s (1975) theory as a conceptual framework, he moved away from the deficit model, embracing who a student is and where that student comes from. In research focused on students of color, Strayhorn (2008) developed a model of college students’ perceived integration called sense of belonging. Further, Strayhorn’s conceptual framework shows that cognitive aspects of sense of belonging result in affective outcomes, such as achievement and retention.
Figure 2. Strayhorn’s hypothesized model of sense of belonging. From Strayhorn, T. L. (2012). College students’ sense of belonging: A key to educational success for all students. New York: Routledge.

Strayhorn’s (2008) model of college students’ sense of belonging shows students entering the college environment where physiological needs emerge, and once met, higher social motives, including a sense of belonging, can manifest. These needs are met or not met in the social spaces and contexts of the classroom, residence hall, academic department, and campus at large. Strayhorn takes into consideration what a student brings to college, as Tinto’s (1975) theory does, but Strayhorn also looks at the campus environment in the context of Maslow’s (1954) hierarchy of needs.
With this in mind, the researcher developed an engagement and belonging student success model. The researcher developed this using Tinto’s (1975) theory on student departure, Astin’s (1991) I-E-O model of change, and Strayhorn’s (2008) model of college students’ sense of belonging. In this model, student outcomes (GPA and persistence) are a function of inputs (student demographics and background) as well as the environment (student engagement and sense of belonging).

![Engagement and Belonging Student Success Model](image)

*Figure 3. Engagement and belonging student success model.*

This engagement and belonging student success model will consider the outcome variables of CCR, GPA, and persistence. The model includes input factors similar to Tinto’s (1975) and Strayhorn’s (2008) models in that it incorporates what a student brings in to the institution, such as student demographics, family background, and college
preparedness. This model includes environmental factors Tinto considered such as
eengagement in social and academic activities and programs and adds the environmental
concept of engagement with institutional support offices and programs. In addition to
engagement, the model includes Strayhorn’s theory, looking at social, academic, and
institutional sense of belonging.

**Significance of the Study**

This study on identity, student engagement, and sense of belonging and their
influence on student persistence is important because it is necessary to add to
understanding of student success strategies and to provide implications for practice,
theory, and research. It is important and timely for several reasons.

First, the study adds to the literature and understanding of student persistence and
institutional retention. Degree attainment impacts students, higher education institutions,
and communities. Institutions are looking into way to support degree attainment;
however, today’s institutions face constraints in funding. An important question is how to
best allocate scarce resources towards contributing to student success (Roberts, 2018).

Engagement and sense of belonging may have an impact on student persistence.
Therefore, it is important to understand the extent that student sense of belonging
influences persistence; the role that engagement has in the relationship between sense of
belonging and persistence; and the degree that student demographics influence
engagement, sense of belonging, and persistence.

This study surveyed undergraduate students first-year through graduation. Roberts
(2018) writes, “It is found that successful student retention models benefit from a holistic
approach to supporting students throughout their lifecycle to achieve success, rather than
the more limited approach to supporting only first-year students” (p. 144). Roberts’s lifecycle model includes stages of commencing students (arrival and first year) as well as continuing students (transition and academic progression). She states, “Mapping student success factors as above within the student lifecycle provides an opportunity to apply mechanisms for success in a coordinated and student-centered way” (p. 148). The institution studied is a 4-year regional institution representative of universities where persistence can be of particular concern. Data from *College Scorecard* (United States Department of Education, 2018) and institutional data (Eastern Michigan University, 2018b) regarding this institution show a first-year retention rate higher than the national average yet a 6-year graduation rate below the national average. This study looks at student sense of belonging and retention for all years of the undergraduate experience with a student body made up of students from diverse social, cultural, racial, and financial backgrounds.

Second, this study is important because it has significance to the practitioner. The institution in this study has initiated programs designed to develop sense of belonging, such as student support, cultural offices, and mentoring. This study looks to see if these programs influence sense of belonging with different student populations in order for practitioners to take action in improving these programs, continuing or discontinuing programs, and locating where to invest limited resources of time and energy. With a greater understanding of sense of belonging, practitioners have better opportunity to develop intervention programs that have the potential for positive influence on student persistence while working with limited resources.
Third, this study has significance to the research community. As mentioned previously, research on retention has been studied in depth, and studies on sense of belonging are becoming more prevalent. This study adds to the extant research literature by examining the combination of student engagement influence as well as sense of belonging influence on persistence delineated by student populations and interactionary effects in the context of intersectionality. This study has significance to theorists. The study seeks to add to our understanding of retention theories by Bean, Spady, and Tinto along with sense of belonging theories by Hurtado and Carter and Strayhorn. By better understanding the relationships between engagement and sense of belonging with several populations, interactionary effects, and influence on persistence, this study adds to the depth of understanding of student success.

Informing researchers, institutions, state agencies, and individuals on sense of belonging and factors that lead to student success indicators, such as retention, GPA, and CCR, is necessary because it has the potential to lead to higher graduation rates. Higher graduation rates may lead to greater opportunities for students, higher education institutions, and communities.

**Definition of Terms**

Definitions are arranged in order of the conceptual model, Figure 3 Student Success Framework, in order from right to left ending with definition of terms that are not in the conceptual framework:

- **Persistence:** Persistence refers to a student continuing towards an education goal. (Rhode Island Office of the Postsecondary Commissioner, 2001). This study refers to student persistence as an individual student’s ability to stay in college
through to graduation. Students in the study are considered to be persisting if they continue to the next semester at the studied institution or graduate.

- **Grade Point Average (GPA):** The Glossary of Education Reform defines GPA as the number representing the average value of final grades over time (Grade Point Average, n.d.). The institution in this study bases the GPA on a 4.0 scale.

- **Cumulative Completion Rate (CCR):** A student’s CCR is determined by the number of credits earned at the institution divided by the number of credits attempted at the institution. (Eastern Michigan University, 2013).

- **Sense of Belonging:** Sense of belonging has been described as a basic human need (Maslow, 1954; Strayhorn, 2012). Researchers have related it to sense of community (McMillan & Chavis, 1986), sense of mattering (Schlossbert, 1989), and a sense that one is valued and has fit (Hurtado & Carter, 1997). Sense of belonging includes all of these concepts. In the context of this study, the researcher uses the definition as the sense that one belongs socially and academically with the community of the institution (Hausman et al. 2007; Hurtado & Carter, 1997; Strayhorn, 2012).

  This study separates sense of belonging into three categories: social, academic, and institutional. For the purpose of this study, social sense of belonging is defined as a student’s perception of fit and mattering to peers at the institution. Academic sense of belonging is defined as the student’s perception of fit with the academic expectations and mattering to the faculty at the institution. Institutional sense of belonging is defined as the student’s perception of fit and
mattering to the people and programs designed to promote student success at the institution and as a member of the campus community.

- **Engagement:** The definition of engagement in higher education includes time, effort, and investment of the student and institution (Trowler, 2010). This study looks at this investment in social, academic, and institutional support programs. Roberts (2018) defines social integration as students having the “opportunities to interact with their peers, academic and professional staff, through a range of formal and informal social networks” (p. 145). This study defines engagement by combining participation levels, importance of the activity to the student, whether or not the student held a leadership role, and the students’ number of years participating in the program or activity.

- **Age:** This study gathers data on how old the student was at the time of the survey.

- **Ethnicity:** For the purpose of this study, ethnicity is defined by the studied university’s data standards. Ethnicity is self-identified by the student at time of application to the institution. Students at this institution are provided the following list with which to identify: Asian, Black or African American, Hispanic/Latino, Multiple Racial, American Indian or Alaskan Native, Nonresident Alien, Native Hawaiian or Other Pacific Islander, Race and Ethnicity Unknown, and White (Eastern Michigan University, 2016).

- **Gender:** For the purpose of the study, gender is defined by the use of the terms provided to students who self-identify gender at the institution. According to the university’s data standards, student gender is indicated as male, female, and not available (Eastern Michigan University, 2016). At this time of this study, the
university institutional data did not provide opportunity to self-identify in non-binary genders.

- **Income:** Researchers define economic status and socioeconomic status (SES) in different ways (Goward, 2018). This makes a discussion using these terms difficult. This study uses the term income when discussing research related to income status with the exception of references to studies where the researcher used a different term. This allows for comparisons across research studies. For this study, Pell eligibility is used to determine income status.

- **First/Continuing-generation Status:** A first-generation student is defined by the U.S. Department of Education as an individual whose parents or guardians did not compete a baccalaureate degree (Nunez & Cuccaro-Alamin, 1998). For this study, participants who are not first-generation students are identified as “continuing-generation students.” For this study, generation status is determined by answers provided by students on the Free Application for Federal Financial Aid (FASFA). FASFA asks the student to indicate the highest-grade level completed by the student’s parents. FASFA defines parent as birth parent or adoptive parent. Legal guardians and stepparents’ level of education are not considered in the FASFA level of parents’ education question and, therefore, are not included in the definition for this study. First-generation status is defined as neither Parent 1 nor Parent 2 having earned a bachelor’s degree or more advanced degree. Students for whom at least one parent earned a bachelor degree are referred to as continuing-generation students.
• **College Preparedness:** College preparedness is assessed by the students' incoming GPA.

• **Intersectionality:** Intersectionality, first coined by Kimberle’ Crenshaw in 1989, provides a framework for exploring people’s multiple identities and the impact of social structures and environments on people. Goodman (2014) states that the “intersectional approach focuses on understanding how different social categories simultaneously interact, shaping people’s identities and lived experiences” (p. 99).

• **Retention:** Retention is defined as the percentage of students who return to the same higher education institution. (National Center for Education Statistics, 2018).

**Delimitations**

The purpose of this study is to understand what characteristics and conditions at one institution influence sense of belonging and how sense of belonging influences persistence at that institution.

The main delimitation is that this study analyzes persistence, engagement, sense of belonging, and identity at one institution, Eastern Michigan University. Information found may not be generalizable to other institutions with different populations and selectivity.

Secondly, the study is bound by secondary source information collected and provided by the institution’s research office concerning the respondent’s ethnicity, gender, income, first-generation status, and age. This study does not include influences nor the inclusion of intersectionality on social identities such as non-binary gender, sexuality, religion or faith background, citizenship, and ability.
Thirdly, generation status and economic status are determined by answers students provide on the FAFSA. Information on economic and generation status is not available for students who did not submit a FAFSA.

Lastly, the study is using quantitative measures to allow for more breadth in the number of students for which data is gathered. However, quantitative measures may limit the depth of understanding of the construct of belongingness.

Chapter One established the underlying problem, the purpose of the study, research questions, theory, and conceptual frameworks. Further, Chapter One provided context by defining variables found in the conceptual framework, Figure 3: Student Success Framework, and acknowledges delimitations of the study. Chapter Two provides literature support for the concepts and variables in Figure 3.
Chapter Two: Literature Review

This chapter reviews the literature and research around the key concepts from the conceptual framework in Figure 3. It is arranged in order of the conceptual framework moving from right to left. Beginning with the student success dependent variables of persistence, GPA, and CCR, the literature review moves to the mediating university environmental variables of sense of belonging and engagement. It ends with the student independent variables of student demographics, family background, and college preparedness. The literature review shows why it is important to look at the student success factors persistence, GPA, and CCR. It discusses the impact of sense of belonging on these student success indicators. Next, the literature review shows the impact of mediating factors of engagement on sense of belonging. Lastly, the literature review establishes the current research on the impact of background characteristics on engagement, sense of belonging, and student success measures.

Student Success

Student success is measured in many ways on a college campus. This study looks at the student success indicators of GPA and persistence. The following section provides a brief review of college student dropout and retention models as well as a review of the literature on sense of belonging, persistence, and GPA.

Persistence and retention. The phenomenon of student attrition has been studied since the inception of higher education; however, prior to the 1970’s, studies focused on student characteristics and shortcomings. Beginning in the 1970’s, studies included more rigor, theoretical frameworks, methodology rigor, and deeper analysis. Instead of a focus solely on student characteristics and shortcomings, studies began looking at the student-
college relationship in regards to student persistence (Aljohani, 2016). The term retention began to be used to describe the institution’s efforts of student persistence.

Frameworks on student retention and attrition have been proposed by Bean (1982); Nora (2006); Spady (1970); Swail, Redd, and Perna (2003); and Tinto (1975) among many others. The majority of these studies have focused on reasons students leave college rather than on why students stay (Demetrious & Schmitz-Sciborski, 2001) and focused on the student’s responsibility to socially and academically integrate into the institution. Of note, is that all of these theorists use a format similar to what Astin later named the inputs-environment-outcome (IEO) model. For example, an early model on student attrition was developed by Spady (1970) titled undergraduate dropout process model. Spady was the first theorist to look at social and academic engagement and to consider the university environment in persistence. His focus was the student’s family background and how that background influence normative congruence and academic potential. Next, he looked at how those factors influence academic performance, social integration, satisfaction, and ultimately, dropout decision. Tinto (1975, 1993) and Bean (1980, 1982) later used Spady’s (1970) model in developing their own models of attrition. Bean’s (1980, 1982) model is titled model of student attrition. Bean theorized that student departure was similar to employee dissatisfaction and substituted employee variables with variables such as GPA, student development, and career relevance. Bean (1981) included four classes of variables: background, environmental, attitudinal, and outcome. He states that these variables have direct or indirect effects on intent to leave and further states that intent to leave is a precursor to leaving. Bean identified 23 variables that may be predictors of dropping out, depending on the institution. Later,
Bean and Metzner (1985) developed a similar model for commuter students titled the nontraditional undergraduate student attrition model. They found that institutional integration did not have as big of an influence on commuter students. This model looked at the variables: academic performance, intent to leave, background, and environmental factors. Astin (1975) developed a theory of student involvement related to campus integration but focused on involvement and why students stay. He theorized that continuation or dropping out of college was influenced by the amount of physical and psychological effort invested in studying and on campus involvement. In his 1975 study, Astin found campus involvement, including Greek organizations, intercollegiate sports, honors programs, ROTC, research projects with professors, and on campus employment positively influenced retention.

Perhaps the most influential theory from this time period is Tinto’s institutional departure model, which was developed in 1975 and modified in 1993. This model uses many of the same constructs as previous theoretical models but builds further on the idea of an academic and social relationship with the institution and people at the institution. Tinto looked at pre-entry attributes such as family background, skills and abilities, and prior schooling. He then considered institutional experiences, such as academic performance, faculty/staff interactions, extracurricular activities, and peer group interactions. Finally, he included the variables of intentions, goal and institutional commitments, and external commitments. These variables and factors, according to Tinto’s model, influence the dropout decision. Tinto, similar to his contemporaries, focused on student’s ability to integrate into the institution academically and socially.
The ownership in these models is on the student to adapt to the norms of the campus majority.

Researchers following Spady, Bean, and Tinto have challenged and refined theories on student retention. More recent theories on student retention remove the responsibility from the student to integrate and instead focus on the institution’s role in providing social and academic integration (Roberts, 2018). Roberts (2018), for example, studied how academic and professional staff contribute to student success and argues that student retention “requires a sustained, deeply embedded commitment from all parts of the institution, placing student experience at the forefront of all activities in the student lifecycle” (p. 140). Additionally, Braxton, Brier, and Hossler (1988) conducted work focusing on organizational attributes rather than student attributes. These researchers found that institutional engagement, institutional communication, and rewards contributed to student persistence.

Although Tinto’s work is considered seminal in the use of integration and although he lays the foundation for work on sense of belonging in relation to student persistence, his initial theory that a person needs to leave their old norms and community in order to fully integrate into the culture of the institution has been challenged, especially in regard to retention of students of color. Tierney, for example, was critical of the anthropological perspective Tinto used indicating that it failed to account for cultural factors (McPherson, 2016). Because of this, theorists such as Hurtado and Carter (1997) and Strayhorn (2012) used the integration models from previous theorists to move to the next iteration of studying retention and persistence, by including perceived integration. Hurtado and Carter (1997) and later Strayhorn (2012) call this perceived integration sense
of belonging. These theories include perceived social and perceived academic integration into the institution and leave space for students to value their own histories and cultures in finding value and fit in the higher education institution. These theorists focused the roll of the institution rather than the student, considering what the institution is doing to create community and membership (Goward, 2018).

Faculty, staff, and institutional programs have a role in providing opportunity for retention and student success. For example, several studies have shown a positive impact on students of color when faculty members provide holistic support, are warm, and go beyond their regular responsibilities with students (Museus & Ravello, 2010). Museus and Ravello (2010) further extended this research, finding that academic advisors could have a positive impact by employing humanized, holistic, and proactive advising practices. Perhaps these practices by faculty and staff members created a sense of belonging with their students. Certainly, they show that the institution’s faculty and staff can take a proactive role in creating opportunities for retention and student success for students. Of note in Museus and Ravello’s (2010) study was that advisors and students involved in the research were from targeted support programs that provided more time and investment on the part of the staff members and institution.

The research shows that institutions can have impact on student retention, providing an impetus for institutions to invest in and develop student support programs and retention plans. Roberts (2018) includes five categories of student success that she proposes should be included in a retention plan: culture, student preparation, personal well-being, academic engagement, and social engagement. With this in mind, an intersectionality construct can be used to examine the intersectionality of multiple student
inputs in relation to opportunities for engagement and the experiences of students at the institution. Astin (1975) theorized that physical and psychological investment impacts persistence (Astin, 1975/1984, Strayhorn, 2009). Therefore, it can be theorized that institutional retention plans that support student sense of belonging can have an impact on student retention.

The purpose of this study is to explore the idea of sense of belonging on the student success factors GPA, CCR, and persistence. Sense of belonging is included throughout the remaining sections of the literature review.

**GPA.** GPA is one measure of academic success. A low GPA can lead to involuntary or voluntary departure from an institution. Therefore, it is an important variable in studying measures that lead to degree completion. Sense of belonging may be one of the factors impacting GPA. Sense of belonging has an affective component as it plays a role in students’ academic experience (Morieson, Carlin, Clarke, Lukas, & Wilson, 2013). For example, Walton and Cohen’s (2007) work suggests that social belonging contributes to behaviors that lead to academic and professional achievement. Similarly, Strayhorn (2012) showed sense of belonging influenced academic success as well. He looked at sense of belonging for students in STEM majors, defining student success in three ways: satisfaction, academic achievement measured by grades, and intent to stay in the field. Strayhorn found evidence that sense of belonging for Black students in STEM majors related to college students’ success in all three areas. In his study with undergraduate students, Strayhorn (2015) found a statistically significant positive correlation between sense of belonging and markers of student success such as GPA. Students in his study who felt they belonged in STEM earned better grades than those
who did not feel they belonged. Additionally, Carini, Kuh, and Klein (2006) found a positive link between student engagement and learning outcomes such as GPA in their study of 1048 students at 14 colleges. Interestingly, they found a stronger positive link between engagement and learning outcomes for students with lower SAT scores than for students with higher SAT scores. The authors caution that a variety of sources influence learning outcomes. Supporting this claim, Strayhorn’s (2015) study controlled for input factors and found high school GPA, SAT scores, and sense of belonging all correlated with college GPA. However, sense of belonging did not have as strong of an influence on college GPA as some other factors. Rather, Strayhorn found the influence of high school GPA on Black students’ college STEM GPA was six times higher than that of sense of belonging.

Academic success in relation to sense of belonging has been studied with graduate students as well. Strayhorn (2012) conducted survey studies and interview studies with graduate students from 2008–2011. He found sense of belonging to be correlated with student success as defined by GPA. Strayhorn showed that, similar to undergraduate students, graduate students who had a sense of belonging displayed behaviors that are known to support student success stating they were motivated to learn, to participate in class discussions, and to seek help.

Much of the extant literature shows a positive correlation between sense of belonging and academic achievement. However, not all studies agree that sense of belonging influences GPA. Hurtado and Carter’s (1997) study of undergraduate Latino students found that students’ sense of belonging was not associated with GPA, suggesting that GPA does not relate to sense of belonging. Further, in studies where there is a
correlation, it is often unclear if sense of belonging influences GPA or if GPA influences sense of belonging.

Cumulative completion rate. As a reminder, CCR refers to the cumulative completion rate of attempted academic credits. It is another measure of academic success. A high rate of course incompletes, withdrawals, repeats, and failing grades adds to the time and funding a student requires in order to complete college. Additionally, a low CCR can lead to departure from college due to a loss of financial aid. Eligibility for federal financial aid through the Free Application for Federal Student Aid (FASFA) requires a student to maintain Satisfactory Academic Progress (SAP). One indicator of SAP is CCR (Federal Student Aid, 2018). Students who fall below the 67% threshold are at risk of not having federal funding for college. Further, a low CCR can lead to involuntary department from college. For example, during the time of this data collection, EMU required a 67% CCR in order for a student to remain in good standing (Eastern Michigan University, 2013). According to the policy, students who did not maintain a 67% CCR would be on probation or dismissed from the institution. Therefore, CCR is an important variable in studying measures that lead to retention. Sense of belonging may be one of the factors impacting CCR. As indicated previously, Morieson et al. (2013) found that the affective component of sense of belonging impacts a student’s academic experience. Additionally, Walton and Cohen (2007) found a link between social belonging and academic achievement. This indicates that sense of belonging may influence CCR.
This section explored the student success indicators of persistence and retention, GPA, and CCR. The following section reviews university environmental factors that may mediate the influence of student demographics and backgrounds on student success.

**University Environmental Mediators**

University environmental factors addressed in this study are sense of belonging and engagement. The following section further defines sense of belonging and engagement and explores the current research on these topics in relation to student retention and academic success.

**Sense of belonging.** Sense of belonging was introduced to the higher education literature by Hurtado and Carter in their 1997 article titled, “Effects of College Transition and Perceptions of Campus Racial Climate on Latino College Students’ Sense of Belonging.” On a college campus, sense of belonging can be defined as the sense that one belongs socially and academically with the community of the institution. (Hausmann et al. 2007; Hurtado & Carter, 1997; Strayhorn, 2012). It speaks to “an individual’s sense of identification or position in relation to a group or to the college community” (Tovar & Simon, 2010, p. 200).

Sense of belonging has been found to be related to student persistence. Tinto (1993) found that an unwelcoming environment could lead to voluntary departure from college. Researchers have studied relationships on college campuses to understand the influence of those relationships on the welcoming or unwelcoming environment. In such studies, sense of belonging is often assessed using students’ responses to questions concerning their perceived relationship to the campus community, faculty, and peers. Strayhorn (2012) describes sense of belonging as a basic human need and fundamental
motivation driving student behavior on college campuses, stating that sense of belonging facilitates educational success. Strayhorn (2012) lists seven core elements stating sense of belonging (1) is a basic human need; (2) is a fundamental motive sufficient to drive human behavior; (3) takes on heightened importance (a) in certain contexts, (b) at certain times, and (c) among certain populations; (4) is related to and a consequence of mattering; (5) is affected by intersects of social identities; (6) engenders other positive outcomes; and (7) must be satisfied on a continual basis and likely changes as circumstances, conditions, and contexts change. In considering these elements, it is theorized that for college students, cognitive aspects of perceived sense of belonging and mattering influence affective aspects of sense of belonging such as motivation and behaviors that lead to student success. Further, based on Strayhorn’s research, it is theorized that sense of belonging and its impact could be perceived differently and have different affective influences based on context, time, population of student, and intersectionality of social identities. Strayhorn (2009) states, “An individual assesses his/her position or role in relation to the group (cognitive) which, in turn, results in a response, behavior, or outcome (affective)” (p. 505).

The cognitive and affective aspects of sense of belonging in Strayhorn’s work is similar to that of other theorists. For example, it is similar to Rosenberg and McCullough’s (1981) studies on mattering. They defined mattering as “the feeling that others depend on us, are interested in us, are concerned with our fate, or experience us as an ego-extension” (p. 165). In their study of adolescents, Rosenberg and McCullough show mattering as a motivation and identify four aspects—attention, importance, ego-extension, and dependence. Rosenberg and McCullough (1981) report that it is the
perception of parental mattering in adolescents that is important regardless of the reality. In other words, the cognitive perception of mattering impacts the affective behaviors and outcomes. Adding the concept of appreciation, Schlossberg (1989) confirmed cognitive aspects of mattering such as perception as well as affective aspects of mattering such as a motivator that drives behavior. Similarly, Hurtado and Carter (1997) discuss affective and cognitive constructs of mattering. These works show the possible influence sense of belonging on college campuses can have on behaviors that lead to student success outcomes such as retention, GPA, and CCR.

Many theorists define sense of belonging in terms of the perception of integration and the feeling that one matters. Strayhorn (2012) discusses sense of belonging in terms of experiencing personal involvement causing a person to feel they play a special role in the environment and the environment plays a special role in the person. However, mattering or feeling valued may be only one part of a student perceiving a sense of belonging. Both perception of being valued and a perception of fit are necessary for sense of belonging (Hagerty & Patusky, 1995). A person may feel valued in a group but may not feel belonging due to cultural, socioeconomic, or other background differences. For example, work with nurses in psychiatric practice suggests empirical referents that show sense of belonging include statements from individuals that they feel valued as well as statements from individuals that there are shared or complementary characteristics that promote a sense of fitting within the environment (Hagerty & Patusky, 1995).

Conversely, the opposite of mattering is marginality. Marginality is a sense of alienation (Strayhorn, 2012). Students who identify in a population that are in the numerical minority on a college campus may be likely to perceive marginality. Similarly,
students who are first in their family to go to college may struggle with fit. These student populations are explored in more depth later in the literature review. Marginality may also occur to or be perceived by students who are in the numerical majority but who are in transition. Schlossberg (1989) discussed marginality as something that is more likely to happen when people go through transitions. Entering college is one such transition. She states that people may feel as if they matter in some situations but when they are in transition with new norms and new roles, those same people may wonder if they fit. This shows the importance of attending to students’ perception of belonging and marginality on a college campus. College is a time of transition for many students. Most higher education practitioners recognize the potential difficulty in transitioning in the first semester on campus for incoming freshmen and transfer students. However, transition can occur as students navigate through their sophomore, junior, and senior years entering programs and practical experiences as well.

This study looks at three aspects of sense of belonging: social, academic, and perceived institutional support. Ingram’s (2012) study on dimensions of sense of belonging suggests that by separating aspect of sense of belonging into social, academic, and institutional support, researchers and practitioners are better be able to delineate aspects of belonging. This nuanced information better guides institutional policies and programs designed to add to the student’s educational experience and outcomes.

*Social sense of belonging (students).* Strayhorn (2008) defines sense of belonging on a college campus stating that belonging “reflects the social support that students perceive on campus; it is a feeling of connectedness, that one is important to others, that one matters” (p. 305). Social sense of belonging has been shown to impact
second year return. Morrow and Ackerman (2012) studied 156 first year students’ intent to persist and second year retention using Hoffman, Richmound, Morrow, and Salomone’s (2002-2003) Sense of Belonging Scale. The scale measures sense of belonging by looking at perceived peer support, perceived classroom comfort, perceived isolations, and perceived faculty support. Results of the study by Morrow and Ackerman (2012) showed that perceived peer support significantly predicted second year return.

*Academic sense of belonging (faculty, instructors, and classroom).* Hausmann et al. (2007) discussed the impact of mattering, showing that students had greater confidence in their academic skills if they felt the group was important to them and that they were important to the group. In the study mentioned above by Morrow and Ackerman (2012), researchers concluded that perceived faculty support significantly predicts intent to persist. Similarly, a sense of belonging to the academic program or department has been shown to influence student success. Strayhorn (2015), identified feeling cared about and feeling of being member of the academic program influenced success for Black male students in STEM fields. He suggests faculty can influence sense of belonging by knowing students’ names, acknowledging their personal interests, and offering ways for students to see themselves in the curriculum.

*Institution and campus sense of belonging.* Using factor analysis, Ingram’s (2012) research found three reliable measures of sense of belonging. The study added to the understanding of sense of belonging by adding perceived institutional support (Ingram, 2012). Ingram found that by separating academic belonging and institutional support, nuanced variables were revealed.
Departments or offices dedicated to cultural or identity of students such as multicultural centers, women’s centers, or LBTGQ offices may have an impact on sense of belonging. Means and Pyne (2017) interviewed students of color attending a predominantly White institution (PWI). Students in the study reported that the multicultural center on their campus provided a space where they could feel at home, feel safe, and understand more about their own racial identity.

Much of the research on sense of belonging includes perceived peer and faculty support. However, relationships with non-instructional staff and institution programing may influence sense of belonging as well. Hurtado, Alvarado, and Guillermo-Wann (2012) extended the research to non-instructional agents of the institution. They studied the rates of sense of belonging mediated by academic and interpersonal validation by faculty and staff at 37 community colleges, four-year private, and four-year public universities. Using the Diverse Learning Environment Survey with 20,460 students, they found sense of belonging was significantly and positively impacted by academic and interpersonal validation by faculty and staff both inside and outside of the classroom. Specifically, Hurtado and her colleagues found that witnessing or experiencing discrimination and bias significantly and negatively impacted sense of belonging; however, validation by instructional and non-instructional staff could be used to mitigate the effects. Their work suggests that in addition to perceived support of instructors, perceived support of non-instructional staff may be influential in a student’s sense of belonging as well. Examples of non-instructional staff include student affairs staff, student support program staff, academic advisors, secretaries, administrators, and on-campus employers.
This section discussed social, academic, and institutional sense of belonging to investigated as potential mediators in persistence. The next section explores the literature on another potential mediator, engagement.

**Engagement.** Student success outcomes have been associated with the amount of time and energy students academically and socially engage on campus (Pascarella & Terenzini, 2005). Engagement is not simply participation in an activity, but rather the amount of investment as well. Engagement may have an influence on sense of belonging and may mediate sense of belonging’s influence on persistence, GPA, and CCR. Benefits could be because of social capital and sense of belonging gained from engagement. Literature supports the inclusion of engagement in retention strategies. For example, Roberts (2018) includes academic and social integration in suggestions for a student success and retention strategy. To provide further depth, Hurtado and Carter (1997) emphasize the importance of participating in organizations by stating that participation allows students to “‘scale down’ their perspectives of the environment to make sense of it and, over time, get to know their large campus environments by affiliating with groups in the college community” (p. 329).

Researchers also express caution on impact and opportunity for all students. In discussing social structure with intersectionality constructs, Goodman (2014) writes, “individuals are members of social groups within larger systems of social inequality. People’s social locations or positions within these hierarchical oppressive structures affect their access to power, resources, and opportunities, which shapes how they see and experience themselves and the world” (p. 100). Kuh (2015) discusses, in the forward to *Student Engagement in Higher Education*, that some groups of students who participate
in certain collegiate experiences benefit differently than other groups of students who participate in those same experiences. Considering differences, Hurtado and Carter (1997) stress the importance of measuring participation in a wide range of activities and memberships in multiple communities in an effort to understand which activities contribute to sense of belonging. In the forward to Strayhorn’s (2012) book College Students’ Sense of Belonging, Hurtado wrote, “Several things are clear—not all student engagement activities foster a sense of belonging in the same way and most colleges have a variety of communities or ‘niches’ where students may be able to find a feeling of community that coincides with an aspect of their multiple social identities” (p. ix).

This study looks at three aspects of engagement: social, academic, and institutional.

**Social engagement.** Tinto’s (1975) model suggests students who have high quality interaction with the collegiate social system are more likely to persist. Participation and engagement may assist students in connecting to and the understanding of the college environment. Research has shown a connection between involvement and sense of belonging, yet not much of this research has used quantitative measures to explore this connection (Hurtado et al., 2012). Studies have, however, shown links between learning outcomes and social integration. For example, Carini, Kuh, and Klein (2006) found a positive link between student engagement and learning outcomes such as GPA. Social engagement could have a relationship to sense of belonging because of its relationship to social integration. Bean and Metsner (1985) discuss social integration variables in their research on engagement. They list common measures of social integration as (a) degree of students’ participation in extracurricular activities, peer
friendships on campus, and relationships with instructors outside of class; (b) students’
evaluation of the quality of these experiences, such as the amount of satisfaction with the
relationship; and (c) a global assessment of students’ satisfaction with their social life or
with the social opportunities at their college. Social engagement could include on campus
and off campus programs. Hurtado and Carter found participation in social-community
organizations to be significantly associated with a sense of belonging for the Latino
students in their study. Hurtado and Carter (1997) wrote, “These findings suggest that
some mainstream but also culturally related activities (social-community organizations
and religious organizations) are associated with a sense of belonging in college” (p. 335).

**Academic engagement.** Researchers have found that academic engagement can
lead to academic sense of belonging (Strayhorn, 2012). Academic engagement has been
defined as time and energy invested in academic activities (Kuh, 2009) and has been
shown to be a predictor of persistence (Quaye & Harper, 2015). For example,
Mamiseishvili and Koch (2011), in a study of students with disabilities at 2-year colleges,
found that students with disabilities who were academically involved were statistically
more likely to return for the second year. Perhaps this is because academic engagement is
related to academic sense of belonging. Academic engagement has been found to be a
mediating link between belonging and motivation (Zumbrunn, McKim, Buhs, & Hawley,
2014). Zumbrunn et al. (2014) found that a supportive classroom environment led to
greater sense of belonging, which led to higher levels of classroom engagement, which
led to higher achievement.

**Institutional engagement.** Research suggests that participation in institutional
student support programs has an impact on integration and sense of belonging. Means
and Payne (2017) interviewed students of color at a PWI. Students reported that spending time in the multicultural center helped them to feel at home and supported and provided students an opportunity to explore their racial background. Harper and Quaye (2007) stress the importance of an institution providing access for all students to engage in student success services. Included are suggestions for practitioners to provide greater access to students from a low-income family background in programs such as orientation, tutoring, and first year experience programs.

This section discussed environmental factors of sense of belonging and engagement that may mediate outcomes such as retention, GPA, and CCR. The remaining areas of the literature review focus on the qualities a student brings into the institution and the research on sense of belonging for these student populations. Understanding what a student brings to the environment provides information on how the environmental factors may impact outcomes.

Students

Diversity in higher education continues to grow. In response, the vast majority of studies on sense of belonging and persistence have focused on sense of belonging as it relates to specific diverse populations. This study looks at diverse populations as it relates to ethnicity, age, gender, family income, first/continuing-generation status, and college preparedness. Further, it looks at the intersectionality of identities and how intersectionality influences sense of belonging, retention, GPA, and CCR. The study uses quantitative analysis to determine to what extent sense of belonging influences student persistence.


**Student demographics.**

*Age.* Including age may be important in this model because research with students of different ages is missing in the literature on sense of belonging and its relationship to retention. Much of the research on sense of belonging has been conducted with what is considered traditional age undergraduate students (typically under the age of 24). However, age may contribute to what types of involvement have an impact on sense of belonging as well as the extent that involvement has on sense of belonging. Still some researchers have studied sense of belonging with students who are considered non-traditional age. For example, Hurtado et al. (2012) conducted a cross institutional study in which 13.1% of students were older than 24. They state in their conclusion, “For students who do not have time for traditional college involvements or do not have as much peer contact, it is important to note that they get their cues from faculty and staff about whether the educational environment is inclusive and welcoming” (p. 17). Additionally, Hurtado writes in Strayhorn’s (2012) forward, “sense of belonging changes as conditions and contexts change and students develop perspective with maturity.” This suggests that sense of belonging may not be defined in the same way by students of different ages.

*Ethnicity.* Many of the current studies on sense of belonging on college campuses focus on students who identify in a marginalized or minoritized ethnicity such as Black or Latino. There may be good reason for a greater number of studies to focus on these populations. Hurtado and Carter (1997) discuss the need for a sense of belonging, especially for those who are marginalized. For example, Walton and Cohen (2007) studied what they called “belonging uncertainty” in schools and in the work place. They suggest that some populations have greater belonging uncertainty and, therefore, have a
greater need for social belonging. Walton and Cohen’s study provided an intervention “designed to de-racialize the meaning of hardship in college and the doubt about belonging that it can trigger” (p. 94). Walton and Cohen (2007) found that the intervention increased behaviors that led to higher achievement with Black students but not with White students. Behaviors that increased in the experimental group included studying longer and emailing professors three times more in the week. Black students in their intervention group had an increased GPA the following semester while White students in the intervention group and Black and White students in the control group did not. Walton and Cohen’s (2007) work suggests that belonging uncertainty leads to a greater need for social belonging and contributes to the racial disparities in achievement both academically and professionally. Several studies show a similar concern with sense of belonging for students of color. A national study of 2,967 students at large, public PWI indicated that students who identified as Black, Latino, or Asian Pacific American perceived lower levels of belonging than White students (Johnson et al., 2007). This finding suggests that the predominant student population on a college campus may influence sense of belonging for students of student populations in the numerical minority on the campus. Likewise, other studies of high school and college students show that students who are part of an ethnic group that is in the numerical majority perceive higher levels of belonging (Ingram, 2012).

Given these findings, creating environments that encourage sense of belonging in students of color may influence persistence and achievement. In a 2012 study of science, technology, engineering, and math (STEM) students of color and sense of belonging, Strayhorn (2012) wrote, “Being accepted, included, welcomed, and cared about leads to
positive outcomes such as integration into the academic and social realms of college life, which, in turn, influences retention, whereas lack of belonging is a primary cause of student departure from college” (p. 64). It is important to understand whether ethnicity influences the development of sense of belonging as well as whether ethnicity mediates the impact of sense of belonging on persistence. Hausmann et al. (2007) studied Black and White students at a PWI, assessing sense of belonging and its influence on intent to persist and actual persistence. A random sample of students received increased communication from the provost expressing value and also received gifts with the college logo with the intent to influence identification with the institution. The researchers found that for both groups, sense of belonging had a direct positive effect on institutional commitment and indirect impact on intentions to persist and actual persistence. Sense of belonging impacted persistence even after controlling for factors such as faculty and peer interactions, parental and peer support, academic interaction, and demographic variables. However, when controlling for ethnicity, researchers found that the intervention of communication and institution-related gifts impacted White students’ sense of belonging but did not impact sense of belonging in Black students. Hausmann and fellow authors theorized that the intervention might have been too minimal due to heightened feelings of alienation students of color may feel at predominately white institutions. Hausmann et al. (2007) suggest that interventions to develop sense of belonging need to specifically target the needs of the ethnic group.

Another study seeking information on influences of sense of belonging for a specific population is Hurtado and Carter’s (1997) study with Latino students. Hurtado and Carter (1997) used the National Survey of Hispanic Students (NSHS) that was based
on Bollen and Hoyle’s (1990) Sense of Belonging Scale, the Student Descriptive Questionnaire (SDQ), and institutional data related to college selectivity of the students’ college institutions. The data was used to analyze perceptions of the racial climate on Latino students’ sense of belonging of 272 respondents attending 127 colleges. The authors controlled for several types of academic and social integration. They found participation in discussion of course content outside of class and participation in cultural-related activities, such as religious and social-community organizations, were strongly associated with Latino students’ sense of belonging. However, in Hurtado and Carter’s (1997) study, participation in ethnic student organizations did not have a significantly higher sense of belonging nor was sense of belonging associated with GPA.

Several different types of programs may also support sense of belonging by students who feel othered. Means and Pyne (2017) found many students of color on the predominantly White campus found support leading to increased sense of belonging from programs such as scholarships, multicultural centers or offices, and social identity-based student organizations.

Gender. Gender may influence sense of belonging as well. Museus et al. (2017) conducted a study of 499 students across three institutions towards the purpose of better understanding how campus environments influence sense of belonging. They controlled for demographic information including gender. Using regression, the authors found a statistically significant relationship showing that, for the students in their study, women exhibited a greater sense of belonging than men. However, they do not present a causal relationship or suggestions of why it might be that women displayed a greater sense of belonging.
**Family background.** Extant research suggests family background SES has a strong influence on college retention (Astin, 1993). Literature on SES in higher education defines SES in different ways. This makes discussing the literature complicated. This study separates the two components of SES by family income defined by Pell eligibility and first/continuing-generation status defined by parental level of education.

**Income.** Understanding sense of belonging and its relationship to income is important to include in this study on sense of belonging and retention. Even when considering academic ability, students from low-income families are less likely to complete college (U. S. Department of Education, 2015). The Pell Institute estimates that bachelor’s degree attainment is nearly five times greater for dependent students from families in the highest income quartile than from the lowest income quartile. (The Pell Institute for the Study of Opportunity in Higher Education & Penn Ahead-Alliance for Higher Education and Democracy, 2015). The Pell Institute data shows a completion rate of 12% for the first (lowest) income quartile, 20% for the second income quartile, 35% for the third income quartile, and 58% for the fourth (highest) income quartile. More recently, college completion for low-income students has increased. In fact, completion of a bachelor’s degree by the age of 24 for students who are dependents of families in the lowest income quartile remained relatively stagnant from 1970 to 2000 but has since doubled from 6% to 12% (The Pell Institute for the Study of Opportunity in Higher Education & Penn Ahead-Alliance for Higher Education and Democracy, 2015). However, income remains a deterrent for degree completion for a large percentage of the population.
Complex and multiple factors influence low-income students’ college completion. One of these factors may be sense of belonging. Some research suggests students from lower income families report lower perception of sense of belonging (Maestas, Vaquera, & Zehr, 2007; Ostrove & Long, 2007). Low-income students may feel challenged in belonging as they navigate potential economic transition (Goward, 2018).

**First/continuing-generation status.** National statistics show that one third of students attending post-secondary education are from families where neither parent attended any college (Cataldi, Bennett, & Chen, 2018). First-generation is defined in different ways in the literature. The definition used in this study is the same as used by the FAFSA. First-generation students in this study are students for whom neither parent graduated with a bachelor’s degree. Approximately one quarter of the students at EMU identify as a first-generation student (Eastern Michigan University, 2018c). EMU’s Institutional Research and Information Management (IRIM) reports show an average of 15% lower 6-year graduation rates for first-generation students who began at EMU as a freshman than for continuing-generation students who began at EMU as a freshman.

There are complex influences on lower graduation rates for first-generation students. Literature suggests that first-generation students lack cultural capital that continuing-generation students gain from their college attending parent (Cataldi, et al., 2018). Additionally, first-generation students may take fewer classes in a semester, have an increase in work and family obligations over continuing-generation students, and may be more likely to come from a family with a lower income. In addition to these factors, first-generation students may be more susceptible to concerns of belonging on the college campus.
To investigate the relationship between sense of belonging and SES, Ostrove and Long (2007) studied the role of social class on sense of belonging, adjustment to college, and academic performance with 324 students at a prestigious liberal arts college. Researchers used the Student Adjustment to College Questionnaire (SACQ) to assess sense of belonging. They found that objective and subjective social class background predicted sense of belonging. Further, they noted that sense of belonging has implications for student success indirectly in that it impacts participation in class, willingness to seek help, and other behaviors. Programs designed to raise a sense of belonging with first-generation students may impact retention with this population. Using linear regression, Ostrove and Long found sense of belonging mediated the relationships between class background and academic and social adjustment as well as SES and academic performance.

**College Preparedness.** Retention efforts related to engagement and sense of belonging could be impacted by college preparedness. College preparedness, measured by admission GPA, class rank, and, to a lesser extent, tests of academic ability, has been shown to be a predictor of college student persistence (Tinto, 1975). College preparedness may be a factor in sense of belonging as well. Museus et al. (2017) conducted a study on sense of belonging with students at a four-year urban research university and two rural community colleges. The sample was diverse both in ethnicity and SES. In controlling for college preparedness, Museus et al. (2017) found a positive and significant association between high school GPA and sense of belonging. Entering admission tests may mediate the impact sense of belonging as well. Carini, Kuh, and Klein (2006) found that students with the lowest SAT scores have a greater positive
relationship between engagement and learning outcomes than students with higher SAT scores.

**Intersectionality**. Intersectionality provides a frame for viewing and discussing the convergence of identities and discriminatory structures (Crenshaw, 2016b). Kimberle’ Crenshaw (1989) coined term “intersectionality” in discussing subjectivity and oppression of Black women in the legal system. Crenshaw (2016b) found structures of discrimination such as racism and sexism often overlapped. The term intersectionality gives a picture of the roads of discrimination from multiple identities that occur simultaneously. In her 1989 seminal work on intersectionality, Kimberle’ Crenshaw considered the marginalization of Black women and wrote, “Because the intersectional experience is greater than the sum of racism and sexism, any analysis that does not take intersectionality into account cannot sufficiently address the particular manner in which Black women are subordinated” (p. 140). Crenshaw’s work began with exploring employment discrimination faced by Black women in certain industries. Although White women were hired and Black men were hired in these industries, the intersectionality of Black and women caused the Black women to have double and simultaneous discrimination. This showed an intersectional form of discrimination. At that time, laws provided employment protections for race as well as employment protections for gender. However, the court systems did not support making both a race claim and a gender claim. Crenshaw’s (2016b) work showed that the experience of Black women could not be understood by looking at sexism and racism separately. Although intersectionality began by looking at gender and race, it has since grown to include any identity were a person is othered. Intersectionality takes into consideration the complexities of demographic,
social, economic, and cultural identities such as race/ethnicity, class, gender, sexuality, religion, citizenship, ability, and age and how these identities shape a person’s unique identity (Tefera et al., 2018).

Intersectionality acknowledges that the identity of a person is not the sum of multiple parts of the person’s identities. Rather, the multiple parts of a person’s identity interact in different ways to form a unique identity. Further, a person’s identities are not put together as a conglomeration. They are both distinct and interactive (Goodman, 2004). Individuals experience all of their dimensions (Weber, 1998). Goodman (2014) illustrates intersectionality as a tapestry. Each thread in the tapestry represents the individual’s social identities and corresponding privilege or oppression at that time. Each thread is interwoven amongst the other identities to create new colors and designs. The tapestry represents the complex interplay among social identities and experiences in that time and place. Using the intersectionality framework, educational research moves beyond one-dimensional views to multiplicities of identity creating a portrayal of the whole person. Proponents of studying intersectionality call for researchers to account for demographic, social, economic, and cultural identities and how they shape power and inequities in social spaces and individual identities (Tefera et al., 2018).

It is important to note that intersectionality is not just an exploration of multiple identities and how they intersect. Rather, it is primarily about how institutional structures contribute to vulnerability of certain identities. In studying intersectionality, the researcher looks at what policies, environments, and structures contribute to exclusion (Crenshaw, 2016a). In their chapter titled “Intersectionality, Identity, and Systems of Power and Inequality”, Wijeyesinghe and Jones (2014) state “Intersectionality highlights
how people—as members of multiple groups of individuals—experience marginalization and inequality, even in movements designed to further social justice and institutional change” (p. 10). Most individuals have privileged and marginalized identities. Although initially focused on forms of subordination, intersectional theory is evolving to include the study of how privileged identities interact with a person’s other identities and experiences, thus providing examination of how identities of privilege and marginalization interact (Goodman, 2014).

Critics of intersectionality in research are concerned about excessive specificity and multiple lines of distinction among populations that may create boundaries and diminish shared experiences within identity groups (Museus & Saelua, 2014). Proponents believe that intersectionality can reveal and create new alliances across identity groups because it can acknowledge communities they may have otherwise been unrecognized (Museus & Saelua, 2014).

Intersectionality is increasingly becoming common in higher educational research. It is all the more important to include the constructs of intersectionality on sense of belonging on college campuses. Goward (2018) points out, “Students contend with multiple identities when they seek out campus relationships with peers, faculty, and staff” (p. 2).

Intersectionality is necessary for providing context for social, academic, and institutional sense of belonging. Tefera et. al. (2018) writes,

An intersectional approach is fundamentally oriented toward analyzing the relationships of power and inequality within a social setting and how these shape individual and group identities. That is, our identities are shaped by our
experiences in social groups and how we as members of those groups encounter institutionalized social structures. (p. viii)

Research on sense of belonging considering multiple aspects of a person’s identity is limited. Goward (2018) writes, “Few studies have examined students who are at the intersection of multiple marginalized identities or their outcomes, with regard to belonging on campus” (p. 28). Goward emphasizes the need to provide faculty and practitioners information on intersections of identity so that they are best able to support needs to students. This study seeks to provide this information.

Chapter Two provided a review of literature on the variables in the Student Success Framework concerning student success, university environment, and student background (See Figure 3), given the four variables outlined in the introduction—persistence, engagement, sense of belonging, and identity. Chapter Three discusses the methodology for this study exploring the relationships between identity, engagement, sense of belonging and persistence.
Chapter Three: Methodology

The purpose of this research is to look at the relationship between sense of belonging and persistence; the role of engagement in this relationship; and the degree that student demographics influence engagement, sense of belonging, and persistence. Chapter Three discusses methodology used to study these factors and relationships.

Based on the conceptual framework in Figure 3: Student Success Framework, variables were collected on student demographics and academic preparation; engagement in academic, social, and institutional activities and programs; sense of belonging; CCR; GPA; and persistence. IBM SPSS Statistics (SPSS) Version 25 was used in the initial analysis to analyze descriptive statistics as well as compute manifest engagement, interacting, and intersectionality variables. Further, SPSS was used to conduct exploratory factor analysis (EFA) in order to make latent engagement and sense of belonging variables. Later, RStudio (R)Version 1.1.463 was used to conduct confirmatory factor analysis (CFA), structural equation modeling (SEM), and to determine model fit.

Research Design and Approach

Data sampling. Participants in the study were ungraduated students attending Eastern Michigan University (EMU) in the Fall 2018 semester. Although traditionally a comprehensive university, EMU recently earned R3 and then R2 Carnegie designation. This PWI is one of the more diverse universities in the area and draws from a large metropolitan area as well as rural counties. The institution is considered a commuter and suitcase school due to the large number of students who commute to college and large number of residential students who leave on weekends. Do to these factors, EMU is
representative of the type of institution where persistence can be an acute concern.

**Data collection.** An original survey was emailed to the full undergraduate body, 15,730 students, from the institution’s research management office, IRIM. The researcher also contacted or met with specific campus programs and academic classes in an effort to recruit minoritized students. Students invited to participate included both transfer and first time in any college (FTIAC) students. Of a little over 1,000 responses received, 561 respondent surveys were complete and valid. This provided a 4% response rate. A large sample size was necessary for SEM to be robust. Some researchers consider $N = 200$ necessary to obtain estimates of model parameters, standard errors, and goodness-of-fit (Hoogland & Boomsma, 1998). The researcher required an $N$ of at least 250 following recommendations of Nye and Drawgor (2011), Nevitt and Hancock (2000), and Yu and Muthen (2002).

Respondents provided their student number and permission to release demographic and academic institutional information. The institution’s research office distributed and collected the survey. Once received, the research office merged the primary source data with the secondary institutional data, removed identifying information, and provided the data to the researcher.

**Variables.** Figure 4 shows specific variables used in the analysis. Input and outcome variables are measured variables. With exception of Academic Advising, Community Service, and Working on Campus, environmental variables are latent as determined by factor analysis. See Factor Analysis p. 59 for more information on factor analysis used in this study. A full list of engagement and sense of belonging items prior to factor analysis can be found in the original survey in Appendix A.
Figure 4. Variables used in analysis. Note: with the exception Academic Advising and Community Services, variables in the environment are latent variables determined after factor analyses.

The study collected data on several measurable variables. Exogenous variables included student demographics of age, gender, and ethnicity; SES based on Pell eligibility and first/continuing-generation status; and college preparedness based on incoming GPA. Endogenous variables in this model are sense of belonging variables, engagement variables, and student success markers. Engagement variables went beyond simple participation of the activity to include data on the activity’s level of importance to the student, leadership role of the student, and student’s years of involvement. Social engagement included organizations and activities such as Greek life. Academic engagement included organizations and activities such as engaging in instructor office
hours. Institutional engagement included programs such as student support programs specific to the particular institution. Data on sense of belonging was gathered by student answers on a Likert scale to questions related to perceived belonging in social, academic, and institutional spaces. Observable variables were answers to questions such as “I feel comfortable contributing to class” and “I feel very different from most other students.” A copy of the original survey can be found in Appendix A for more specific information on questions and scales. In addition to these primary source data, secondary source data was provided by the institution’s research office on the observable variables of CCR, GPA, and student persistence. A copy of the Human Subjects Approval Letter can be found in Appendix B.

**Student demographics.** Participating students were asked to provide their student number and permission to release demographic information. Secondary source information was provided by the university’s research office on the student’s self-identification of age, ethnicity, and gender; as well as information from FASFA on first/continuing-generation status and Pell eligibility. Using institutional records increased the likelihood of complete datasets.

**Engagement.** Questions on the survey asked respondents to indicate their level of participation in various engagement activities, their rate of importance of the activity, whether or not they had a leadership role, and the number of years the student participated in the activity. Engagement data were collected on social, academic, and institutional programs and activities. Social offerings include programs such as Greek life, sports participation and attendance, and community service. Academic offerings include academic organizations such as student organizations related to the major,
tutoring, instructor office hours, and academic support programs specific to EMU such as Holman Success Center’s Study Tables. University offerings include using student services such as academic advising, support offices such as the Women’s Center and EMU specific programs such as the transition to college program, Edge. For each activity, answers to questions concerning participation, importance, leadership role, and number of years of participation were weighted and combined to calculate the variable “engagement.”

**Sense of belonging: Social, academic, and institutional support.** Questions on the survey designed for this study assessing sense of belonging were set in a 5-point Likert scale. Questions the researcher expected to align with institutional belonging include “I feel I am a member of the college community” and “I would encourage a high school senior whose background, abilities, and interests are similar to mine to attend this college.” Questions on the survey aligned with social belonging include, “I have a lot in common with other students here” and “Other students here like me the way I am.” Questions on the survey that the researcher expected to align with academic belonging include “I feel comfortable contributing to class discussions” and “When I interact with professors at this college, I feel they care about how I’m doing.” Questions on the survey that align with institutional belonging include “This college is the right school for me.” and “I see my identity reflected in the staff members at this institution.” A full list of survey questions can be found in Appendix A.

**Outcome variables.** IRIM provided secondary source data for the variables of CCR, GPA and persistence.
Data Analysis

The researcher used the following statistical techniques: descriptive statistics, coding, variable transformation, EFA, CFA, and SEM including goodness of fit.

**Descriptive statistics.** Descriptive statistics were used to calculate frequencies of student demographics and backgrounds, CCR, GPA, and persistence in order to learn more about the population studied. Descriptive statistics were also used to determine the statistical means of engagement and sense of belonging variables in order to understand more about the levels of engagement and levels of sense of belonging. Additionally, SEM assumes normal distribution. SPSS was used to check for non-normality. Further, multiple regression assumes the independent variables are not highly correlated. The researcher used factor analysis to avoid multicollinearity and, using R Studio, confirmed independent variables used in the analysis were not highly intercorrelated.

**Coding.** Dummy coding was used to incorporate nominal variables of gender, ethnicity, scholarship, first-generation status, Pell eligibility, enrollment, and graduated/not graduated into regression analysis. Next, engagement variables were made by multiplying weighted coded variables: extent of participation, level of importance, leadership, and total years. See Table 1 for specific coding used to make the engagement variable.
Table 1

*Coding for Weighted Engagement Variables*

<table>
<thead>
<tr>
<th>Extent of Participation</th>
<th>Coded</th>
</tr>
</thead>
<tbody>
<tr>
<td>no participation</td>
<td>0</td>
</tr>
<tr>
<td>slight participation</td>
<td>1</td>
</tr>
<tr>
<td>some participation</td>
<td>1.5</td>
</tr>
<tr>
<td>substantial participation</td>
<td>2</td>
</tr>
<tr>
<td>missing</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leadership Coded</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
</tr>
<tr>
<td>yes</td>
</tr>
<tr>
<td>missing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years Coded</td>
</tr>
<tr>
<td>1 yr.</td>
</tr>
<tr>
<td>2 yrs.</td>
</tr>
<tr>
<td>3 yrs.</td>
</tr>
<tr>
<td>4 yrs.</td>
</tr>
<tr>
<td>4 plus yrs.</td>
</tr>
<tr>
<td>missing</td>
</tr>
</tbody>
</table>

**Computed variables.** Intersecting variables and variables related to intersectionality were made by multiplying specific variables together. Interacting variables were calculated by multiplying demographic variables with engagement variables as well as multiplying demographic information with sense of belonging variables. Intersectionality variables were calculated by multiplying dummy-coded student demographic variables such as gender and ethnicity as well as gender and Pell
eligible.

**Variable transformations.** Nonnormality can be a concern when using categorical variables (Newsom, 2018). Non-normally distributed variables were found in the engagement variables: major outside of class, social activities, social justice, support programs, time with professor, and tutoring/mentoring. These variables were transformed by first adding a two to each non-normally distributed engagement variable in order to make the variable positive and second taking the cubed root of the variable. This corrected for non-normality by bringing the skewness below > 2 and kurtosis below > 7 as recommended by West, Finch, and Curran (1995).

**Factor analysis.** The statistical techniques of EFA, CFA, and SEM examine the covariation among observed variables to reduce observable variables into a smaller number of latent variables (Schreiber, Nora, Stage, Barlow, & King, 2006). This technique avoids multicollinearity and also creates opportunity to measure variables that are difficult to observe. In this study, SPSS was used to perform EFA in determining relationships among interrelated variables of engagement and interrelated variables of sense of belonging. Next, R Studio was used to perform CFA to test the hypothesis that there is a relationship between the manifest variables and the latent variables of engagement as well as manifest variables and the latent variables of sense of belonging. Factor analysis with varimax rotation was used on the 30 engagement items to determine latent engagement variables as well as with the 18 sense of belonging items to determine latent sense of belonging variables.

**Structural equation modeling (SEM).** Lavaan and SEMTools packages in R through R Studio version 1.1.383 were used to perform SEM. SEM is an advanced
multivariate analysis technique used to explore the relationship between variables and
determine the degree to which a theoretical model is supported by the data. It consists of
a CFA measurement model, a structural model, and fit measurements. SEM is valuable in
this type of study because of its ability to test models that include both observed and
latent variables, confirm factor structure, and examine the plausibility of complex
theoretical models. It is also able to compare theoretical models using model fit indices to
determine which is a better model fit to the data (Crockett, 2012). The observed
indicators in the model are both continuous and categorical. The use of ordinal scales
created a basement that challenges normal distribution. R typically uses maximum
likelihood estimates (ML); however, ML assumes observed continuous variables and
multivariate normal distribution (Li, 2006). Current literature suggests diagonally
weighted least squares (DWLS) approach to estimate fit and coefficients when using
ordered categorical and other nonnormally distributed data (Li, 2006; Nye & Drasdow,
2011).

**Evaluation of fit.** As mentioned above, model fit indices are used in SEM to
compare theoretical models in determining best model fit to the data. Literature
recommends multiple indices based on the data used (Schreiber, Nora, Stage, Barlow, &
King, 2006). Robust indices used were ratio of chi-square to degrees of freedom
(CHIM/DF), root mean squared error of approximation (RMSEA), Tucker-Lewis index
(TLI), and comparative fit index (CFI). TLI and CFI have a score of 0-1. Scores closest
to 1 show good fit. The researcher looked for a score above 0.9. Additionally, the
researcher looked for a CMIN/DF < 3 and an RMSEA < 0.05. Goodness of fit scores
used in this study are based on recommendations by Newsom (2018).
Chapter Summary

Chapter Three discussed methods in data sampling, data collection, and quantitative methods used in collecting data and assessing results towards investigating the relationship between identity, engagement, sense of belonging, and persistence.

Chapter Four will discuss the findings.
Chapter Four: Findings

Chapter Four shares the findings from the study. Included in this chapter are findings from descriptive analysis, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), structural equation modeling (SEM), and model fit analysis.

Descriptive Statistics

Demographics. The demographics and background of respondents were compared to those of the institution, county, state, and nation. Compared to the full EMU undergraduate study body, slightly more respondents to this study identified as White, slightly more identified as female, and slightly more persisted (see Table 2). A comparison table that includes the information from Table 2 as well as state and national comparisons can be found in Appendix C.

<table>
<thead>
<tr>
<th>Variable (N)</th>
<th>Study Participants</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>N = 561</td>
<td>N = 16,997</td>
</tr>
<tr>
<td>Men (153)</td>
<td>27.3%</td>
<td>39.70%</td>
</tr>
<tr>
<td>Women (408)</td>
<td>72.7%</td>
<td>60.20%</td>
</tr>
<tr>
<td>White (409)</td>
<td>72.9%</td>
<td>63.40%</td>
</tr>
<tr>
<td>Black (59)</td>
<td>10.5%</td>
<td>17.88%</td>
</tr>
<tr>
<td>Latinx (30)</td>
<td>5.3%</td>
<td>5.09%</td>
</tr>
<tr>
<td>Identified groups less than N = 30</td>
<td>11.3%</td>
<td>**</td>
</tr>
<tr>
<td>Returned WI19 (497)</td>
<td>88.6%</td>
<td>81.36%</td>
</tr>
<tr>
<td>Graduated FA18 (24)</td>
<td>4.3%</td>
<td>7%</td>
</tr>
<tr>
<td>Persisted (521)</td>
<td>92.9%</td>
<td>88.36%</td>
</tr>
</tbody>
</table>

** data not available

Exploratory and Confirmatory Factor Analysis

EFA and later CFA factor loadings of manifest variables for engagement and loadings of manifest variables for sense of belonging were used to determine latent variables. The final CFA in lavaan 0.6-3 ended normally after 180 rotations with a chi-square p-value of 0.000. Model fit indices were used to test the appropriateness of the model as follows: CHIM/DF = 1.42, CFI = 0.978, TLI = 0.974, RMSEA = 0.028.

**Latent engagement variables.** Seven latent engagement variables emerged from EFA: social justice, social activities, mentoring/tutoring, major/minor activities, time with professors, support programs, and athletics. CFA later removed the latent variable athletics, which included being involved in varsity sports and sports clubs. The remaining six latent variables, the manifest variables that make them, and factor loadings can be found in Table 3.
<table>
<thead>
<tr>
<th>Latent Variable: Engagement in Social Justice</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.678</td>
<td>EMU Cultural Groups or Activities</td>
</tr>
<tr>
<td></td>
<td>.590</td>
<td>EMU Political Activities</td>
</tr>
<tr>
<td></td>
<td>.683</td>
<td>EMU Student Government</td>
</tr>
<tr>
<td></td>
<td>.766</td>
<td>EMU Center for Multicultural Affairs</td>
</tr>
<tr>
<td></td>
<td>.745</td>
<td>EMU Women's Resource Center</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Engagement in Social Activities</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.785</td>
<td>EMU Greek Life</td>
</tr>
<tr>
<td></td>
<td>.785</td>
<td>NSOA - Orientation volunteer or paid worker</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Major Outside of Class</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.870</td>
<td>EMU student organization membership related to your major/minor</td>
</tr>
<tr>
<td></td>
<td>.870</td>
<td>Participation in extra-curricular programs related to your major/minor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Mentoring/Tutoring</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.792</td>
<td>Participating in a university-sponsored mentoring program</td>
</tr>
<tr>
<td></td>
<td>.792</td>
<td>Using university-provided tutors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Time with Professors</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.902</td>
<td>Talking with professor outside of class</td>
</tr>
<tr>
<td></td>
<td>.902</td>
<td>Visiting professors during office hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Support Programs</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.739</td>
<td>Attend EMU Study Tables</td>
</tr>
<tr>
<td></td>
<td>.739</td>
<td>EDGE</td>
</tr>
</tbody>
</table>

Student engagement for the particular activity is a combination of: level of participation in the activity/program, degree of importance the student placed on the activity/program, leadership involvement in the activity/program, and number of years
the student was affiliated with the activity/program. The overall score can range from 0 (no participation) to 7.5 (substantial participation, very important, leadership role, and five or more years of affiliation).

A level of participation statistical means comparison was completed. Engagement (EN) variables included the three manifest variables: En-Community Service, En-Academic Advising, and En-Working on Campus as well as the six latent engagement variables (see Figure 5). The participation score ranges from 0 to 3: zero = no participation, 1 = slight participation, 2 = some participation, and 3 = substantial participation. Note, the latent variable score is an average of the averages that comprise the latent variable. Of all the activities studied, only two were attended by the average student: En-Academic Advising and En-Time with Professors. The study found the highest level of student participation in Academic Advising with a score of 1.62. This shows the average individual student indicates a level of participation above slight participation and under some participation. Time with Professors had the second highest participation score at 1.37. This shows a participation level above slight participation. The activities with the lower rates of participation are Social Justice (0.18), Social Activities (0.23), Mentoring/Tutoring (0.18), and Support Programs (0.27). These averaged well below slight participation.
Dimensions of sense of belonging. Four dimensions of sense of belonging (SB) emerged from the exploratory factor analysis of all respondents. The following latent variables emerged: SB-Students and Community, SB-Faculty and Staff, SB-Discrimination, and SB-Identity. Confirmatory factor analysis supported all four latent variables. The latent sense of belonging variables, manifest variables that make them, and factor loadings can be found in Table 4.
<table>
<thead>
<tr>
<th>Latent Variable: Students and Community</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can really be myself at EMU.</td>
<td>.748</td>
<td></td>
</tr>
<tr>
<td>I feel like I am a member of the EMU community.</td>
<td>.784</td>
<td></td>
</tr>
<tr>
<td>I am glad I am attending EMU.</td>
<td>.782</td>
<td></td>
</tr>
<tr>
<td>Students at EMU are friendly with me.</td>
<td>.746</td>
<td></td>
</tr>
<tr>
<td>Students at EMU treat me with respect.</td>
<td>.710</td>
<td></td>
</tr>
<tr>
<td>I would encourage a high school senior whose background, abilities, and interests are similar to mine to attend this college.</td>
<td>.717</td>
<td></td>
</tr>
<tr>
<td>I would find it easy to join study groups with other students if I wanted to.</td>
<td>.589</td>
<td></td>
</tr>
<tr>
<td>I have been a positive role model for my peers.</td>
<td>.601</td>
<td></td>
</tr>
<tr>
<td>EMU's efforts at community building are effective.</td>
<td>.708</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Faculty and Staff</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I interact with professors at EMU, I feel thy care about how I'm doing.</td>
<td>.859</td>
<td></td>
</tr>
<tr>
<td>When I interact with staff members at EMU, I feel thy care about how I'm doing.</td>
<td>.786</td>
<td></td>
</tr>
<tr>
<td>I would feel comfortable asking a professor for help if I did not understand something course-related.</td>
<td>.773</td>
<td></td>
</tr>
<tr>
<td>I feel comfortable contributing to class.</td>
<td>.680</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Identity</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>I see my identity reflected in the professors in my academic program</td>
<td>.773</td>
<td></td>
</tr>
<tr>
<td>I see my identity reflected in the staff members at EMU</td>
<td>.680</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Discrimination</th>
<th>Factor Loading</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>People of my race/ethnicity are more likely to experience discrimination at EMU than others.</td>
<td>.800</td>
<td></td>
</tr>
<tr>
<td>I feel very different from most other students.</td>
<td>.800</td>
<td></td>
</tr>
</tbody>
</table>
A statistical means comparison of the four dimensions of sense of belonging can be found in Figure 6. Respondents rated sense of belonging variables on a five-point Likert scale stating whether or not they agreed with the sense of belonging statement. Answers were then scored as 1 = *strongly disagree*, 2 = *somewhat disagree*, 3 = *neither agree nor disagree*, 4 = *somewhat agree*, 5 = *strongly agree*. SB-Faculty and Staff has the highest rating with a 3.95. This is just about at somewhat agree. SB-Students and Community has a rating just below somewhat agree with a score of 3.77. Feelings of sense of belonging by SB-Identity were between neither agree nor disagree and somewhat agree at 3.36. The lowest scoring sense of belonging dimension was feelings of discrimination (SB-Discrimination). At 2.5, responses were between slightly disagree and neither agree nor disagree.

![Figure 6. Statistical means of sense of belonging variables.](image)

This section discussed factor loadings that make up the engagement and sense of belonging latent variables as well as the statistical means and comparisons. In the next section, we will look at covariations of engagement and sense of belonging factors as well as their correlations with identity and student success factors.
Final Structural Equation Model

The final SEM in lavaan 0.6-3 ended normally after 180 rotations with a chi-square p-value of 0.000. Model fit indices were used to test the appropriateness of the model. The model fit results were as follows: Ratio of chi-square to degrees of freedom = 1.51, CFI = 0.942, TLI = 0.911, RMSEA = 0.032. Data from the final SEM can be found in Figure 7. The final SEM indicates correlations and covariates for all of the variables that carried through to the final model. Variables that did not correlate or covary at the statistically significant level of at least $p < 0.1$ were dropped from the model. Later sections will present the model in smaller groupings in order to analyze the data and clarify results. Following SEM reporting traditions as indicated by Schreiber, Nora, Stage, Barlow, and King (2006), ovals indicate latent variables and rectangles indicate manifest variables.

Figure 7. Full SEM.
SEM is able to show directionality. The full SEM data show one-directional relationships (indicated with a one-directional arrow) as well as mutual relationships (indicated with a double arrow). Demographic and background variables positively or negatively correlated with some engagement, sense of belonging, and student success indicators. These relationships are one-directional in the direction indicated by the arrow. Similarly, relationships involving student success factors were shown by SEM to be one-directional as well. On the other hand, several of the engagement and sense of belonging variables indicated a bi-directional relationship. These covarying variables show variables mutually influencing each other. The relationship is indicated by a double arrow point.

Findings Related to Research Questions

The following section contains additional information on findings related directly to research questions R1, R2, and R3. The data in descriptive statistics, EFA, CFA, and the full SEM were analyzed to answer these three main research questions. Conclusions and Implications will be discussed in Chapter Five.

Figure 8 shows mediating effects of engagement and sense of belonging on college GPA and persistence used to answer the first two research questions.
Research Question 1: To what extent does sense of belonging influence persistence? This study shows no direct effect of sense of belonging on persistence. However, it does show an indirect effect mediated by En-Major/Minor Activities and mediated by College GPA.

Sense of belonging mediated by En-Major/Minor. The sense of belonging factor, En-Students and Community, positively covaried with En-Major/Minor Activities with a beta of 0.020 and a p-value < .001. The sense of belonging factor, SB-Faculty and Staff, positively covaried with the engagement factor, En-Major/Minor Activities, with a beta of 0.016 and a p-value < .001. Therefore, the data show that a higher sense of belonging in one of these dimensions enables engagement in the major/minor activities, and lower
sense of belonging in one of these dimensions inhibits engagement in major/minor activities.

Engagement in Major/Minor Activities influences College GPA and College GPA influences Persistence. Previous studies have been unclear on whether GPA influences sense of belonging or if sense of belonging influences GPA. By using SEM, the researcher was able to establish directionality to show that sense of belonging and engagement influence GPA. GPA did not influence sense of belonging or engagement for the students in this study.

**En-Major/Minor Activities’ relationship to college GPA.** En-Major/Minor Activities was the only engagement or sense of belonging variable with a direct link to a student success indicator. En-Major/Minor Activities was significantly positively correlated with College GPA with a beta value of 0.666 and \( p \)-value < .01. This relationship was one-directional. College GPA does not influence engagement, rather, College GPA increases as engagement in Major/Minor activities increase, and college GPA decreases as the level of engagement in Major/Minor Activities decrease.

**College GPA correlates with persistence.** College GPA was significantly positively correlated with persistence with a beta value of .182 and a \( p \)-value < .001. SEM shows the correlation to be one-directional. The higher the student’s College GPA, the more likely that student is to persist to the next semester or graduate. Similarly, the lower the student’s college GPA, the less likely the student is to persist. With all this in mind, the answer to research question one is SB-Students and Community as well as SB-Faculty and Staff have an indirect effect on persistence with a beta of 0.002.
Research Question 2: What is the role of engagement in the relationship between sense of belonging and persistence? Several engagement and sense of belonging factors covaried, creating several mediating effects. As mentioned in the answer to research question one, En-Major/Minor Activities mediated the effect of SB-Student and Community and SB-Faculty and Staff on College GPA and finally on Persistence. Moving a step back, we see that SB-Students and Community mediated the effect of factors: En-Tutoring/Mentoring, En-Support Programs, En-Social Justice, En-Social Activities, En-Time with Professors, and En-Community Service on En-Major/Minor Activities, College GPA, and finally, Persistence. Similarly, SB-Faculty and Staff mediated, En-Time with Professor’s and En-Community Service influence on En-Major/Minor Activities, College GPA, and finally, Persistence. Finally, we see that SB-Identity was mediated by En-Community Service and SB-Discrimination was mediated by En-Tutoring/Mentoring. This last relationship is negative, meaning that when feelings of discrimination are lower, engagement in tutoring and mentoring is higher and vice versa.

The answer to research question two is sense of belonging, in certain dimensions, created enabling and inhibiting opportunities for engagement. Similarly, engagement in certain activities/programs created enabling and inhibiting opportunities in the student’s sense of belonging. Entry into this web of influences is shown to enable or inhibit student persistence.
Research Question 3: To what extent do student demographics and other student backgrounds influence engagement, sense of belonging, and persistence?

The study found a difference in how students of different demographics and backgrounds relate to engagement, sense of belonging, and persistence. However, these data do not explain much of the variance. The influences of student demographics in this study are interesting but slight.

**Age.** Older students in this study tended to have a higher GPA (beta .026 and $p < .01$), spent more time with professors (beta .024 and $p < .01$), had a higher sense of belonging with faculty and staff (beta 0.057 and $p < .001$), and had a higher sense of belonging with students and community (beta 0.024 and $p < .1$). This higher sense of belonging with faculty and staff as well as with students and community provided access for older students in the sense of belonging pressure points that lead to increased engagement in major/minor activities that indirectly leads to persistence.

Beta and p-values, as well as the influence of Age on other variables, can be found in Figure 9.
Gender. Gender had a direct influence on one engagement variable. Females were less likely to engage in social activities (beta -0.068, p-value <.01). Females at this institution have higher persistence rates; however, males in the study were more likely to engage in social activities. Engagement in social activities provides entry into the web of enabling and inhibiting factors that lead to higher engagement, sense of belonging, college GPA, and persistence. Beta and p-values related to gender can be found in Figure 10.
Figure 10. Gender relationship to engagement, sense of belonging, and student success.

**Socioeconomic Status.** The study assessed SES by looking at first-generation vs. continuing-generation status and Pell eligible vs. non-Pell eligible variables.

The findings showed First-Generation status had a direct negative influence on College GPA (beta of -0.228 and p < .001) which directly correlated with Persistence. Additionally, First-Generation is negatively correlated with SB-Faculty and Staff (beta 0.323 and p < .01). This finding showed that students with one or more parent who attended college were more likely to have a higher College GPA and more likely to feel a sense of belonging with faculty and staff, leading towards greater opportunity to persist.

Pell eligibility had a negative influence on engaging in academic advising (beta - 0.026 and p < .01). En-Academic Advising did not covary with other engagement or sense of belonging variables or correlate with levels of persistence. Therefore, for students in this study, Pell eligibility by itself did not have a significant influence on persistence. Beta and p-values related to SES can be found in Figure 11.
Figure 11. Socioeconomic relationship to engagement, sense of belonging, and student success.
Ethnicity. This study analyzed the influence of identifying White/non-White and the influence of identifying Black/non-Black on assessed factors. The study found differences based on ethnicity.

The variable Black correlated with one variable in this study. Black students were much more likely to work on campus than non-Black students (beta of 0.469 and p-value < .001). However, En-Working on campus did not significantly correlate or covary with any other variables in this study. Therefore, for students in this study, identifying as Black, by itself, had no direct or indirect influence on other engagement variables, sense of belonging variables, College GPA, or Persistence.

Identifying as White had three influences that enable or inhibit other variables. First, identifying as White is highly correlated with SB-Identity (beta 1.031 and p-value < .001), meaning White students were more likely to see their identity reflected in faculty and staff. SB-Identity covaried with En-Community Service, which covaried with SB-Students and Community as well as with SB-Faculty and Staff. Second, White students in this study were also less likely to feel discrimination (beta 0.679 and p-value < .001). A lower feeling of discrimination was related to greater engagement in mentoring and tutoring, which in turn is related to SB-Students and Community. Conversely, White students were less likely to spend time with professors. The variable White negatively correlated with En-Time with Professors with a beta of 0.411 and a p-value < .001. This negative correlation inhibited SB-Faculty and Staff as well as SB-Students and Community, which in turn inhibited En-Major/Minor Activity, College GPA, and Persistence. See Figure 12 for all beta, p-values, and relationships related to Ethnicity.
Identity is a complicated concept. This section looked at ethnicity, one aspect of a person’s identity. Findings concerning interacting variables and intersectionality of identities can be found in the next section.

*Figure 12.* Direct and indirect relationships of ethnicity on engagement and sense of belonging influences.

**Interacting variables and intersectionality.** Ethnicity considers only one aspect of a person’s identity. A person’s identity is made up of several different aspects of a person’s demographics and background. This assessment included interacting variables to understand more complex aspects of a person and identity. Direct and indirect influences on engagement and sense of belonging were found when assessing the interacting variable Black/scholarship as well as with the intersectionality Black/male (see Figure 13).
Figure 13. Interacting variables and intersectionality with engagement, sense of belonging, and student success factors.

Findings showed the interacting variable Black/scholarship had a direct effect on SB-Identity (beta 0.834, \( p \)-value < .1) as well as an effect on SB-Identity mediated by En-Community Service for a total effect of 0.884. This means that Black students on scholarship were more likely to see their identity reflected in faculty and staff than Black students not on scholarship. In addition, findings show that being Black and on scholarship positively correlated with En-Community Service (beta 0.344, \( p \)-value < .001) and En-Support Programs (beta 0.203, \( p \)-value < .001). This means that Black students in this study who are also on scholarship were more likely to engage in community service activities and support programs. Both of these engagement programs/activities positively correlated with sense of belonging dimensions that were shown to have an indirect influence on College GPA and Persistence.
In looking at the intersectionality of Black male, the study showed a positive correlation with En-Social Justice (beta 0.231 and \( p \)-value < .001). This means Black males were engaging in social justice programs more than students who are not Black males. As shown in Figure 13, engagement in social justice programs positively correlated with sense of belonging with students and community. In turn, SB-Students and Community enabled En-Major/Minor, College GPA, and Persistence.

Research question three asked about demographics and their influence on persistence. The data show demographics have influence; however, for students in this study, those influences are small.

**Chapter Summary**

Chapter Four provided findings of descriptive statistics, factor analysis, SEM, and research questions. Chapter Five is arranged to discuss the findings as conclusions with underlying stories as well as provide implications of these findings and conclusions.
Chapter Five: Conclusions and Implications

Chapter five reviews the findings and literature to discuss five conclusions and underlying stories. Structural equation modeling (SEM) in this study tells a story around identity, engagement, sense of belonging, and persistence. As seen in the data, reasons students persist or do not persist are complicated. The SEM model shows the complexity in that no one factor has a large degree of influence on persistence; however, several factors have significant influence. The chapter finishes with implications for practitioners, researchers, and theory.

Conclusions

Conclusion One: College GPA has a direct influence on persistence. The study shows the key factor in persistence is college GPA. It is not a surprise that the data show academic success in classes leads to student persistence. As noted previously, low GPA can lead to voluntary or involuntary departure from college. Additionally, a recent study by Brecht and Burnett (2019) showed college GPA to be the largest predictor of retention of student athletes at the studied school. However, the researcher expected factors outside of College GPA to also have a direct influence because previously studied theoretical models have shown direct links from non-cognitive factors including attitude (Bean, 1982), intentions (Tinto, 1975), and belonging (Strayhorn, 2012). Given these findings in the literature, the question emerges, “Why is College GPA the only variable directly related to Persistence in this study at this time and at this institution?”

One explanation may be that college GPA is becoming a greater predictor in contemporary institutions of higher education as shown in the recent article by Brecht and Burnett (2019) where college GPA was found to be the largest predictor of
persistence. The current study and Brecht and Burnett’s study could be marking a change in the impact of college GPA. Funding sources may be leading this change. Education, once considered a social good and largely funded by society through state appropriation, is now largely viewed as an individual good and largely funded by individual students and/or their families. For example, at EMU, funding received from state appropriations compared to funding from tuition and student fees has made a marked change. EMU’s (2009) *Y2019 University Budget Data* shows in 1980 nearly three quarters funding from state appropriations compared to just over one quarter funding from tuition and student fees and yet 2019 numbers show the opposite in funding. About one quarter of funding was from state appropriations vs. three-quarters funding from tuition and fees. The responsibility for funding has moved to the individual student. This may be contributing to a consumerism view of education, leading the focus on academics, GPA, and career as opposed to less immediate and less visible benefits of higher education including societal, health, and social benefits. Today’s students may be concerned about the career and job aspects of their education to a greater degree than previous generations of students in higher education. This view could be even more prominent for commuter and suitcase student, a population prevalent at EMU. Students who spend less physical time on campus could view academic success more importantly than other student success factors. Knowing the direct influence of College GPA, the next question to consider is, “What leads to a higher college GPA?”

**Conclusions Two: Only one factor, increased Engagement in Major/Minor Activities, directly leads to higher GPA.** Engagement in programs/activities related to the major and minor is key to a higher college GPA. This is not surprising. Theorists
discussed the importance of academic integration (Hurtado & Carter, 1997; Pascarella &
Terenzini, 2005; Roberts, 2018; Strayhorn, 2012/2015; Tinto, 1975/1993). However,
several studies have specifically noted the positive influence of social engagement on
GPA as well (Carini et al., 2006). Considering the literature, the researcher expected to
find additional aspects of engagement and sense of belonging to have a direct influence
on College GPA. Given the literature and findings, the question emerges, “Why is
engagement in major/minor activities the only variable directly related to higher or lower
College GPA?”

The important influence of engagement in activities related to the major and
minor could also be related to growing consumerism in higher education and an increased
importance on what the higher education degree will “do” for the student regarding
career and future income. It may also be related to the type of institution in this study.
Different kinds of engagement and sense of belonging may influence persistence
differently at different types of institutions. This institution, for example, has its roots in
preparing students for particular careers. EMU is a regional R2 institution that has its
roots in teacher preparation as a normal school and later as a comprehensive institution.
Some of the main fields of study at this institution are nursing, teacher preparation, and
business. These factors may contribute to a vocational culture that naturally promotes
majors/minor and career more so than an R1, liberal arts, or residential college might.

The importance of engagement in major/minor activities may also be due to the
types of students who choose EMU. Although many students at this institution are
traditional age, full-time students, and residential, many other students commute to
college and/or leave campus on weekends. Still other students are older than 24 or are
veterans. Student population is an important consideration. Tinto’s (1975) initial theory on integration and retention was based on studies with traditional age, residential students. Later, Tinto (2006) noted differences in his theory, stating, “As we studied persistence in non-residential settings, for instance, we have come to appreciate as we did not before, not only the impact of external events on student lives, but also the importance of involvement in the classroom to student retention” (p.4). The study at this commuter and suitcase school supports Tinto’s findings concerning populations that are not necessarily residential and traditional age. Considering this trend, the question that still remains is, “What leads to higher engagement in programs and activities related to the major and/or minor?”

**Conclusion Three: Two pressure points in sense of belonging enable or inhibit engagement in major/minor activities.** Sense of belonging with students and community as well as sense of belonging with faculty and staff are shown to enable or inhibit engagement in major/minor activities. This is a mutual relationship, meaning that sense of belonging factors influence engagement in major/minor activities and also engagement in major/minor activities influences sense of belonging factors. The influence of sense of belonging on major/minor engagement and indirect influence on GPA corroborate work of other researchers who found sense of belonging to have an affective component that influences students’ academic experience (Morieson, Carlin, Clarke, Lukas, & Wilson, 2013). Similarly, Strayhorn (2012) describes sense of belonging as a basic human need that facilitates student success. He later provided an example when he found that Black STEM students who felt they belonged in their STEM program participated more in behaviors that influenced higher academic success than
students who did not feel they belonged (2015).

The influence of sense of belonging with faculty and staff could be because of the opportunity for a student to feel that faculty and staff see the student as a whole person, someone of value, and someone worth spending time with. This consideration is supported by studies reported by Museus and Ravello (2010), which show a positive influence from interactions with faculty who are warm, see the student as a whole person, and go beyond their regular activities. Considering students in this study saw sense of belonging with faculty and sense of belonging with staff in the same dimension, the study further supports the implication by Museau and Ravello that academic advisors with the same warm and whole-student approach can have a similar positive influence. This finding could be further influenced by the large number of EMU students who commute to campus and who leave on weekends. Hurtado et al. (2012) state that students who do not have time for college involvement or who have less peer contact draw conclusions on the inclusive and welcoming environment from faculty and staff.

Sense of belonging with students and community may be influential because of the relationship between social belonging and psychological and physical investment as discussed by Pascarella and Terenzini (2005). Further, the conclusion is supported by the affective component of sense of belonging seen in Walton and Cohen’s (2007) work, concerning the influence of social belonging on academic and professional achievement.

**Conclusion Four: Actionable engagement variables directly and indirectly enable and inhibit factors that indirectly lead to persistence.** Engagement variables are actionable on college campuses, meaning these are places where the administrator and practitioner can provide or remove opportunities and barriers. The opportunity for
activities and programs to influence persistence may be related to the opportunity for physical and psychological investment it creates. This conclusion is supported by Pascarella and Terenzini’s (2005) work as well as Astin’s (1975) theory of student involvement. Astin found several activities, including research with professors and involvement in Greek organizations, contributed to the decision to stay or leave college.

Several actionable engagement factors and sense of belonging factors have mutual influences, meaning they influence each other. Actionable engagement opportunities found are engagement in social justice, social activities, tutoring/mentoring, time with professors, support programs, community service, and major/minor activities. These items have the ability to influence sense of belonging factors related to students and community, faculty and staff, discrimination, and identity. Analysis shows both direct and indirect influences. These engagement activities are varied and have differing time and location commitments. What is common among them all is that they create opportunity for student investment. Using a variety of activities and programs is supported by Roberts’s (2018) suggestion that retention plans include culture, student preparation, personal well-being, academic engagement, and social engagement.

Although several engagement activities relate to student success, the researcher was surprised that some of the activities studied did not relate. For example, with an understanding of financial and work requirements of many of the students at this institution, the researcher expected working on campus to be an opportunity to provide investment related to student persistence. For example, Astin (1984) found a positive influence of working on campus on persistence.
Persistence, engagement, and sense of belonging contributions are complicated. In summary, several actionable activities and program are influential while others are not. Additionally, actionable activities and programs are modified by other factors. This leaves a final question, “How do we know what personal characteristics, identities, and other background information influence engagement, sense of belonging, and persistence?”

**Conclusion Five: Importance of assessing interacting variables and intersectionality in quantitative analysis in relation to engagement, sense of belonging, and persistence.** Checking for interacting variables, including intersectionality, is important in quantitative research. Interacting variables are a combination of two variables and their influence on a third variable. Intersectionality can be studied as a form of interacting variables by looking at the intersection of identities. For example, this study shows the variable Black/scholarship reacting statistically different than the variable Black or the variable scholarship alone. The study also shows the variable Black/male reacting differently than the variable Black or the variable male alone. Assessing interacting variables enables the understanding of more complete student identities and how these identities relate to engagement, belonging, and persistence.

**Interacting variables in quantitative research.** For students in this study, identifying as being Black and on a scholarship has a positive influence on engagement in community services, engagement in support programs, and on sense of belonging regarding identity. This influence is not seen for students who identified as Black only or on a scholarship only. This shows Black students on scholarship have a greater
opportunity than Black students not on scholarship to be introduced into the enabling and inhibiting web towards persistence.

Perhaps the scholarship adds to a student’s feeling of being valued and of fitting in on campus for students in the non-dominant culture. This conclusion is supported by Means and Pyne’s (2017) research that found students of color on the PWI reported increased sense of belonging from support from programs such as scholarships. Perception of value as well as a perception of fit are necessary for sense of belonging (Hagerty & Patusky, 1995). A person can feel valued but not feel belong on campus due to cultural and background differences. Perhaps the scholarship inhibits feeling marginalized and adds to the perception of both value and fit for students in the non-dominant culture of a campus.

The study also reveals sense of belonging with identity is influenced through community service for Black students on a scholarship in a way that is not true for non-Black students on a scholarship or for non-scholarship Black students. This could be influenced by a belief in the Black community to give back. An advisor who works with many Black student athletes on scholarship discussed an engrained culture in the Black community of a responsibility to go back to the community, to talk with young people similar to themselves, and to encourage opportunities for success (S. Pryor, personal communication, September 10, 2019). Black students on scholarship may understand the value of funding and support to a greater degree than other students on scholarship. These factors may influence engagement in community service, which further has a positive influence on sense of belonging in identity and a positive influence on sense of belonging with students and community and provides access to the enabling and inhibiting
engagement and sense of belonging that have a positive influence on college GPA and ultimately on persistence.

*Intersectionality in quantitative research.* In this study, Black male students were more likely to engage in social justice programs than students who were not Black male. The findings in this research reinforce a need to check for interacting variables in quantitative research, especially using the framework of intersectionality. The findings support one of the core elements Strayhorn (2012) used to define sense of belonging, the belief that sense of belonging is affected by intersects of social identity. The framework of intersectionality can be supported by the framework of QuantCrit in quantitative research in that it they require the quantitative researcher to consider historical, social, political, and economical power relations within engagement, sense of belonging, and persistence.

Intersectionality, in quantitative statistics, is a form of an interacting variable. It is the combination of one’s multiple identities and understanding of an individual’s full identity. A reason interacting variables and intersectionality changes engagement and sense of belonging may be due to differences in access to resources, power, and opportunity based on membership in social groups, supporting Goodman’s (2014) work. Goodman writes about differences in opportunities based an individual’s hierarchy within the group. Additionally, intersectionality allows the researcher to account for cultural factors in studying persistence, a need discussed by McPherson (2016).

The finding that Black male students are more likely to engage in social justice activities than other students further support the discussion in the previous section related to an engrained belief in the Black community to give back. The data in this study
suggests that this belief for Black male college students may be embodied in programs that create change and activism. The latent variable social justice includes engagement in institutional cultural groups/activities, political activities, student government, and the center for multicultural affairs. The finding that Black males are more likely to engage in social justice activities and programs suggests that social justice programs may be a gateway for Black males to enter into the mix of enabling and inhibiting factors that lead to persistence.

**Conclusion summary.** Factors related to identity, engagement, sense of belonging, and persistence are complex. The conclusions discussed college GPA having a direct influence on persistence and engagement in major and minor activities being the only direct influence on GPA. It also discussed two pressure points in sense of belonging that enable or inhibit engagement in major and minor activities, and several engagement activities and programs directly and indirectly related to those pressure points. The final conclusion discussed how identity and intersectionality play a part in understanding the relationship between engagement, sense of belonging, and persistence. The following section will discuss implications of the findings and conclusions for practitioners, theory, and research.

**Research Limitations**

Limitations were found in this study. Comparisons to the university demographics and student success indicators were fairly similar to the general population at EMU; however, there were slightly more women, slightly more people who identified as White, a slightly higher GPA, and slightly higher graduation rate with the students who participated. Additionally, the response rate for the survey was 4% of the total
undergraduate population. A larger sample size and closer demographic match would make these findings more generalizable to the EMU undergraduate population as a whole. Next, lack of diversity in respondents limited data that could be collected and analyzed on the relationships among different student populations. A more diverse response would allow for greater understanding of difference between student populations and greater opportunity for use of the frameworks of intersectionality and QuantCrit. Lastly, low levels of participation by respondents in many of the engagement variables caused a need for variable manipulations when analyzing data.

In addition to generalization to the full undergraduate study body, these challenges can cause false positives in relationships between variables. A study with a greater response rate that is more representative of the general population at this institution could provide greater understanding of relationships, opportunity for understanding sense of belonging with different student populations, and ease in analyzing data.

**Implications**

**Implications for practitioners.**

*Higher education administrators.*

*Administrators Recommendation #1: Focus resources on providing access for students to engage in actionable activities/programs that lead toward increased sense of belonging, increased engagement in the major/minor activities, and increased persistence.* Conclusions one through five show direct and indirect links to persistence. Of note in this implication is Conclusion Four’s actionable programs/activities (see page 84, Conclusion Four: Actionable engagement variables directly and indirectly enable and
inhibit factors that indirectly lead to persistence.). Considering the limited resources of today’s R2, R3, and comprehensive institutions, administrators would be wise to combine effective engagement opportunities. Programs can be designed that efficiently influence student persistence. An example of a program that could hit several enabling areas would be a social justice and community service project, related to the student’s major or minor, and that involves faculty. An example of a program that hits these areas and is already available at EMU is the College of Education’s NEXT Place-Based Education teacher education program. The NEXT Place-Based Education program has several primary anchors that operationalize a practice of social justice. Through the NEXT program, students in the teacher preparation program become part of a learning community with other educators and youth to learn how to engage youth in inquiry-based learning that develops a deep sense of belonging to their community through a connection to place and informed civic engagement. Further, the NEXT Place-Based Education program provides teacher preparation majors multiple opportunities to collaborate with EMU faculty and K-12 students in teaching, learning, and community service while considering the heritage, culture, and experiences of the community. Currently, the program has resulted in a noticeable increase in teacher candidates’ involvement in activities related to the major, an increase in engagement in community service, an increase in teacher candidates’ skills and knowledge of equitable outcomes, and transformational relationships with professors of the program (W. Burke, personal communication, October 13, 2019). NEXT exemplifies a program that incorporates four engagement activities shown to impact sense of belonging, GPA, and persistence.
The suggestion to provide access to a variety of actionable activities is corroborated by Roberts’s (2018) proposal that retention plans include: culture, student preparation, personal well-being, academic engagement, and social engagement. The recommendation is further supported by the finding that sense of belonging influences physical and psychological investment and that physical and psychological investment influences persistence (Astin, 1975/1984; Pascarella & Terenzini, 2005; and Strayhorn 2009).

**Administrators Recommendation #2: Consider intersectionality in decision-making.** Looking at the suggestion in the previous paragraph, the higher education administrator could further provide access to students by considering intersectionality of identities. For example, Black males in this study are more likely to engage in social justice. Focusing resources on providing opportunities for Black males to participate in social justice could be a way to provide access for Black males into the interacting web of variables that enable and exhibit factors leading to student success. EMU has one of the more diverse student bodies in the region. To provide widespread success at this institution, it will be important for EMU to consider the historical, social, and political influences on sense of belonging and engagement with a diverse student populations.

**Administrators Recommendation #3: Academic advising can have an opportunity to make a difference with appropriate development and resources.** Academic advising is the activity with the highest percentage of student participation in this study. Yet in this study, academic advising did not correlate directly nor indirectly with student persistence. Academic advisors have a critical opportunity to connect with and communicate with students on the topic of opportunities related to the actionable engagement activities and
programs that influence sense of belonging, college GPA, and ultimately, persistence. In their study titled, “Characteristics of Academic Advising that Contribute to Racial and Ethnic Minority Student Success at Predominantly White Institutions,” Museus and Ravello (2010) found that academic advisors can facilitate student success in minoritized students by employing humanized, holistic, and proactive advising practices. Using humanized, holistic, and proactive advising techniques, while communicating benefits and opportunities for engagement, has the potential to help students find activities and programs that lead to opportunities for academic success as well as help students develop a sense of belonging with advising staff and advising faculty. Given the data, an academic advisor could be the one person a student sees throughout the full educational experience. A recent unpublished report in EMU’s College of Education showed a major concern of students related to academic advising is in the lack of time with advisors and the quality of advising (Lancaster & Kraii, 2019). Additional advising staff and professional development specific to academic advising through professional organizations such as NACADA: The Global Community for Academic Advising could provide a stronger relationship between academic advising, sense of belonging, and persistence.

**Professors: Time with you outside of class makes a difference.** Increased time with professors raised sense of belonging with the two pressure points of sense of belonging with faculty and staff and sense of belonging with students and community. It is not surprising that students who spend more time with professors feel a greater sense of belonging with faculty and staff. Faculty and staff engagement in relation to persistence is shown effective by several early retention theorists such as Tinto (1975). More
recently, research has shown connection between faculty and student sense of belonging (Hurtado & Carter, 1997; Roberts, 2018; Strayhorn, 2005) as well as with non-instructional staff (Hurtado & Carter, 1997). Specifically, Strayhorn (2005) found time with professors builds sense of belonging with students when professors take the time to learn students’ names, acknowledge their personal interests, and offer ways for students to see themselves in the curriculum. It is interesting that time with professors also influences sense of belonging with students and community. These two dimensions of sense of belonging are the two main pressure points that directly lead to participation in major/minor activities and indirectly lead to higher or lower GPA and rates of student persistence.

According to the National Survey of Student Engagement (2016), students at EMU spend more time with faculty discussing career plans than students at other Michigan public institutions or Mid-American Conference schools. However, according to the same report, EMU students spend slightly less time working with faculty on activities other than coursework and spend slightly less time discussing topics, ideas, and concepts with faculty outside of class as compared with students at those same institutions. This implies that faculty at this institution have an opportunity to enable greater rates of persistence by including in their time with students, activities outside the classroom related to the major and minor and also by discussing topics, ideas, and concepts outside of the classroom.

*Students: Seek to engage in programs/actives that lead to increased sense of belonging as well as activities related to your major and minor.* The research shows actionable areas for students as well. Students have limited resources of time, energy, and
finances. Spending time meeting with faculty and finding information on activities and programs that lead to persistence can be an effective way to use limited resources towards meeting academic goals. For example, students may wish to find ways to participate in community service that also provides time with professors, is related to the major or minor, and fits within the needs of their identity and goals.

**Implications for theory.**

*Theory Consideration #1: Consider different dimensions of belonging in developing theory.* Sense of belonging is not monolithic. This study found four dimensions of sense of belonging for students overall: Sense of belonging with students and the campus community, sense of belonging with faculty and with staff, sense of belonging related to identity with faculty and staff, and sense of belonging related to feelings of discrimination. These different dimensions of sense of belonging influence engagement in different ways. For example, lower rates of sense of belonging in discrimination relate to higher rates of tutoring and mentoring. Higher rates of sense of belonging with identity relate to higher rates of community service. Theorists will want to consider different dimensions and aspects of belonging when observing and assessing sense of belonging as well as when considering influences of sense of belonging on engagement and success factors.

*Theory Consideration #2: Bring critical theory lens in quantitative analysis.*

This research caused the author to think more about the importance of being sensitive to critical perspective in quantitative analysis. Gillborn, Warmington, and Demack (2018) coined the term QuantCrit as describing the inclusion of critical race theory (CRT) in
quantitative analysis. In the abstract for their study, the authors name five tenants of QuantCrit:

1. the centrality of racism as a complex and deeply rooted aspect of society that is not readily amenable to quantification; (2) numbers are not neutral and should be interrogated for their role in promoting deficit analyses that serve White racial interests; (3) categories are neither ‘natural’ nor given and so the units and forms of analysis must be critically evaluated; (4) voice and insight are vital: data cannot ‘speak for itself’ and critical analyses should be informed by the experiential knowledge of marginalized groups; (5) statistical analyses have no inherent value but can play a role in struggles for social justice. (p. 158).

QuantCrit methods seek to disrupt racism in research by encouraging the consideration of historical, social, political, and economical power relations in analysis (Garcia, López, & Vélez, 2018). Garcia and fellow authors (2018) warned, “Quantitative approaches cannot be adopted for racial justice aims without an ontological reckoning that considers historical, social, political, and economical power relations” (p. 155).

QuantCrit provides a methodology for conducting and interpreting quantitative analysis that includes a critical perspective. QuantCrit methods allow this study to see that dimensions of sense of belonging can differ among students of different backgrounds and ethnicities and that these differences can have historical and power differential causes. Although exploring these differences between student populations in depth is beyond the scope of this research study, differences were found that could be critical in further understanding how sense of belonging influences persistence in the development of theory.
Factor analysis allowed the researcher to see that Black students and White students in the study defined dimensions of sense of belonging differently. Appendices D and E provide factor loadings of these findings. The loadings show differences when separating Black student responses from White student responses to sense of belonging questions. Black student responses defined five dimensions of sense of belonging: sense of belonging with students, faculty, and staff; sense of belonging with community; sense of belonging with identity; sense of belonging with classroom and racial discussion; and sense of belonging with discrimination and difference. White students, on the other hand, defined four dimensions of sense of belonging through factor analysis: sense of belonging with student and community; sense of belonging with professors, staff, and classroom; sense of belonging with identity; and sense of belonging with racial discussion and discrimination.

The importance of this finding relates to concerns of other contemporary theorists. Tierney, for example, was critical of the failure to account for cultural factors (McPherson, 2016). Kuh (2015) showed that some groups react differently to participation in certain activities than other groups. Researchers also express caution on impact and opportunity for all students. In discussing social structure with intersectionality constructs, Goodman (2014) writes, “Individuals are members of social groups within larger systems of social inequality. People’s social locations or positions within these hierarchical oppressive structures affect their access to power, resources, and opportunities, which shapes how they see and experience themselves and the world” (p. 100).
QuantCrit considerations are essential when seeking to understand the narratives of minoritized student populations on a college campus since these students may be more likely to perceive marginality. Marginality is the opposite of feeling a sense of belonging, rather, it is a sense of alienation (Strayhorn, 2012). People assess their position in relation to the group (Strayhorn, 2009). Further, Goodman (2014) wrote about social groups and social positions within hierarchical oppressive structures, saying these positions shape how a person sees the world. Understanding sense of belonging with all students is important to the student success and the success of the university.

**Theory consideration #2: Include dimensions of sense of belonging to understand I-E-O models.** Astin’s I-E-O college impact model is widely used in conceptual frameworks for research and theoretical models. However, impact models on their own are limited. According to Strayhorn (2008), “College impact models concentrate on the origins of change while models based on developmental theory attempt to explain the states through which change occurs” (p. 3). The theorist can find a depth of understanding by considering dimensions of sense of belonging such as students and community, faculty and staff, identity, and discrimination when telling the story around their I-E-O model and looking for context where change occurs.

**Implications for research.**

**Research Recommendation #1: Further explore dimensions of sense of belonging using a QuantCrit framework.** The use of quantitative analysis in education research with a CRT framework has been questioned. One reason is that quantitative analysis is not bias free. Imbedded biases influence interpretation of numbers. A study using QuantCrit will challenge the researcher to bring to the conscience previously
unknown assumptions and biases.

Another reason quantitative analysis has been questioned is the perception that quantitative research lacks the ability to grasp nuances of everyday experience (Garcia et al., 2018). The SEM story in this study shows that quantitative analysis can grasp some nuances of critical race theory if effective questions are asked and power structures are considered.

The data in this study confirms the value of quantitative research in educational research with the use of a QuantCrit framework. However, it only touched the surface of what a study using QuantCrit methodology has the opportunity to find. For example, although it was outside the scope of this study, the author was curious about sense of belonging dimensions defined by students of different student populations. It was found that students who identify as Black and students who identify as White define sense of belonging in different ways at this PWI (see Appendixes D and E).

The research in this study considered diversity, intersectionality, and opportunity by pulling out certain populations in comparison. This has the potential to provide fragmentation bias and/or may reinforce White narratives. Further, studies using a critical lens and QuantCrit should challenge researchers to look at unexamined imbedded marginalized practices and unearth assumptions about quantitative analysis.

A study using QuantCrit methodology and considerations of political, historical, and societal influences can further provide a context to understand and challenge assumptions while providing greater understanding of engagement, sense of belonging, and persistence in complicated context of intersectionality.
Research Recommendation #2: Further explore student support programs specific to EMU and EMU’s student populations. The current study looked at a wide variety of activities and programs and the influence of engagement in those programs for EMU student respondents. For example, the study showed tutoring and mentoring programs to have an influence on sense of belonging in relationship to lower feelings of discrimination and higher feelings of belonging with students and community. Further exploration of programs specific to EMU with the student populations the programs are designated to support will provide valuable data specific to the institution and its students. Current EMU programs of interest include: Brotherhood, Sisterhood, King-Chavez-Parks supported programs, EMU’s TRiO Student Support Systems, and EMU’s veteran support programs.

Research Recommendation #3: Further explore findings with qualitative analysis. The current study uses quantitative analysis to discover and interpret the numbers surrounding engagement, sense of belonging, and persistence. Through the use of SEM, this study has been able to tell a story. However, the quantitative method does have limitations. Research would benefit from adding qualitative techniques and lived experiences to find additional meaning in discovered relationships and to deepen understanding of identity, engagement, and sense of belonging as they relate to persistence.

Research Recommendation #4: Assess differences in identity, engagement, sense of belonging, and persistence with students who commute to campus. Bean and Metzner (1985) found that institution integration influence had less influence on commuter students than it did for residential students in their study. This study did not
ask students to differentiate between whether they considered themselves a commuter or residential student. Bean and Metzner’s study might or might not reflect the same with contemporary college students. Students who commute may engage differently on campus than residential students. However, this engagement may be just as important for them as for others. Further, because of location and population differences where students reside, commuter students may define and relate to sense of belonging differently than residential students. Similar to considering different demographics and backgrounds, considering residential status could bring added insight to engagement, sense of belonging, and the higher education persistence field of study.

*Research Recommendation #5: Expand analysis to multiple institutions.* The purpose of the current study was to consider the influences of identity, engagement, and sense of belonging at one institution. This provided an opportunity to assess influences within the historical context and population in one setting, but it also limited the scope of the research. Research involving multiple institutions may provide confirmation and further understanding of the influences of engagement and sense of belonging on student persistence. Further, this scope could further define and confirm dimensions of sense of belonging as it relates to a broader group of students and institutions.

**Final Summary**

Chapter Five used the problem statement, research questions, and findings to develop conclusions and implications. This study corroborated the idea that factors leading to persistence are complex. It identified four dimensions of sense of belonging: faculty and staff, students and community, identity, and discrimination. It discussed engagement programs and activities that enable or inhibit sense of belonging and
persistence. Lastly, it explored implications of identity on these factors. The study implores higher education administrators to use the understanding of identity, engagement, sense of belonging, and persistence when determining how to use limited resources. It suggests theorists use dimensions of sense of belonging and QuantCrit in developing theories related to persistence. Lastly, it offers suggestions for further research and corroborates the importance of using QuantCrit in further studies.
References


APPENDICES
Appendix A: The Survey

Social, Academic, Institutional Sense of Belonging Survey

Some wording and organization questions on this survey are used by permission directly from a dissertation by Dabney Ingram (2012). Dr. Ingram used wording from existing surveys (CIRP Freshman Survey, 2006; Michigan Student Study, 1990-1994; National Survey of Student Engagement, 2007; Hurtado and Carter’s Sense of Belonging to Campus’ scale; Freeman, Anderman, and Jensen’s Social Acceptance scale; and Goodenow’s Psychological Sense of School Membership scale.

Student Number: _E__________________________

Please answer the following questions in relation to your experiences at Eastern Michigan University
<table>
<thead>
<tr>
<th>To what extent do you agree with the following statements:</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can really be myself at EMU.</td>
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<tr>
<td>I feel I am a member of the EMU community.</td>
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<tr>
<td>I am glad I am attending EMU.</td>
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<tr>
<td>Students at EMU are friendly with me.</td>
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<tr>
<td>I would feel comfortable asking a professor for help if I did not understand something course-related.</td>
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<tr>
<td>Students at EMU treat me with respect.</td>
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<tr>
<td>People of my race/ethnicity are more likely to experience discrimination at EMU than others.</td>
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<tr>
<td>I feel comfortable contributing to class.</td>
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<tr>
<td>I feel very different from most other students.</td>
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<td>When I interact with professors at EMU, I feel they care about how I'm doing.</td>
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<tr>
<td>I see my identity reflected in the professors in my academic program.</td>
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<tr>
<td>When I interact with staff members at EMU, I feel they care about how I'm doing.</td>
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</tr>
<tr>
<td>I see my identity reflected in the staff members at EMU.</td>
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<tr>
<td>I would encourage a high school senior whose background, abilities, and interests are similar to mine to attend this college.</td>
<td></td>
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<tr>
<td>I would find it easy to join study groups with other students if I wanted to.</td>
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<tr>
<td>I have been a positive role model for my peers.</td>
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<tr>
<td>EMU’s efforts at community building are effective.</td>
<td></td>
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<tr>
<td>I feel comfortable discussing racially sensitive topics on campus with members of other races/ethnicities.</td>
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</tbody>
</table>
Did you participate in the following social activities through an Eastern Michigan University Program?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Extent of Activity</th>
<th>Rate of Social Importance of Activity</th>
<th>Did you have a leadership role</th>
<th>Academic Years of Participation in this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you participate in the following activities through an Eastern Michigan University Program?</td>
<td>no participation</td>
<td>Not at all socially important</td>
<td>Yes</td>
<td>1st yr</td>
</tr>
<tr>
<td>EMU events such as art, music, theatre etc.</td>
<td>slight participation</td>
<td>Somewhat socially important</td>
<td>No</td>
<td>2nd yr</td>
</tr>
<tr>
<td>EMU community service activities</td>
<td>some participation</td>
<td>Very socially important</td>
<td>No</td>
<td>3rd yr</td>
</tr>
<tr>
<td>EMU cultural groups or activities</td>
<td>substantial participation</td>
<td>Extremely socially important</td>
<td>No</td>
<td>4th yr</td>
</tr>
<tr>
<td>EMU Greek Life</td>
<td></td>
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<td>5th yr or later</td>
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<tr>
<td>EMU political activities</td>
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<tr>
<td>EMU religious clubs or activities</td>
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<tr>
<td>EMU student social organizations</td>
<td></td>
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<tr>
<td>EMU sports or athletic clubs</td>
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<tr>
<td>EMU Student Government</td>
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<tr>
<td>Other _______</td>
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<tr>
<td>Other _______</td>
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</tbody>
</table>
Did you participate in the following academic activities through an Eastern Michigan University Program?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Extent of Activity</th>
<th>Rate of Academic Importance of Activity</th>
<th>Did you have a leadership role</th>
<th>Academic Years of Participation in this Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you participate in the following activities through an Eastern Michigan University Program</td>
<td>no participation</td>
<td>Not at all important</td>
<td>yes</td>
<td>1st year</td>
</tr>
<tr>
<td>Serving as a tutor in an EMU program</td>
<td>slight participation</td>
<td>Not at all important</td>
<td>yes</td>
<td>1st year</td>
</tr>
<tr>
<td>EMU Math Tutoring Center attendance</td>
<td>some participation</td>
<td>Somewhat important</td>
<td>yes</td>
<td>1st year</td>
</tr>
<tr>
<td>EMU student organization membership related to your major/minor</td>
<td>substantial participation</td>
<td>Very important</td>
<td>yes</td>
<td>1st year</td>
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<tr>
<td>Talking with professors outside of class</td>
<td></td>
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<td>no</td>
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<tr>
<td>Attending EMU Writing Center</td>
<td></td>
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<td>yes</td>
<td></td>
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<tr>
<td>Attending EMU Study Tables</td>
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<td>no</td>
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<tr>
<td>Using university provided tutors</td>
<td></td>
<td></td>
<td>yes</td>
<td></td>
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<tr>
<td>Visiting professors during office hours</td>
<td></td>
<td></td>
<td>no</td>
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<tr>
<td>Participation in extra curricular programs related to your academic major or minor</td>
<td></td>
<td></td>
<td>yes</td>
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<tr>
<td>Other academic engagement</td>
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<td>no</td>
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<tr>
<td>Other academic engagement</td>
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<td>yes</td>
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Did you participate in the following student support programs or activities through an Eastern Michigan University Program?

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<thead>
<tr>
<th>Activity</th>
<th>Extent of Activity</th>
<th>Rate of Institutional value - Importance of Activity</th>
<th>Did you have a leadership role</th>
<th>Academic Years of Participation in this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you participate in the following programs through Eastern Michigan University</td>
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<tr>
<td>EMU Center for Multicultural Affairs</td>
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<td>CAPS - Counseling and Psychological Services</td>
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<tr>
<td>DRC - Disability Resource Center</td>
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<tr>
<td>EDGE</td>
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<tr>
<td>LGBT Resource Center</td>
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<tr>
<td>NSOA - Orientation, volunteer or paid worker</td>
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<tr>
<td>Study Abroad</td>
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<tr>
<td>Participating in a university sponsored mentoring program</td>
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<td>EMU Women's Resource Center</td>
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<tr>
<td>Honors College</td>
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<tr>
<td>Meeting with an academic advisor</td>
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<tr>
<td>Working on Campus</td>
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<tr>
<td>Other University Support Program</td>
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<tr>
<td>Other University Support Program</td>
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</tbody>
</table>
Appendix B: IRB Approval

From: human.subjects@emich.edu
Subject: UHSRC-FY18-19-6 - Initial - Initial - Exempt
Date: October 5, 2018 at 8:57:24 AM EDT
To: clancaste@emich.edu, danderson@emich.edu

Oct 5, 2018 8:57 AM EDT

Christine Lancaster
Leadership and Counsel, COE Offc Aca Service

Re: Exempt - Initial - UHSRC-FY18-19-6 Sense of Belonging and Engagement Impact on Retention and GPA

Dear Christine Lancaster:

The Eastern Michigan University Human Subjects Review Committee has rendered the decision below for Sense of Belonging and Engagement Impact on Retention and GPA. You may begin your research.

Decision: Exempt

Selected Category: Category 2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Category 4. Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Renewals: Exempt studies do not need to be renewed. When the project is completed, please contact human.subjects@emich.edu.

Modifications: Any plan to alter the study design or any study documents must be reviewed to determine if the Exempt decision changes. You must submit a modification request application in Cayuse IRB and await a decision prior to implementation.

Problems: Any deviations from the study protocol, unanticipated problems, adverse events, subject complaints, or other problems that may affect the risk to human subjects must be reported to the UHSRC. Complete an incident report in Cayuse IRB.

Follow-up: Please contact the UHSRC when your project is complete.

Please contact human.subjects@emich.edu with any questions or concerns.

Sincerely,

Eastern Michigan University Human Subjects Review Committee
Appendix C: Demographics

<table>
<thead>
<tr>
<th>Ethnicity and Gender number and percentages Sense of Belonging Survey Respondents</th>
<th>Participants</th>
<th>EMU</th>
<th>Washtenaw County</th>
<th>Michigan</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men N = 135</td>
<td>27.27%</td>
<td>39.70%</td>
<td>49.00%</td>
<td>49.20%</td>
<td>49.20%</td>
</tr>
<tr>
<td>Women N = 362</td>
<td>72.72%</td>
<td>60.20%</td>
<td>51.00%</td>
<td>50.80%</td>
<td>50.80%</td>
</tr>
<tr>
<td>Resident Alien N = 5</td>
<td>0.90%</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>American Indian/Alaskan Native N = 1</td>
<td>0.30%</td>
<td>0.20%</td>
<td>0.30%</td>
<td>0.70%</td>
<td>1.20%</td>
</tr>
<tr>
<td>Asian N = 12</td>
<td>2.90%</td>
<td>2.86%</td>
<td>7.90%</td>
<td>3.00%</td>
<td>5.60%</td>
</tr>
<tr>
<td>Black N = 51</td>
<td>10.52%</td>
<td>17.88%</td>
<td>12.70%</td>
<td>14.20%</td>
<td>13.30%</td>
</tr>
<tr>
<td>Hispanic/Latino N = 20</td>
<td>5.30%</td>
<td>5.09%</td>
<td>3.50%</td>
<td>4.90%</td>
<td>17.60%</td>
</tr>
<tr>
<td>Race/Ethnicity Unknown N = 19</td>
<td>3.70%</td>
<td>4.85%</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Two or More Races N = 17</td>
<td>3.30%</td>
<td>3.80%</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>White N = 372</td>
<td>72.90%</td>
<td>63.40%</td>
<td>74.50%</td>
<td>79.70%</td>
<td>77.10%</td>
</tr>
<tr>
<td>Ave. Age</td>
<td>22.56</td>
<td>23</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Average Admit GPA</td>
<td>3.36</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Average ACT</td>
<td>23.67</td>
<td>22.38</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Average SAT</td>
<td>1157.93</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Ave Current GPA</td>
<td>3.38</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Ave Credits Completed</td>
<td>80.56</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Scholarship N=431</td>
<td>76.82%</td>
<td>57%</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Returned WI19 N= 497</td>
<td>88.59%</td>
<td>81%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Graduated FA18 N = 24</td>
<td>4.27%</td>
<td>0.07%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Returned or graduated N = 521</td>
<td>92.86%</td>
<td>88%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

(Eastern Michigan University, 2018a; U. S. Census, 2010; U. S. Census, 2015, and A. Agarwal, personal communication, March 2, 2019)
Appendix D: Sense of Belonging Dimensions for Black Respondents

<table>
<thead>
<tr>
<th>Sense of Belonging Dimensions and Factor Loadings for Black Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Latent Variable: Students, Professors, and Staff</strong></td>
</tr>
<tr>
<td>Factor Loading</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>.756</td>
</tr>
<tr>
<td>.822</td>
</tr>
<tr>
<td>.708</td>
</tr>
<tr>
<td>.669</td>
</tr>
<tr>
<td>.827</td>
</tr>
<tr>
<td>.742</td>
</tr>
<tr>
<td>.726</td>
</tr>
<tr>
<td><strong>Latent Variable: Community</strong></td>
</tr>
<tr>
<td>Factor Loading</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>.887</td>
</tr>
<tr>
<td>.782</td>
</tr>
<tr>
<td>.740</td>
</tr>
<tr>
<td>.829</td>
</tr>
<tr>
<td><strong>Latent Variable: Identity</strong></td>
</tr>
<tr>
<td>Factor Loading</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>.896</td>
</tr>
<tr>
<td>.896</td>
</tr>
<tr>
<td><strong>Latent Variable: Class and Racial Discussion</strong></td>
</tr>
<tr>
<td>Factor Loading</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>-.841</td>
</tr>
<tr>
<td>.841</td>
</tr>
<tr>
<td><strong>Latent Variable: Discrimination and Different</strong></td>
</tr>
<tr>
<td>Factor Loading</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>.840</td>
</tr>
<tr>
<td>.840</td>
</tr>
</tbody>
</table>
Appendix E: Sense of Belonging Dimensions for White Respondents

<table>
<thead>
<tr>
<th>Latent Variable: Students and Community</th>
<th>Loadings</th>
<th>Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.747</td>
<td>I can really be myself at EMU.</td>
</tr>
<tr>
<td></td>
<td>.773</td>
<td>I feel like I am a member of the EMU Community.</td>
</tr>
<tr>
<td></td>
<td>.774</td>
<td>I am glad I am attending EMU</td>
</tr>
<tr>
<td></td>
<td>.740</td>
<td>Students at EMU are friendly with me</td>
</tr>
<tr>
<td></td>
<td>.688</td>
<td>Students at EMU treat me with respect</td>
</tr>
<tr>
<td></td>
<td>.721</td>
<td>I would encourage a high school senior whose background, abilities, and interests are similar to mine to attend this college.</td>
</tr>
<tr>
<td></td>
<td>.635</td>
<td>I would find it easy to join study groups with other students if I wanted to.</td>
</tr>
<tr>
<td></td>
<td>.586</td>
<td>I have been a positive role model for my peers.</td>
</tr>
<tr>
<td></td>
<td>.723</td>
<td>EMU’s efforts at community building are effective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Professors and Staff</th>
<th>Loadings</th>
<th>Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.775</td>
<td>I would feel comfortable asking a professor for help if I did not understand something course-related.</td>
</tr>
<tr>
<td></td>
<td>.682</td>
<td>I feel comfortable contributing to class</td>
</tr>
<tr>
<td></td>
<td>.863</td>
<td>When I interact with professors at EMU, I feel they care about how I'm doing.</td>
</tr>
<tr>
<td></td>
<td>.807</td>
<td>When I interact with staff members at EMU, I feel they care about how I'm doing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Identity</th>
<th>Loadings</th>
<th>Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.948</td>
<td>I see my identity reflected in the professors in my academic program.</td>
</tr>
<tr>
<td></td>
<td>.948</td>
<td>I see my identity reflected in staff members at EMU.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latent Variable: Discrimination and Discussion</th>
<th>Loadings</th>
<th>Survey Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.633</td>
<td>People of my race/ethnicity are more likely to experience discrimination at EMU than others.</td>
</tr>
<tr>
<td></td>
<td>.633</td>
<td>I am uncomfortable discussing racial issues with people of other ethnicities</td>
</tr>
</tbody>
</table>