

THE IMPACT OF SOCIAL BELONGING ON THE ACADEMIC PERFORMANCE
OF FIRST-GENERATION STUDENTS AT MONTANA STATE UNIVERSITY

by

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DEDICATION

My dissertation is dedicated to my parents, who understood the value of higher education and unquestioningly supported the pursuit of my college and graduate degrees. My Dad worked overnights at a bank for years while I was in high school and college to pay for my sister and I to attend college. He was a first-generation college and graduate school student. My Mom had a relative who was the first woman to graduate from college in the state of Nebraska. From very different backgrounds, they both instilled the power and importance of education in me, and I can only hope that I have done the same for the students I have worked with in my career thus far, and will for those yet to come. I wish my mother was still on this earth to see me get my doctorate, but I know she is watching proudly, in another place.

“I was something that lay under the sun and felt it, like the pumpkins, and I did not want to be anything more. I was entirely happy. Perhaps we feel like that when we die and become a part of something entire, whether it is sun and air, or goodness and knowledge. At any rate, that is happiness; to be dissolved into something complete and great. When it comes to one, it comes as naturally as sleep.”

“My `Antonia”, Willa Cather

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ABSTRACT

In the United States, first-generation college students are significantly less likely to persist in college and complete a four-year college degree than continuing-generation students (Cataldi, Bennett, & Chen, 2018; DeAngelo & Franke, 2016; Engle & Tinto, 2008; Pascarella, Pierson, Wolniak, & Terenzini, 2004). The same is true at Montana State University (MSU), where only thirty-one percent of first-generation students graduate within six years (Montana State University, 2018c). It was hypothesized that generational status would predict academic performance at MSU, and that sense of belonging, along with peer and faculty involvement, would mediate the relationship. In addition, a conditional effect was hypothesized, so that there would be an interaction between generational status and belonging, with belonging being a stronger predictor of college grades for first-generation students than for continuing-generation students.

A self-report online survey was utilized to assess peer and faculty involvement and sense of belonging. The sample consisted of 184 first-year, first-time, part-time and full-time students at MSU. Factor analysis was used to better delineate between peer involvement and belonging scales. Logistic regression and linear regression were utilized to determine the relationships between independent and dependent variables.

First-generation college students had significantly lower levels of influential positive peer involvement when compared to continuing-generation students. Specifically, they had lower levels of agreement that peers would help or listen if they had a problem, and that it was easy to make friends at MSU. Peer involvement and faculty involvement significantly predicted higher sense of belonging for all students. Peer involvement had a negative impact upon college grades for all students, which approached significance. Faculty involvement had a positive impact on college grades for all students. Stigma/stereotype threat variables had an impact on college grades. Sense of belonging did not significantly impact college GPA. Finally, a conditional effect emerged for generational status and peer involvement upon college GPA, which approached statistical significance.

Policies, programs, and services must be changed at institutions of higher education to help first-generation college students feel more supported by their peers and welcomed to campus, along with balancing social vs. academic priorities during college.

INTRODUCTION

Introduction

In the United States, we tend to espouse the view that education is the great equalizer, and yet class disparities in higher education have actually increased over time (Astin & Oseguera, 2004; Soria & Bultmann, 2014; Soria, 2015), and only thirty-four percent of our nation's citizens over age twenty-five hold four-year bachelor's degrees (NCES, 2017). In 2010, students coming from the top income quartile were ten times more likely to earn a college degree by the age of twenty-four than those in the bottom quartile; yet three decades ago, in 1980, these students were five times as likely to earn their degree by the same age (Mortenson, 2010). Educational inequality may be increasing, rather than decreasing over time. This reality contrasts with the vision of many higher education reformers over the decades, among them Ernest Boyer, author of *Scholarship Reconsidered*. He put forward a vision of higher education in service of the public good, for the purpose of making the nation and the world a more democratic and inclusive place (Boyer, 1990). We need a reimagining of the purpose and structure of American higher education, from one focused on uniformity and the reproduction of inequality, to one focused on validating the lives and experiences of all students.

Approximately one quarter of first-time (full and part-time) students in the U.S. leave college between their first and second year (NCES, 2017a), and as of 2009, only approximately fifty-nine percent of first-time full-time students entering a four-year institution graduate with their bachelor's degree within six years (NCES, 2017b). At Montana State University (MSU); a land grant public research university, these numbers

are a bit lower than the national average: the six-year rate for students entering in 2012 was fifty-two percent (Montana State University, 2018c). College persistence, retention, and graduation are important topics of research and are currently of great concern to state legislators and institutions around the country, both private and public. It is essential to expand our understanding of why certain groups of students might be more likely to leave college than others, and why they persist, so that institutions can improve or alter what they do to help students be successful and reach their potential.

Tinto's (1993) research has illustrated the importance of students becoming integrated into the campus environment, though more recent research has critically examined the presumption that students must sever ties with their families and homes in order to do. Researchers have also questioned the applicability to diverse populations of students, such as commuters, students of color such as Latino students, and nontraditional students (Braxton & Mundy, 2001; Hurtado & Carter, 1997; Kuh & Love, 2000; Lee, Godwin, & Hermundstad, 2018; Rendon, 1992; Tierney, 1999). Tinto's original work focused on how the actions of students helped them integrate into the institution (or not) (Tinto, 1993), versus the importance of the actions of the institution (and responsibility as well), in assisting and supporting students in integrating and finding their fit (Tinto, 2012). A body of research, spearheaded by Astin's (1984) work, has shown that getting students involved with peers and faculty makes it more likely they will be satisfied and persist (Astin, 1984; Pascarella & Terenzini, 1991, 2005; Mayhew, Rockenbach, Bowman, Seifert, & Wolniak, 2016), and that feelings of belonging or fit are necessary for persistence (Hurtado & Carter, 1997; Johnson, Soldner, Brown Leonard, Alvarez, Kurotsuchi Inkelas, Rowan-Kenyon, & Longerbeam, 2007; Hausmann, Ye, Ward-

Schofield, & Woods, 2009; Strayhorn, 2012; Wells & Horn, 2015). There exists a variety of terminology used to describe student integration or fit at institutions of higher education. For example, one study may describe something as “fit,” another as “sense of belonging,” and still another may seem to measure integration and involvement, and all may call them “belonging” (Wolf-Wendel, Ward, & Kinzie, 2009).

First-generation college students, or students whose parents did not graduate from a four-year institution, by some estimates are at least half of students currently in college in the U.S. (NCES, 2017). In the NCES study of 2002 high school sophomores who subsequently enrolled in higher education, fifty-eight percent were first-generation college students using the above definition (NCES, 2017). Over the past few decades, access to higher education has improved for first-generation students (Cataldi, Bennett, & Chen, 2018; Chen & Carroll, 2005; Choy, 2001; Nunez & Cuccaro-Alamin, 1998; Pascarella & Terenzini 1998; Pascarella, Pierson, Wolniak, & Terenzini, 2004), as evidenced by the numbers of these students enrolling in higher education. Though first-generation students are attending college at higher rates, (if we define first-generation as those with parents who have not graduated from college), they are not graduating or persisting as often as students who have parents who have completed a college degree (Cataldi, Bennett, & Chen, 2018; Chen & Carroll, 2005; DeAngelo & Franke, 2016; Engle & Tinto, 2008; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Riehl, 1994; Soria, 2015). At Montana State University, first-generation students are significantly less likely to persist and graduate than continuing-generation students. Only thirty-one percent of first-generation students at MSU graduate within six years, while fifty-two percent of all entering students graduate (Montana State University, 2018c) .

Belonging in college is a contributing factor to success, persistence, and graduation for all students (Hausmann, Ye, Ward-Schofield, & Woods, 2009; Hurtado & Carter, 1997; Johnson, Soldner, Brown Leonard, Alvarez, Kurotsuchi Inkelas, Rowan-Kenyon, & Longerbeam, 2007; Wells & Horn, 2015), but may be much more salient for first-generation college students. Researchers studying first-generation students have examined a variety of factors that appear to at least partially explain this phenomenon of lower persistence among first-generation students. First-generation students are more likely to be nontraditional students; older than twenty-five, married, have children, and work while attending college (Nunez & Cuccaro-Alamin, 1998; Skomsvold, 2015). There are also higher percentages of first-generation students who are students of color, low-income, and non-native English speakers (NCES, 2017). First-generation students tend to lack knowledge about higher education, especially in terms of the costs of college and college choice and application process (Cataldi et al., 2018; Collier & Morgan, 2008; Conley, 2010; Pascarella et al., 2004). These factors all present challenges that can make it more difficult to access and pursue a college degree. In addition, studies have found that first-generation students tend to come to college with lower high school GPAs and lower SAT scores than their continuing-generation peers (DeAngelo & Franke, 2016; Sackett, Kuncel, Arneson, Cooper, & Waters, 2009; Redford, Mulvaney Hoyer & Ralph, 2017; Riehl, 1994; Sirin, 2005), indicating that first-generation students often start off less academically prepared (or less “college-ready”) for college. In one study, when “college readiness,” (defined as academic preparation, along with factors such as choosing a major prior to matriculation and amount of time spent studying each week) was controlled for when comparing the effects of generational status upon persistence,

first-generation college students who were “college-ready” were just as likely to persist beyond the first year as continuing generation students (DeAngelo & Franke, 2016). Though overall, first-generation students tend to be less college-ready than their peers, along with holding many characteristics that make it more difficult to complete college, this can be evaluated from a deficiency perspective as well. In response, some researchers focus on a more strengths-based model of first-generation student success in college, rather than what could be labeled as the “deficiency viewpoint” taken by many of the studies above. For example, one qualitative study found that the first-generation students they interviewed developed the positive strengths of proactivity, goal direction, optimism and reflexivity during college (Garrison & Gardner, 2010). A recent book titled *Becoming a Student-Ready College* (Brown McNair, Bensimon, Cooper, McDonald, & Major, 2016) has flipped the notion of college-readiness to focus on the institution’s responsibility to be ready to support and serve all kinds of students. Finally, it is important to note that first-generation students may come from low-income or working-class families, but they may also have parents who work in the skilled trades or other fields not requiring a bachelor’s degree and make enough money economically in the middle-class. This overlap and yet distinction between low-income, working-class and first-generation can cause problems with interpretation across research studies.

In addition to life responsibilities and lower academic preparation for college, first-generation students also confront a campus climate that may not be welcoming to the values and identities that they bring to college, which ultimately has a huge impact on persistence (Synder & Trost, 2018). Prior to the passage of the Morrill Act in 1862 and then implementation of the GI Bill in the 1940’s and the diversification of higher

education in the US, access to higher education was mostly for the middle to upper classes of society (Thelin & Gasman, 2011; Thelin, 2011). The founding of institutions of higher education in America was centered on educating future religious leaders (Boyer, 1990; Thelin & Gasman, 2011). With the creation of the land grant university as a result of the Morrill Act in 1862 came a move towards a practical college education in agriculture and mechanical arts, and better access for those from the working classes (Thelin & Gasman, 2011). Then in 1890, the second Morrill Act created historically black institutions in the U.S. (Thelin & Gasman, 2011). Thus, the institution of higher education in this country has been associated with class, or SES, from the beginning. It is only beginning in the 19th century that higher education has significantly changed in terms of the populations of students gaining access.

Cognitive intelligence is associated with class, or socioeconomic status, the stereotype being that poor people are not as intelligent as middle class or wealthy people (Soria, 2015). This stereotype, as most stereotypes, has a basis in reality: on average, people in middle-upper income brackets tend to have higher IQs than those in lower income brackets (Binet, 1911; Sirin, 2005; White, 1982). SAT scores tend to be associated with wealth as well, so that for every \$20,000 increase in parental income, SAT scores also increase about ten-seventy points (College Entrance, Examination Board, 2009). The assumption is that these test scores measure actual intelligence, rather than one's access to test preparation, good education, and other cultural advantages of the wealthy.

Stereotypes about the poor and working-class have not been studied widely; when class is included in research studies, it is often included as a control variable, rather than

the central focus of the study (Crozier & Millet, 2011). However, available research tends to illustrate that negative stereotypes about the poor and working-class do exist. People from lower SES groups are often stereotyped as lazy, ignorant, unintelligent, and unmotivated (Cozarelli, Wilkinson, & Tagler, 2001).

An example of this stereotyping is Miller, McLaughlin, Haddon, and Chansky's 1968 study examining teacher perceptions of lower-class and middle-class children. They found that teachers were more likely to perceive lower-class children as having more detentions, having lower estimated IQs, participating less in extracurricular activities, leaving school earlier, having parents less involved in school, and completing fewer homework assignments. People tend to assume lower SES children have lower academic ability than higher SES children (Desert, Preaux, & Jund, 2009). More recent work has examined the effect of beliefs in meritocracy upon the social class achievement gap, finding that the belief that ability and hard work lead to success increased the social-class achievement gap (Darnon, Wiederkehr, Dompnier, and Martinot, 2018). Durante, Tablante, & Fiske (2017) conducted a study examining stereotype content, and found that poor people were stereotyped as warm, while wealthy people were perceived as cold, but more competent.

Class, or socio-economic status, may overlap with generational status, since family experience with higher education makes up part of the construct of SES, along with income. Research with low-income and working-class students has illustrated that these students appear to be stigmatized due to their status, and experience the negative effects of stereotype threat (Crozier & Claire, 1998; Johnson, Richeson, & Finkel, 2011; Spencer & Castano, 2007). The experience of identity threat or stereotype threat, in

which students internalize messages that they are not smart and do not belong in college, is theorized to have a negative impact upon fit or feelings of belonging for first-generation students (Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002; Synder & Trost, 2018; Walton & Cohen, 2007).

The theoretical underpinnings of the current study are based in theories of identity and experience of stereotype threat (Steele, 1997, 2010; Steele & Aronson, 1995; Steele, Spencer, & Aronson, 2002). For first-generation college students, who are more likely to come from working-class and lower income families, they come face to face with a climate that often subtly tells them they do not belong in college (Synder & Trost, 2018). Due to the climate of the college environment, they may also be primed to be vigilant for these environmental cues that signal they do not belong (Murphy & Taylor, 2011). If situational cues indicate that they don't belong and that their identity is a liability, then the level of vigilance, or awareness, to messages and cues that one does not belong increases. Stereotype threat, a psychological experience in which stigmatized individual's awareness of a well-known stereotype affects behavioral outcomes, is characterized by a state of arousal and anxiety, impacting well-being, cognitive functioning, and the ability to identify with the environment or domain in question or stereotyped (Murphy & Taylor, 2011; Murphy & Zirkel, 2015; Steele, 2010). In the case of first-generation college students, this domain or environment is higher education (Hurst, 2010; Soria, 2015).

Theoretical Framework

Models of college student retention have been around at least since 1970, with William Spady's model focusing on drop-outs from higher education (Spady, 1970). The transition to college poses a significant challenge for all students, but may be more challenging for first-generation students, since the transition often involves a very different environment than the one they have grown up in. Tinto's (1993) theory of student departure focuses on how and why students become or do not become socially and academically integrated into the campus environment. Integration is defined as the congruency between the student and institution, but Tinto also places the responsibility of integration squarely upon the student (Tinto, 1993). The theory is that integration is a necessary precursor to persistence and retention, and, eventually, graduation (Tinto, 1993). Although commitments (goals around completing college and commitment to a specific college) and entering traits (age, race/ethnicity, income, etc.) are both important predictors of integration and persistence, interactions are also a very important predictor of persistence (Tinto, 1993). This "interactionalist" theory basically says that interactions during college can lead to better integration; both social and academic, or, they can lead to negative relationships or a lack of relationships, isolation, or so much social and academic/intellectual challenge without accompanying supports that a student leaves the institution (Tinto, 1993).

A number of critiques have been leveled at Tinto's theory, since it places the onus on the student to "integrate" into the college environment (Tierney, 1999). The theory assumes this integration requires an abandonment of family, friends, and values

associated with racial/ethnic, first-generation, and working-class identities (i.e., “cultural suicide”) (Rendon, 1992; Tinto, 2012; Tierney, 1999). Tinto himself, in his most recent book (2012), has focused more on the actions and responsibility of institutions, rather than the students, in improving college success, retention and graduation. Tierney argues that Tinto’s theories reside within the assumption that underrepresented and racial/ethnic minority students are lacking or deficient in a variety of ways and must assimilate into the dominant culture of higher education in order to be successful students (Tierney, 1999). Rendon (1992) and Tierney (1999) argue that the definition of intellectual development and the culture of the academy must change so that underrepresented students and their backgrounds and identities are affirmed and validated. Rendon (1992; 1994) examined validation and the relationship to involvement and successful college transitions. She discovered that especially for nontraditional and underrepresented students, validation appeared to be a prerequisite for academic and social involvement in college (Rendon, 1994). The components of validation included in and out of class academic and interpersonal validation (Rendon, 1994). Most importantly, the validation and involvement process was perceived by students as needing to be initiated by the institution and institutional agents, and was not something students expected to initiate on their own (Rendon, 1994). This indicates the shift needed: a shift away from the expectation that students need to change their behavior, and toward the expectation that institutions will need to intentionally create these interactions and supports.

Astin’s (1984) theory of involvement is closely related to Tinto’s (1993) theory of student departure, in that Astin postulated that one of the outcomes of involvement is persistence. Astin defines involvement as the investment of energy and time into an

object. Additionally, involvement happens along a continuum, so that different degrees of involvement are manifested in different objects at different times, and it has quantitative and qualitative features (hours spent participating in a student club in addition to the quality of time spent- programs developed, level of leadership in club, etc.) (Astin, 1984). Astin developed the I-E-O model, which stands for Inputs-Environments-Outcomes, and provides a simple construct or model for how students experience college. Inputs include variables such as a student's parent's income, high school experiences such as GPA and SAT scores, gender and race; environments are any experiences that occur during college (such as participation in learning communities, interactions with faculty, doing study-abroad, for example), and outcomes are a myriad number of learning and development - based variables, such as subject matter competence, scores on GREs, and civic engagement (Astin, 1984).

Astin's 1975 study found that "fit" was an important predictor of retention/persistence as well, so that Black students were more likely to persist at HBCUs vs. majority White colleges, religious students were more likely to persist at religious colleges when their religious backgrounds were similar, and students from smaller towns/rural areas were more likely to persist at smaller colleges vs. larger (Astin, 1975, 1984). This notion of "fit" is essential to the current study, in that fit and belonging may be similar or even the same concept. The current study also follows Astin's I-E-O model, in that the I, or input, is represented by generational status along with other individual variables, the E or environment is sense of belonging (or institutional fit), and the O, or outcome, is academic performance.

The theory of cultural capital is an important theory as well, especially in terms of the experiences of first-generation college students. The seminal work on social capital comes from Bourdieu (1986), who proposed three parts of capital. The first, cultural capital, consists of embodied, objectified, and institutional capital (Bourdieu, 1986). Embodied capital are the long-lasting dispositions of the mind and body, objectified capital are the goods and services such as books, pictures, etc., and institutional capital is the capital acquired through association with institutions, such as a college degree (Bourdieu, 1986). The second form of capital is social capital, which are the benefits and resources that come to one as the result of social group membership, whether it is a family, a club, fraternity/sorority, or alumnus of a college or university. Finally, economic capital is the capital that can be acquired or bought through monetary means, (Bourdieu, 1986). Bourdieu (1986) theorized that middle- and upper-class people inherited and passed on cultural capital in its various forms through family lines, so that, for example, attending college was an expectation. Prior to this work, Bourdieu introduced the concept of habitus (1977), which he conceptualized as a system of dispositions, perceptions, and actions dependent upon one's social location in society. In our current system of higher education, all of these forms of capital are needed to obtain a college degree, which in Bourdieu's terms would be an example of institutionalized capital. Embodied capital- the language, knowledge, and values necessary to succeed in college, and objectified and economic capital- textbooks, housing, and tuition resources to score well on SATs, are all needed in order to succeed in college (Tierney, 1999). First-generation students are often less likely to have access to this cultural capital since they do not have family with a history of college attendance, and in addition are often

without access to the economic capital to pay for college and the time and space to succeed there.

First-generation college students are least likely to have the knowledge about college that is necessary to succeed. For example, this “college knowledge” (Conley, 2010) includes navigating the systems and processes necessary in college life, an understanding of the culture that guides positive interactions with faculty and staff, and the social and academic skills necessary for success. In addition, the differences between high school and college, two organizational systems which developed differently historically and in separate spheres, is vast. Thus, the actions and mindsets students are familiar with from high school often do not assist them in college, where a higher level of agency, different academic expectations, and time management skills are all needed for success. On top of this difference is the influence of cultural capital discussed above, since those with access to cultural capital are often better prepared for college by attending private high schools, taking SAT prep courses, and having parents with high levels of education. This has more recently been called the “hidden curriculum” of college (Smith, 2013; Soria, 2015). The hidden curriculum reproduces the social class hierarchy; which promotes the values of competition, independence, and rewards based upon academic hierarchies, such as honor programs/colleges and dean’s lists. This curriculum also includes the knowledge and skills necessary for success in college; such as the types of books one should read to prepare for college and the experiences one should have in college (living in residence halls, traveling over spring break, and doing study abroad) (Soria, 2015).

Some of the barriers to learning this hidden curriculum are obviously financial: studying abroad and traveling costs money. When working-class and first-generation students are working in addition to attending college, they may simply not have the time or energy to be involved in a student club or do an internship (for no pay). However, there may be other factors at work as well. The assumption that students must learn this “hidden curriculum” in order to succeed in college is considered problematic in and of itself, since this assumption is rooted in the deficiency model. It puts the onus on the student to assimilate into the culture of higher education, rather than on the institution to change to be more welcoming and inclusive of first-generation students, along with changing the academic curriculum and the institutional structure to represent these students. Social belonging may play a role in the hidden curriculum, so that first-generation students do not feel as if they fit or belong in higher education due to a campus climate or environment that reproduces the social class hierarchy present in American society.

The definition of a “first-generation college student” varies across studies and datasets. NCES (2017) defines a first-generation student as a student where neither parent has attended college or graduated with a bachelor’s degree, but also collect and analyze data on students who have at least one parent who has attended an institution of higher education but not graduated. NCES analyzes their data for these two groups and compares them to continuing generation students: those who have at least one parent who has graduated with a bachelor’s degree (Cataldi et al., 2018). For the purposes of the current study, unless specified otherwise, first-generation college students are defined as those whose parent/s have not graduated from college. The reason for this is that the

retention and graduation outcomes for students whose parent/s attended college vs. graduated from college are not different enough to validate treating these two groups very differently. Cataldi et al. (2018) studied high school performance, college enrollment, and college persistence and graduation for these three groups of students using three large national data sets; the Education Longitudinal Study of 2002, the 2004/09 Beginning Postsecondary Students Longitudinal Study, and the 2008/12 Baccalaureate and Beyond Longitudinal Study. There were differences between the three groups for enrollment in college: seventy-two percent of first-generation students had enrolled in postsecondary education by 2012, while eighty-four percent of those whose parent/s had attended some college had, and ninety-three percent of continuing-generation students had enrolled (Cataldi et al., 2018). There were also differences between the groups for staying on the persistence track, which is captured by three categories taken three years after enrollment: stayed on the persistence track, left persistence track, and left without return (Cataldi et al., 2018). Forty-eight percent of first-generation students stayed on the persistence track, compared to fifty-three percent of those whose parent/s attended some college, and sixty-seven percent of continuing-generation students (Cataldi et al., 2018). There seem to be consistently larger differences between first-generation vs. continuing students than there are between first-generation vs. some attendance. When examining data by institutional type, the differences are even larger: when looking at public two-year college enrollment, forty-two percent were first-generation students, compared with twenty-nine percent for both some college attendance and continuing generation students (Cataldi et al., 2018). The pattern was reversed for four-year institutions (public and private). This indicates that there are likely multiple types of advantages that students

whose parent/s graduated from college tend to gain. The gains are likely economically larger when a parent graduates from college, vs. only attends without getting a degree. People with college degrees are more likely to earn more over a lifetime, and are able to obtain professional jobs that pay higher salaries, along with gaining access to social capital (Mayhew et al., 2016). However, there is also the cultural capital that comes from college attendance and degree obtainment, and it may be that what is gained through some attendance is this cultural capital (Bourdieu, 1986). Parents may be able to assist students with college applications, assessments/tests, and financial aid, and assist with understanding the navigational aspects of college life. However, it does not appear to be enough, or to be the same as the life-changing benefits that come with a bachelor's degree. The current study defines first-generation students as the NCES (2017), Cataldi et al., (2018) and TRiO (Upward Bound Program, 2017) programs do: neither parent has graduated with a bachelor's degree.

The current study argues that sense of belonging is the linchpin that holds models of retention together and is missing from traditional models of retention. Sense of belonging is a psychological phenomenon, and is related to Tinto's theory of integration, and to Astin's involvement theory. However, belonging has been studied in the psychological literature as far back as Anant (1966) and has appeared in the literature on stigmatized groups and college persistence over the past twenty years (Hurtado & Carter, 1997; Johnson, Soldner, Brown Leonard, Alvarez, Kurotsuchi Inkelas, Rowan-Kenyon, & Longerbeam, 2007; Hausmann, Ye, Ward-Schofield, & Woods, 2009; Wells & Horn, 2015). The transition to college signals a change to student's belongingness status (Baumeister & Leary, 1995). Separation from friends and family occurs, whether that

means a student is commuting to school a half hour away and living at home or moving across the country. Separation may be conceptualized in terms of physical distance, but also cultural distance. Though the type and degree of separation is varied, it constitutes a change in belongingness status. New social groups and experiences are going to be encountered, which means that perceptions are heightened around whether (or how) students will fit into their new environment. First-generation students may be more susceptible to threats to their sense of belonging during this transition (Crozier & Millet, 2011; Soria, 2015). Though belonging is a basic human motivation and need for everyone (Anant, 1966, 1967, 1969; Baumeister & Leary, 1995; Durkheim, 1951; Maslow, 1954), the current study proposes that belonging has a disproportional impact on academic performance for those who are stigmatized, such as first-generation college students. Indeed, authors examining race/ethnicity and belonging have discovered that stigmatized racial groups (non-white) experience lower levels of belonging in college (Hurtado & Carter, 1997; Johnson, Soldner, Brown Leonard, Alvarez, Kurotsuchi Inkelas, Rowan-Kenyon, & Longerbeam, 2007; Hausmann, Ye, Ward-Schofield, & Woods, 2009; Wells & Horn, 2015).

Spady, Tinto, Astin, and Bourdieu's theories are characterized as sociological in nature. They all account for characteristics students bring with them to college, and focus on the interactions and experiences students have during college, which then lead to certain outcomes (negative, such as dropping out, or failing, and positive, such as involvement in clubs and organizations). In contrast, belonging is centered in psychological processes. Figure one, below, illustrates the approach and connection the current study makes between the sociological and psychological characteristics,

experiences, and outcomes. The current study takes a sociocultural viewpoint, focusing on the importance of the climate and environment of college, which interacts with the psychological experiences of identity threat and social belonging with a social category or identity, first-generation status. The climate of higher education; the valuing and promoting of the values, objects, language, and knowledge associated with a family history of involvement with higher education, impacts the experience of identity or stereotype threat, which impacts the ability for first-generation students to form the social bonds necessary for belonging in college. Thus, the current study marries the sociological and the psychological literature on retention.

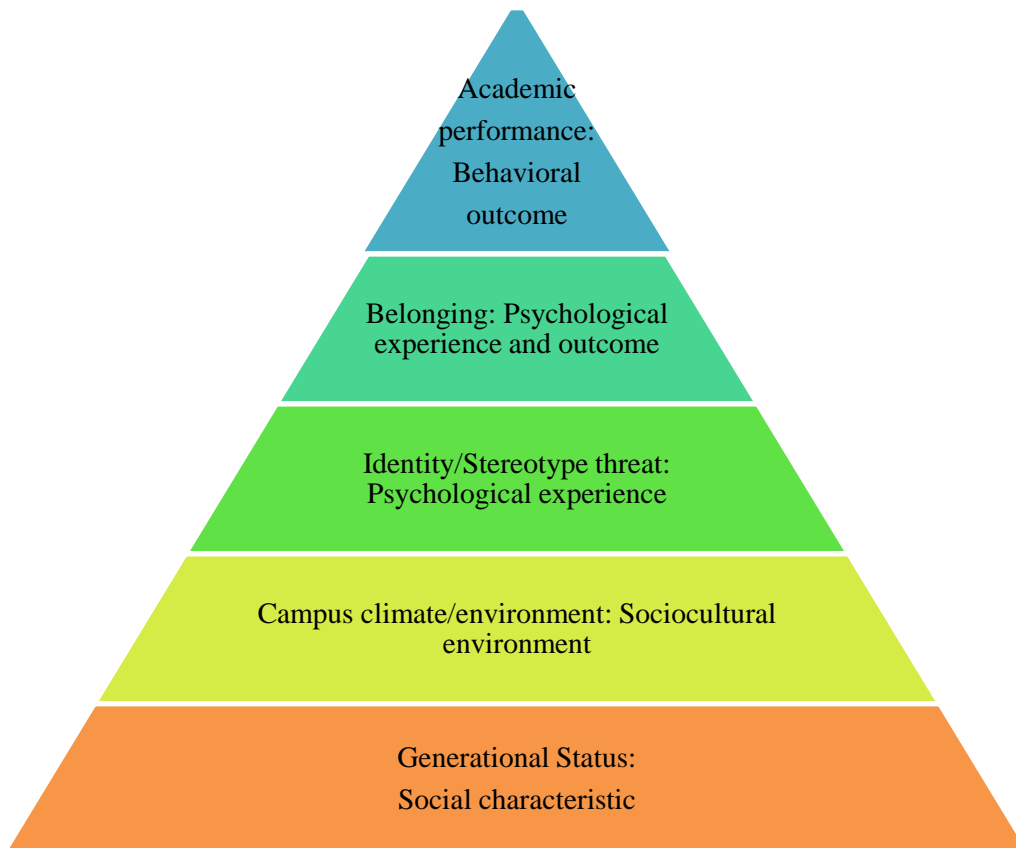


Figure 1. Relationship between sociological and psychological factors in the study.

Problem Statement

The purpose of the current study is to investigate the impact of generational status, peer and faculty involvement, and sense of belonging upon the academic performance of first-year students at Montana State University. It is hypothesized that due to the stigma and stereotype threat felt by those students who do not have a family history of involvement and familiarity with higher education, that first-generation college students will have lower levels of belonging on campus than continuing-generation students. Generational status is expected to moderate the impact of both involvement and belonging upon academic performance, so that belonging will have a stronger relationship to academic performance for first-generation students compared to continuing-generation students. Finally, for the purposes of the current study, a first-generation student is a student whose parents or guardians have not graduated with a four-year baccalaureate degree.

Research Questions

1. Is there a difference in sense of belonging between first-generation and continuing generation college students?
2. To what extent is any difference in students' sense of belonging mediated by peer and faculty interactions?
3. Is there a relationship between generational status and academic performance as measured by GPA?

4. To what extent is this relationship mediated by sense of belonging and peer and faculty interactions?
5. To what extent is the relationship between sense of belonging and academic performance, controlling for peer and faculty interactions, moderated by generational status?

Delimitations

The current study is a problem of practice. Specifically, it asks why first-generation college students attending Montana State University (MSU), a public, land grant, mid-sized research university, might be less likely to persist and graduate than continuing-generation students. As such, the findings of the research will apply to this single institution and are not necessarily applicable more broadly beyond MSU. In addition, the current study focuses solely on first-year students. Sophomores and above are not a part of the sample. It may be that belonging's impact upon academic performance is different for these students. Similarly, transfer students are not included in this sample of first-time MSU students, and belonging may function differently for them as well.

Limitations

The current study has a few limitations. First-generation status is a self-report variable, by necessity, (since there is no other way to obtain this data), which may leave room for misinterpretation or simply a lack of knowledge of parent's/guardian's education levels. In addition, family income is not available, since it is a protected part

of student's FAFSA data. Instead, the researcher decided to use Pell grant recipient status as a substitute. It is fairly well-known that there are a number of problems with using Pell grant status as a proxy for income, namely that it tends to underestimate the number of low-income students (Delisle, 2017). This is due to the fact that depending upon inflation and the way in which eligibility is determined, sometimes there are more middle-income students who qualify for Pell grants (Delisle, 2017). Additionally, low-income students who would qualify for Pell grants don't necessarily apply for and obtain them (Delisle, 2017).

Finally, the current research does not include a measure of anticipated belonging, or pre-belonging, measured prior to the General Belongingness Scale (GBS). Therefore, this limits the current research in that there is no way to examine student's feelings of belonging prior to transitioning to MSU.

Significance

Though several researchers have studied racial and ethnic minority students and the impact of stigma on belonging and success in college, first-generation status has been under-studied using these concepts. In addition, Montana State University has a fairly significant population of first-generation students, and as a public land-grant institution, one could argue that they have an obligation to guide and support these students through college to graduation. Since these first-generation students have not traditionally had the same access to higher education as those with a family history of higher education, and many of them also belong to lower class/SES groups, they may experience feelings of stigma in college which negatively impact belonging, due to their group status (Crozier &

Claire, 1998; Johnson, Richeson, & Finkel, 2011; Spencer & Castano, 2007). In addition, first-generation students may experience stigma more strongly when there are more salient cues present that they do not belong (Aries & Seider, 2005; Barratt, 2012; Granfield, 1991; Jury, Smeding, Stephens, Nelson, Aelenei, & Darnon, 2017; Lehmann, 2007; Martin, 2015; Ostrove, 2003; Ostrove & Long, 2007; Soria, 2015; Soria et al., 2014). If this is part of what is occurring for first-generation students at MSU, and could help account for their lower rates of success, retention, and graduation, it could lead to different interventions designed to address these issues. The current study attempts to address these issues and inadequacies in the research.

Finally, almost half of the new first-time full-time students attending Montana State University (MSU) do not graduate from MSU. In addition, only thirty-one percent of first-generation students at MSU graduate within six years, while fifty-two percent of all entering students graduate (Montana State University, 2018c). Losing half of the incoming class prior to graduation, in addition to a large graduation gap between first-generation and continuing-generation students, is not a positive indicator that the institution is serving its students well. This statistic indicates a need to dig deeper and investigate who is leaving, and why.

Though college access has improved, access without success might almost be worse than no access at all. If students are encouraged to aspire to further education and are invited into the world of postsecondary education, but they do not see themselves represented and valued, and are not provided the tools, environment, or the support to succeed there, they will leave. When they leave, they often leave with debt, frustrated, and without a degree, and therefore unable to access the social, cultural, and economic

potential a four-year degree provides. The future of the nation depends upon our ability to truly create educational environments that promote success for all; especially the most marginalized and underprepared students. Maybe then the dream of the “New American College” Ernest Boyer (1994) spoke of could be a reality; college for the public good, rather than the private benefit.

LITERATURE REVIEW

Introduction

First-generation college students are less likely to graduate from college than their continuing-generation peers (Astin & Oseguera, 2004; Cataldi et al., 2018; Walpole, 2007), possibly due to a multitude of reasons. Though access to college has improved over the past few decades for underrepresented groups of students (Cataldi et al., 2018; Chen & Carroll, 2005; Choy, 2001; Nunez & Cuccaro-Alamin, 1998; Pascarella & Terenzini 1998; Pascarella et al., 2004), the ability to finish and obtain a degree remains out of reach for too many students. Social belonging has been established in the psychological literature as a basic human need, healthy levels of which result in lower levels of anxiety and depression, good mental health, and a variety of motivational behaviors. However, this body of research on belonging is just beginning to be applied to college students in the campus environment, especially college students who are underrepresented in institutions of higher education. It is important to investigate the role of psychological belonging in the success of first-generation students in college. To do so, current literature on the characteristics of first-generation students is presented below, along with comparisons of first-generation characteristics and outcomes to continuing-generation students. In addition, the definition of ‘first-generation student’ itself is critiqued, since this definition can vary, thus changing the statistics and their meaning. Next, a review of campus climate research, along with social stigma and stereotype threat, the latent variables in the current study, is presented. Finally, the research on social belonging is discussed, along with research on first-generation students and their

belonging in college, and the few studies that have empirically connected first-generation status, belonging, and academic performance in college. First-generation students are theorized to have a stigmatized status in the college environment, leading to the experience of stereotype threat, a psychological experience impacting belonging, and eventually academic performance in college. Figure two illustrates the connections between these concepts, along with the process that is theorized to result in the outcome of poor academic performance and lower likelihood of persistence. This follows the manner and order in which these concepts will be presented in the chapter.

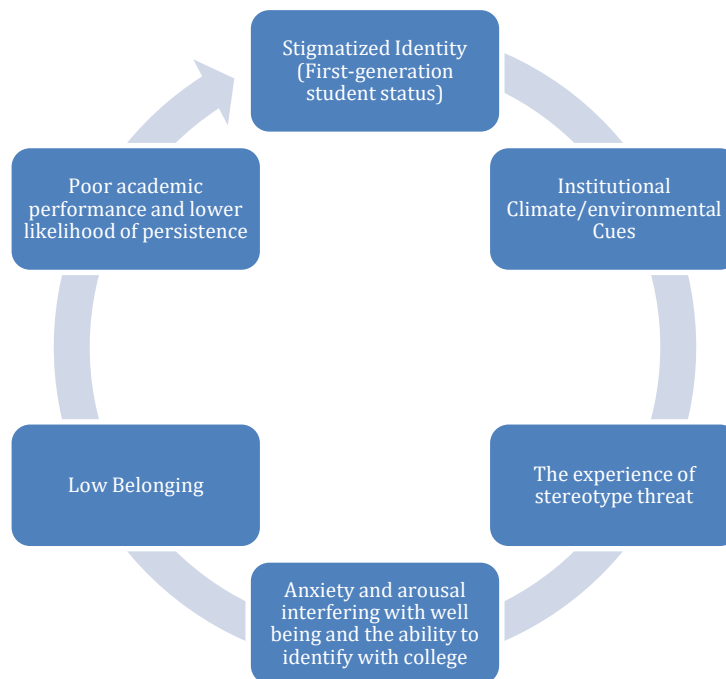


Figure 2. Proposed process of impact of first-generation status upon academic performance and persistence.

First-Generation College Students

The term “first-generation student” has been used for at least a few decades (Billson & Terry, 1982; Bui, 2001; Davis, 2010; Hsiao, 1992; Pascarella & Terenzini, 1998) to identify students who are the first in their family to attend college. The first use of the term in legislation was through the H.R. 5192, Education Amendments of 1980, after the term was used by the Council for Opportunity in Education (COE) to identify underserved students without utilizing racial/ethnic terminology (Whitley, Benson, & Wesaw, 2018). The COE champions TRiO, along with other education opportunity programs. TRiO, a federal program operating in every state and serving disadvantaged students, was created in 1964 as a result of the Educational Opportunity Act (Upward Bound Program, 2017). During fiscal year 2013, TRiO programs served 800,000 students, including first-generation students (Federal TRiO programs 50th Anniversary Fact Sheet, 2017). TRiO’s definition of “first-generation” is that neither of the student’s parents holds a bachelor’s degree (Upward Bound Program, 2017), which includes students whose parent or parents enrolled in college but never graduated, along with those who graduated with associate degrees. However, the National Center for Education Statistics (NCES) and their studies such as the Beginning Postsecondary Students Longitudinal Study and the Baccalaureate and Beyond Studies, define first-generation college students as those whose parents never enrolled in post-secondary education at all; a much more restrictive definition (NCES, 2017c). The most recent study issued from the NCES on first-generation students defines them as students whose parents have never enrolled in college (Cataldi et al., 2018). Other independent research studies define

first-generation inconsistently as well. The result is that we as a nation do not have a consistent definition of “first-generation”, making it challenging to consistently report on the outcomes associated with this status.

The differences in definitions of first-generation students lead to some major differences in reporting on how many of these students exist, along with whether their numbers are increasing or decreasing in terms of enrollment and graduation. For example, a recent study of high school sophomores in 2002 who later enrolled in postsecondary education (NCES, 2017d) asked students about both parental enrollment and graduation from college. This study found that twenty-four percent of these students were “first-generation” students, or students whose parents never enrolled in or graduated from college, and that another thirty-four percent had at least one parent who had some post-secondary experience, but did not hold a degree (NCES, 2017d). Only forty-two percent of these students had at least one parent with a bachelor’s degree or higher (NCES, 2017d). The most current statistics from the National Center for Education Statistics (NCES, 2017) state that for students taking the Beginning College Student Survey in 2011-12, sixty-two percent indicated that neither parent had a bachelor’s degree. By most of these estimates then, “first-generation” college students, if they are defined as students whose parents did not graduate from post-secondary education, are now over half of new students entering programs and institutions of higher education in the United States (Davis, 2010; NCES, 2017). Using the definition of first-generation that neither parent holds a bachelor’s degree, first-generation student numbers have increased steadily over the past two or three decades, and are also at least half, possibly the majority, of new college students (Chen & Carroll, 2005; Choy, 2001; Nunez &

Cuccaro-Alamin, 1998; Pascarella & Terenzini 1998; Pascarella, Pierson, Wolniak, & Terenzini, 2004).

The NCES report, *First-generation students in postsecondary education* utilizes data from the National Longitudinal Study, which include students enrolled in postsecondary education between 1992-2000. These students were part of a nationally representative sample of eighth graders across U.S. schools who were tracked from middle school through postsecondary education (Chen & Carroll, 2005). Twenty-two percent of this sample were first-generation college students, defined as students whose parents never attended college (Chen & Carroll, 2005). Since many institutions do not track generational status, it is impossible to know for certain the exact number of first-generation students attending postsecondary institutions at any point in time (Hsiao, 1992).

The problem with differing definitions of first-generation students is that seemingly conflicting data exist. The most recent NCES report from February of 2018 indicates that numbers of first-generation students, defined as students whose parents have never attended college, are declining slightly; five percent from the year 1999-2000 to 2011-2012 (Cataldi et al., 2018). When comparing this statistic with other evidence that seems to show more first-generation students attending college, this may indicate that there are more people in the U.S. who are attending college but not graduating, while in the past these people would never have attended at all. This group of people would not be captured by the NCES, which is defining first-generation as those whose parents never attended any college. It could be argued that more people attending college yet not

graduating is worse than no college at all, since these students often accumulate debt and yet are without any credential to show for it.

In summary, the percentages of first-generation students in the U.S., along with the growth in college attendance for this population, depends on where the data comes from. Using the definition of “parent or parents who have not graduated with a bachelor’s degree” results in much larger numbers of first-generation students than the definition of “parent or parents who have never attended college at all.” In addition, the most current data on first-generation students appears to show that the differences in persistence and graduation between students whose parents attended some college and first-generation students are fairly small (Cataldi et al., 2018). This may indicate that some college attendance is not as beneficial as graduating with a credential. The benefits that come with one parent with a bachelor’s degree seem to far outweigh the benefits that come from some college attendance without a degree.

First-generation students identify with ethnic and racial groups across the spectrum, but seem to lean heavily towards underrepresented and minoritized ethnic/racial groups. For example, one study (Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007) found that eighty-seven percent of first-generation students entering postsecondary study in 2005 were students of color, and Lohfink & Paulsen (2005) found that the first-generation students in their study were disproportionately non-white, low-income, and female. According to NCES data, when looking at generational status along with ethnicity/race, fifty-one percent of White students in the study were first-generation, along with sixty-nine percent of Black/African-American students, seventy-two percent of Latino/Hispanic students, forty-three percent of Asian students, seventy-four percent

of American Indian or Alaska Native students, and forty-eight percent of Native Hawaiians/Pacific Islanders (NCES, 2017).

Although first-generation students can be defined as students whose parents did not graduate from college, this can include working- class and middle-class families, since some jobs that do not require a college degree have the potential for a high income, such as in the skilled trades. Social class intersects with first-generation status and race but is not consistently measured by any major educational surveys. Since the NCES does not collect data on social class, Pell grant status may be a somewhat acceptable proxy. Pell grants, especially the largest amount (\$4,500-\$5,550/year), are for financially needy students, since eligibility is based upon belonging to lower-income brackets. In 2011-12, for those students who did not receive Pell grants, forty-five percent were first-generation college students, while for the neediest students receiving the highest amount of Pell grants, eighty percent were first-generation students (NCES, 2017). According to these statistics, most students in the U.S., along with the majority in almost every ethnic group, and the overwhelming majority of Pell grant recipients, are first-generation college students. Even those students who are not Pell-eligible are close to fifty percent first-generation students (NCES, 2017). Clearly, increased access to college for those who have been traditionally underrepresented in higher education is working. In addition, the moniker “first-generation student” includes a wide variety of social classes and ethnic groups, though being a student of color and/or financially needy appears to make it more likely that one will also be first in their family to attend college (NCES, 2017). First-generation students are often dealing with multiple identities, which may intersect, creating more, or less, privilege and differing types of challenges and experiences during

college. For example, being a Latina and first-generation college student is different in many ways than being a white male first-generation student. The Latin or Hispanic culture is not necessarily represented or deeply ingrained in higher education, whether one is examining the academic curriculum, or the values represented in the academy (Rendon, 1992; 1994). Orbe (2004), in his qualitative study of first-generation students, found that women and students of color were much more likely to be conscious of being the first in their family in college, and to feel the weight of that experience, both in positive and negative ways. In contrast, being white, male, and/or middle-upper class seemed to keep the self-concept of being first-generation on the edge of consciousness and identity (Orbe, 2004).

Though there are a large number of first-generation college students attending institutions of higher education in the U.S., they are also at a disadvantage in terms of college success when compared to their continuing-generation peers, for a multitude of reasons and in a multitude of differing areas (Bowen, Kurzweil & Tobin, 2005; Collier & Morgan, 2008; Ishitani, 2003; Nunez & Cucarro-Alamin, 1998; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Prospero & Vohra-Gupta, 2007; Stephens, Markus, Fryberg, Johnson, & Covarrubias, 2012a; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). First-generation students tend to lack knowledge about higher education, especially in terms of the costs of college and application processes (Cataldi et al., 2018; Collier & Morgan, 2008; Conley, 2010; Pascarella et al., 2004). This is not surprising, since they do not have parents who are able to share expertise and knowledge with them. First-generation students also show lower levels of pre-college academic preparation and tend to have lower SAT scores and lower high school GPAs than continuing-generation

students (DeAngelo & Franke, 2016; Redford, Mulvaney Hoyer & Ralph, 2017; Riehl, 1994; Sackett, Kuncel, Arneson, Cooper, & Waters, 2009; Sirin, 2005). First-generation college students are also more likely to be older, have lower incomes, be married, and have dependents than non-first-generation students (Nunez & Cuccaro-Alamin, 1998; Skomsvold, 2015).

Once enrolled in college, the differences (and often the disadvantages), continue. At private non-profit institutions, first-generation students were more likely to take remedial/developmental courses than their peers (Nunez & Cuccaro-Alamin, 1998), and overall, fifty-five percent of first-generation students take some remedial courses during college (Chen, 2005). First-generation students also earn fewer credits during their first year of college; an average of eighteen compared to twenty-five for continuing-generation students (Chen, 2005). Taking several remedial courses, along with lower credit loads, are both associated with lower retention and graduation rates (Chen, 2005). Cataldi et al. (2018) found that proportionally fewer first-generation college students, compared to students whose parents had graduated from college, took higher level math and calculus courses, and had enrolled in AP (Advanced Placement) credits or IB (International Baccalaureate) credits during high school. In addition, first-generation students also have significantly lower undergraduate GPAs both their first year and continuing over the course of their college careers (Chen, 2005; Ramos-Sanchez & Nichols, 2007; Riehl, 1994). Financial issues differentially affect first-generation students as well (Martinez, Sher, Krull, & Wood, 2009; Mayhew, Rockenbach, Bowman, Seifert, & Wolniak, 2016). First-generation students are significantly more debt-averse than their peers, and debt has a stronger association with attrition for them (Mayhew et

al., 2016; Somers, Woodhouse & Cofer, 2004). These students are less likely to live on campus, and work significantly more hours per week than students whose parents have graduated from college (Engle & Tinto, 2008; Pascarella et al., 2004). This may be because first-generation students are more likely to come from families with less funds available to pay for education (Bui, 2002; NCES, 2017). These are all experiences that put these students at a disadvantage in terms of college success and completion.

In terms of social differences, first-generation students tend to have lower levels of peer interactions outside of academic courses, and less extracurricular involvement in college, along with lower levels of social and academic integration (Pascarella et al., 2004; Rubin, 2012). Since interactions with one's peers has an important effect upon learning, involvement, and belonging in college (Astin, 1994; Pascarella & Terenzini, 1991, 2005), this puts first-generation students at a disadvantage. Terenzini et al. (1996) assessed students attending institutions participating in the National Study of Student Learning (NSSL), and found that first-generation students studied fewer hours, completed fewer first-year credit hours, took fewer humanities and fine arts courses, and were less likely to perceive that faculty were concerned about students and teaching. Interestingly, several authors have found that these differences in outcomes (in learning gains, involvement, retention/persistence, etc.) existed between first- and continuing -generation students, even when all pre-college characteristics (HS GPA, SAT scores, SES, institution type, attendance status, etc.) were controlled (Nunez & Cuccaro- Alamin, 1998; Pascarella et al., 2004).

Other studies have been conducted evaluating the cognition and psychology of first-generation students, with varying results. Self-efficacy has been found to have an

important impact upon adjustment to college (Ramos-Sanchez & Nichols, 2007).

Although not necessarily the same as self-efficacy, Hellman (1996) found that first-generation students had lower self-perceptions of their academic ability than continuing-generation students, and Ramos-Sanchez & Nichols (2007) also concluded that first-generation students had lower self-efficacy than continuing-generation students and found a positive relationship between self-efficacy and college adjustment for all students. In a study evaluating belonging and mental health resources, Stebleton, Soria, & Huesman (2014) found that first-generation students had higher levels of depression and stress than continuing-generation students.

The characteristics and experiences of first-generation students result in differences in retention and graduation rates for students who are first in their family to attend college. These students are significantly more likely to leave college, when compared to their peers, by the end of their first year (Cataldi et al., 2018; Engle & Tinto, 2008; Pascarella et. al., 2004). They are also less likely than continuing generation students to remain enrolled in college or attain a BA degree after five years (Ishitani, 2003; Pascarella et. al., 2004). The most recent NCES report states that thirty-three percent of first-generation students whose parent/s do not have a bachelor's degree are not enrolled three years after beginning college, compared to only fourteen percent of students who have at least one parent with a bachelor's degree (Cataldi, Bennett, & Chen, 2018). These differences in persistence and retention exist even when studies control for pre-existing characteristics (gender, race, family income, academic standing, etc.) (Nunez & Cuccaro-Alamin, 1998; Ishitani, 2003). Since first-generation students are not graduating at a similar rate to their continuing generation peers, they are

disproportionately burdened with college debt, without the benefit of a college degree that would allow them access to better careers and a higher standard of living.

The results of studies discussed above would suggest there is more going on than simply different levels of academic preparation, less involvement in college, and a lack of “college knowledge,” which could all be addressed by skill-based and remedial programs. What these studies lack, however, is they do not tell us *why*- why are these students often less involved, less integrated, and less confident than their peers? As Rubin (2012) makes clear in his study on social class differences in social integration in college, we know there are differences; future studies need to focus on *why* differences exist. Then we may focus on how to address the issue, and whether we need to better assimilate students, change institutions, or both (Rubin, 2012).

Although we appear to know a fair amount about first-generation student’s high school preparation, experiences in college, and differing retention and completion outcomes, we do not know enough about their cognitive or psychological development or experiences during college (Pascarella et al., 2004). More recent research conducted just over the past several years has focused on the impact of the campus climate or environment on the psychology of first-generation students; specifically on the negative effects of endorsing interdependent goals and needs within the more independent culture of higher education (cultural mismatch) (Phillips, Stephens, & Townsend, 2016; Stephens, Townsend, Markus, & Phillips, 2012b), on the effects of utilizing value affirmations to boost these student’s academic achievement and counter the effects of feeling like an outsider in education (Layous, Davis, Garcia, Purdie-Vaughns, Cook, & Cohen, 2017) and on affirming feelings of independence to boost achievement (Tibbetts,

Harackiewicz, Canning, Boston, Priniski, & Hyde, 2016). Overall, this area of research has found that first-generation students endorse more interdependent values than continuing-generation students, and appear to continue to do so throughout college, which negatively impacts fit, or feelings of belonging (Phillips et al., 2016; Stephens et al., 2012b; Stephens, Markus, Fryberg, Johnson & Covarrubias; 2012a). Research examining campus climate and environment is important in terms of its effects upon first-generation student's feelings of fit and belonging; and is addressed in the next section.

Campus Climate

The research on campus climate took off with Hurtado's studies (1992) on the climate for racially and ethnically diverse students on college campuses in the 1980's, when racial conflicts on campus were on the rise. Climate assessments were created in the interest of addressing these issues and making college campuses more diverse and inclusive places (Hurtado, Arellano, Griffin, & Cueller, 2008). The majority of climate research has focused on racial climate, but there have been studies examining climate around gender, sexual orientation, disability, and class as well (Hurtado et al., 2008). Climate encompasses community member's (in this case, the campus community) perceptions, attitudes, behaviors, and expectations around race/ethnicity (or class, gender, etc.) (Hurtado et al., 2008; Hurtado, Milem, & Clayton-Pedersen, 1999). The forces influencing climate are broad environmental forces. Hurtado et al. (2008) describe these forces as including government policy and context, which is the historical legacy of exclusion/inclusion; the sociohistorical context, which is structural diversity; and the institutional context, which includes psychological climate and the behavioral dimension.

Importantly, Hurtado and colleagues (2008) found in their studies that perceptions of campus climate and actual experiences of discrimination are not always directly related, and are separate constructs. Students could, and often did, perceive racial hostility, yet did not necessarily experience direct discriminatory behavior from others on campus (Hurtado, 1994; Hurtado et al., 2008). Finally, a number of studies assessing racial campus climate have found that perceptions of a hostile climate can affect outcomes, especially for students of color (Hurtado, 2008). For example, Hurtado found that Latino students perceiving a negative climate for diversity had lower sense of belonging than those who did not perceive such a climate (2005). The more positive interactions with diverse peers, along with participation in academic support programs, the higher their levels of belonging (Hurtado & Ponjuan, 2005). Other climate research has found that perceptions of a hostile climate are not only related to lower belonging, but to lower academic performance as well (Fischer, 2007; Nora & Cabrera, 1996). However, many of these studies are plagued by methodological problems that make it difficult to attribute the differences in outcomes solely to race (Lascher & Offenstein, 2012). A climate assessment (the SERU) conducted with large public institutions indicated that student's agreement that "students of my race/gender/SES are respected on campus," dropped between 2012-2017 (Soria, 2018). The largest drop occurred in 2016, the year of the presidential election, possibly indicating the negative effect the current political climate is having upon campus climate (Soria, 2018).

Though typically researchers have examined campus climate in light of race and ethnicity, some researchers have examined class, and/or first-generation status.

Institutional climate towards socioeconomic diversity appears to affect lower-SES

student's feelings about their fit with the student body and perceptions of the diversity of the institution (Browman & Destin, 2016; Granfield, 1991; Reay, Crozier, & Clayton, 2009). For example, warmth cues (as opposed to chilliness cues) increased lower-SES student's academic efficacy, expectations, and implicit associations with high academic achievement (Browman & Destin, 2016). The cues for the chilly climate condition for low SES students included written descriptions of the campus which focused on the wealth of the students and the campus, including a lack of need for financial aid, high tuition costs, and a large college endowment. The warmth cues involved statements about the majority of students receiving financial aid, and the commitment of the university to the work-study program; promoting the overall idea that the college was interested in socioeconomic diversity (Browman & Destin, 2016).

Educational settings are "classed" in the sense that cues in the campus environment indicate the type of behavior that is encouraged, acceptable and rewarded, and these behaviors are rooted in class (Browman & Destin, 2016; Granfield, 1991; Murphy & Zirkel, 2015; Reay, Crozier, & Clayton, 2009; Synder & Trost, 2018; Soria, 2015). Simple overt cues include things such as visual indicators of class, such as style of dress and speech. An example of a more subtle environmental cue is the manner in which values are enacted on a campus. Meritocracy is the belief that through hard work and a level playing field, anyone can rise to the top; a value often expressed at institutions of higher education. Students coming from working-class backgrounds often know through their own personal and familial experience this is not the case, and yet tend to endorse these values anyway. Interdependent vs. independent values is another example of a more subtle cue in the environment. Universities tend to promote the notion that

independence is a positive and sought-after mode of operation during college. First-generation college students have been found to value interdependence (in contrast with continuing-generation students), vs. the values of separation, independence, and self-reliance promoted by middle and upper classes (and institutions of higher education) (Phillips et al., 2016; Stephens et al., 2012b; Stephens, Markus, Fyrberg, Johnson & Covarrubias; 2012a).

Human beings read these cues in the environment and use them to determine whether they fit in and belong (Aries & Seider, 2005; Granfield, 1991; Martin, 2015; Ostrove, 2003). For example, Aries & Seider (2005) found that lower-income students noticed the economic capital of other students- their dorm furnishings, clothing, and vacations- and those attending private Ivy-league institutions discussed these more often, with more anxiety, than those students attending public state institutions. Orbe (2004), in his qualitative study of first-generation students and identity, found that many first-generation students had a distinct awareness of the privileges of other students whose parents had attended college and had money. One Latina student talked about the benefits her roommate had in terms of re-taking the SAT and taking a prep course in high school, because her father understood this option was available, and had the money to pay for it (Orbe, 2004). Though this study does not explicitly examine environmental cues, it does examine climate and student perceptions. Ultimately, these cues in the environment affect perceptions, and are what creates a “campus climate.” For example, Synder & Trost (2018) studied generational status and perceptions of campus climate at large research universities, using data from the Student Experience in the Research University (SERU). They found that continuing-generation students, or those whose

parents had obtained a four-year college degree, reported feeling more comfortable with the climate for diversity and inclusivity on campus. Synder & Trost (2018) also found that these continuing-generation students were significantly more likely than the first-generation students to report feeling that others of their race/ethnicity were respected on campus, and that others of their SES were respected as well. Along with an indicator that first-generation students seem to be experiencing a less-welcoming campus climate or environment, this is also an indicator of the intersection between generational status, race, and class.

Identity, self-perceptions, and perceptions of the college environment matter, and they matter immensely. The most recent research on first-generation students tells us that students evaluate whether they are welcome, whether they will fit into the environment, and whether their values and ideals will be valued in the culture or climate of higher education. Further, their conclusions have an important impact upon their academic performance and success. It appears there are deeper cognitive and psychological effects in college that impact the achievement of students who are first in their family to attend college. Studies on stereotype threat and stigma and the relationship to social belonging are enlightening in terms of explaining the experiences and outcomes of first-generation college students.

Social Stigma

Goffman (1963) conducted what is widely viewed as the seminal work on stigma in the 1960's. He proposed that people belonging to "discredited" social groups consciously manage the way in which others see them and their identities. The process of

devaluation of certain social groups, and the individuals that belong to them, affect these individuals' sense of self, and result in stress and anxiety (Goffman, 1963). Stigma is a social construction, and stigmatized individuals are "marked." These discrediting marks can be visible or invisible, linked to appearance (such as a facial deformity) or to group membership, (such as working-class individuals) (Crocker & Major, 1989; Goffman, 1963; Major & O'Brien, 2005). In addition, the stereotypes and perceptions about stigmatized individuals are shared widely in the culture or society, and then become the reason or basis for excluding or avoiding stigmatized members (Major & O'Brien, 2005).

Stigma and the processes that can occur because of stigma can lead to negative emotions and impact self-esteem. Some of these processes include negative treatment and direct discrimination, expectancy confirmation processes, automatic stereotype activation, and identity threat processes (Major & O'Brien, 2005). Identity threat, often called stereotype threat as well, is the process central to the current study (Major & O'Brien, 2005; Steele, 2012). Stigma by itself is not associated with negative outcomes; rather the psychological processes triggered by stigma result in negative outcomes, which will be discussed in the next section.

Since Goffman's work on stigma and suggestion that lower social class could be considered a stigma, some researchers have focused on the perceptions and self-concepts of working class and lower SES class students within the realm of higher education, especially in fields or types of institutions not historically friendly to working class/low-income students (Aries & Seider, 2005; Barratt, 2011; Granfield, 1991; Jury, Smeding, Stephens, Nelson, Aelenei, & Darnon, 2017; Lehmann, 2007; Martin, 2015; Ostrove, 2003; Ostrove & Long, 2007; Soria, 2015; Soria et al., 2014). Students belonging to

lower social classes (and first-generation students as well, when this was assessed) expressed feelings of not fitting in or belonging, especially on more elite or private college campuses (Aries & Seider, 2005; Soria et al., 2014); “imposter syndrome” (Granfield, 1991) reported depression and anxiety (Stebbleton, Huseman, & Soria, 2014); and lower levels of social integration (Soria et al., 2014). In addition, working-class students sometimes expressed their values in a positive manner and took pride in them as well, as in Martin’s (2015) study illustrating these student’s values of hard work, financial responsibility, and self-reliance.

Lower-income and working-class students feel “different.” Aries & Seider (2005) found in their qualitative study that lower-income students noted the economic capital of other students in their possessions: electronic equipment, dorm furnishings, designer clothes, cars, meals at off-campus restaurants, and vacations. The students made many references to this evidence of social class in their interviews. The themes emerging from these interviews centered around feelings and affect: feelings of inadequacy around their articulateness (or lack thereof) and regional accents, their self-presentation, their lack of money, and feeling excluded based upon class (Aries & Seider, 2005). Students attending state colleges (as opposed to a private Ivy-league institution) discussed these feelings and concerns much less often. They did not discuss feeling powerless and were not particularly aware of their speech or accents. However, the authors did find that these students were aware of being judged as ‘less than’ when interacting with more wealthy students (Aries & Seider, 2005). The authors concluded that the type of college attended significantly impacts student’s relationship between their class identity and the college experience. In addition, the first-generation students in the study showed the greatest

feelings of inadequacy and powerlessness (over and above levels expressed by low-income continuing-generation students (Aries & Seider, 2005). Similarly, Ostrove (2003) found that among women attending Smith College in the 1960's, those coming from lower income backgrounds expressed feelings of alienation, while middle and upper-income students more often talked about feelings of belonging. Granfield (1991) also discovered that lower income students expressed feeling out of place in an elite educational environment (law school), and distinctly felt class stigma, which they sought to escape from, feeling as if they were "tainted." Similarly to the outcomes of Stebleton, Soria, & Huesman, Jr.'s (2014) study on first-generation students and use of mental health services, Granfield (1991) found that not only did working-class students feel out of place, but they also displayed higher levels of stress than middle-upper class students. These findings indicate that there are potential negative mental health outcomes associated simply with attending college as a working class and first-generation college student. The stigma these students appear to be experiencing may ultimately also have a negative impact upon their integration into college, ability to satisfy belonging needs, and their academic success. Stereotype threat, discussed in the next section, is the phenomenon that may occur when one is in possession of a stigmatized identity.

Stereotype Threat

Stereotype threat is a psychological phenomenon or experience that occurs in relation to stigmatized status, and a term first coined by Claude Steele (1997). Stereotype threat involves a stigmatized group member's awareness of a stereotype about them (a threat in "the air"), and the resulting consciousness and fear of fulfilling that stereotype,

combined with cognitive processes which affect important outcomes (Steele, 2010). This threat is tied to a stigmatized identity (for example, being a first-generation student or working/lower class) and is present in any situation where the stereotype is relevant (Steele, 2010). It exists in part because of the nature of stereotypes: we are all aware of them, just like we are aware of what other members of our society think about a variety of things: what Steele calls “intersubjectivity” (Steele, 2010).

The stereotype threat concept originated with Steele’s (1997) work investigating underachievement of African-American college students, and his observations of African-American college students at the university where he taught. His beginning investigations of available data on these students illustrated that these students entered college (a competitive research university) with high SAT scores. However, their later grades in college did not match these SAT scores. When compared to White students, Black students got consistently lower grades at every level of SAT scores (low, medium, high) (Steele, 2010). Once Steele and his colleagues began examining gender as well, they found similar patterns with women and math. Although SAT scores were equivalent, performance in advanced math courses was worse than their male classmates (Steele 2010).

Steele’s experimental work found that making a stereotype about a certain group relevant to the task in front of them could purposely induce stereotype threat. For example, simply stating that an IQ test they took in an experimental situation evaluated intellectual ability caused African-Americans to underperform in comparison to Caucasian participants, presumably because this evaluative situation called up the stereotype that black people are intellectually inferior to white people. An everyday

example of the phenomenon is provided by Steele (2010) in his book *Whistling Vivaldi: How stereotypes affect us and what we can do*. A black student attending an Ivy-league university notices that whenever he walks around the city, he can almost feel the fear of the white people he passes by. Out of nervousness at first, he begins whistling Vivaldi and Beatles tunes as he walks down the street, and people's reactions are completely different- the tension disappears, sometimes they smile at him. This student had experienced a stereotype- the stereotype that all black men are violent- "in the air" (Steele, 2010). This stereotype did not have to be verbally expressed; the student was aware of it because he was a black male living in the United States, and he was conscious of the body language of white people on the street (Steele, 2010).

Stereotype threat results in the underperformance of the group on intellectual tasks in which the stereotype exists (Steele, 1997; Steele & Aronson, 1995; Steele, Spencer, & Aronson, 2002). Steele & Aronson (1995) hypothesized that stigma had a negative influence on performance for these groups. When participants were told that a test had no gender differences and did not evaluate math ability, males and females scored similarly on math tests (Spencer, Steele, & Quinn, 1999). Steele (2010) found similar results when examining race. When black men taking a test were told that the test did not measure intellectual ability (Steele & Aronson, 1995), they scored similarly to white men. When it is made clear that the test is not measuring the ability that is under stereotype threat ("women are bad at math," "black people are not as smart as white people"), this removes the unstated threat and presumably the cognitive load that thinking about confirming the stereotype induces (Steele, 2010). These findings are important for multiple reasons. First, the knowledge that a stereotype existing about one's group could

affect one's academic performance meant that there was much more to underperformance of stigmatized groups than anyone had realized. Second, it meant that removing the threat of the stereotype might do much towards equalizing the chances of success for underrepresented groups in education. Finally, it was important because it indicated that the phenomenon of stereotype threat could happen without intentional prejudice of specific people (Steele, 2010). The students participating in the experiments had no reason to believe that the people running the studies or giving the test were prejudiced; all they knew was the general knowledge that people in our culture share: the stereotype that women are not as good at math as men, or, black people are not as intelligent as white people (Steele, 2010).

Even more importantly, Steele (2010) and his colleagues have discovered with further experimental research that stereotype threat affects the more highly motivated and academically engaged students the most, since their identity is tied to academic and intellectual pursuits. This means that the disadvantaged students who make it into college; often the ones who are the most motivated and engaged; are also the ones most susceptible to stereotype threat. In contrast, when confronted with stereotype threat, some students disengage from the task at hand, preserving their self-esteem by disidentifying with academic and intellectual arenas when other sources of belonging and self-esteem are available and easier to come by (Steele, 1997, 2010). These are the students who may gain self-esteem and feel belonging from joining gangs, who identify doing well in academics as "acting white," or who drop out of high school and/or college. Students who are academically engaged, whose self-esteem is connected to their academic performance in school, do not disengage from the task, and therefore

performance often goes down and self-esteem does as well. Ironically, the result is that this may feed into the stereotype about their group, though the poor performance or disengagement is caused by stigma and stereotype threat, not actual differences in intellectual ability.

Additionally, researchers have studied the cognitive process by which the underperformance related to stereotype threat occurs, and it appears to be that it affects cognitive load (Crozier, Despres, Gauzins, Huguet, Leyens, & Meot, 2004; Johnson, Richeson, & Finkel, 2011; Steele, 2010). Humans only have so much room in their brains for processing, and when cognition is taken up with thinking about and attempting to disprove a stereotype about your group, anxiety and stress are triggered, and there is less room to process and understand an intellectual task. Stereotype threat may have a large impact upon first-generation and low-SES college students, resulting in many of the outcomes described in the section on first-generation students. A limited number of experimental studies have been published so far investigating stereotype threat and class/SES (Crozier & Claire, 1998; Johnson, Richeson, & Finkel, 2011; Spencer & Castano, 2007), and all found significant results for the relationship between stereotype threat, class, and behavior or cognitions. For example, Crozier & Claire (1998) studied French college students, and presented them with an intellectual task where the instructions were varied to induce or to not induce stereotype threat. When the test was described as a test of intellectual ability, low SES participants performed worse than high SES participants, but when the test was presented as non-diagnostic of intellectual ability, low SES and high SES participant's performance did not differ (Crozier & Claire, 1998). Spencer & Castano (2007) also studied SES and stereotype threat, finding that when SES

was made salient before a test, low SES students performed more poorly than when SES was not made salient. The way SES was made salient was by stating that the test was a measure of verbal intelligence, vs. the control condition where it was described as a task of attention and perception (Spencer & Castano, 2007).

Johnson, Richeson, & Finkel (2011) found that lower SES students at an elite university expressed more concern about academic competency than their higher SES peers; what the authors call “identity-based concerns”. The authors also theorized that, according to ego-depletion theories, the impact of managing these identity concerns would be significant for lower SES students. Indeed, this is what they discovered, so that using measures of ego depletion, lower SES students were more depleted than higher-SES students after talking about a topic related to academic achievement (Johnson, Richeson, & Finkel, 2011). They also found that the amount of ego-depletion could be changed as well, through manipulating task demands, so that the lower-SES students concerns about academic competency were lowered. All in all, though these studies do not assess first-generation status, they do assess a closely-related identity: class, or socioeconomic status. They confirm that class is a stigmatized identity, as gender or race can be as well. As such, lower- class or lower-SES students appear to be susceptible to the effects of stereotype threat.

Another line of more recent research has involved implementing behavioral interventions that are designed to reduce stereotype threat and increase belonging, resulting in better academic outcomes (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Stephens, Townsend, Hamedani, Destin, & Manzo, 2015; Walton & Cohen, 2007; Yeager et al., 2016). These studies all

test the assumption that brief psychological interventions can have long-term effects upon group member's achievement, since they reduce stereotype threat and initiate recursive processes (Stephens et al., 2015). Interventions vary, and include tasks such as writing exercises affirming the personal adequacy of minority students (Cohen et al., 2006); listening to peers talking about how their first-generation status affected their success in college, and then writing about and discussing one's own background (Stephens et al., 2015), and a "lay theory" social belonging intervention where students listened to peers normalize the challenges of the transition to college (Yeager et al., 2016). All of the above studies found significant results. For example, Stephens et al. (2015) found that students in the intervention condition discussed their backgrounds more often than control participants, and that first-generation students participating in the intervention vs. the control condition showed greater physiological thriving. Other studies found significant results for academic achievement: Cohen et al. (2009) found that African-American students in the intervention had higher GPAs and higher self-perceptions two years later.

These are all important studies, because they appear to show that relatively short-term simple social-psychological interventions can reduce stigma and stereotype threat and increase achievement in college (Cohen & Garcia, 2014; Steele, 2010). However, belonging is not directly measured and is, for the most part, an assumption in many of these studies. Two studies that do directly assess fit and feelings of belonging are Walton & Cohen (2007) and Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak (2002), whose research indicates that stereotype threat does significantly impact African-

Americans, resulting in discomfort during the college transition, lower trust in the university, declines in grades, and lower feelings of belonging and potential.

Walton & Cohen (2007) examined how threats to social belonging would impact African-American student's motivation and academic performance in college. The activity that induced stereotype threat involved participants listing either two or eight friends who would fit into the Computer Science department in their college. A subsequent intervention involved students learning that adversity and struggle were a normal and temporary part of being a new student. Findings indicated that for racial minorities but not for whites, their feelings of fitting in and belonging were lower when they had to list eight friends as opposed to two. For black students, their sense of fit or belonging in college dropped on days when they experienced higher levels of stress, indicating they are attributing the stress to their stigmatized identity (Walton & Cohen, 2007). The intervention, which normalized adversity and labeled it as temporary, also differentially affected minority students, resulting in feelings of belonging less dependent upon the stress levels of any particular day, along with higher GPAs and an increase in the amount of time spent studying (Walton & Cohen, 2007).

Mendoza-Denton et al. (2002) tested a questionnaire designed to assess feelings of rejection and anxiety around race; basically, a self-report measure of identity or stereotype threat. The authors concluded that students with higher levels of race-based anxiety and rejection expectation also showed lower levels of academic performance, even when controlling for incoming SAT scores, along with lower social adjustment and interpersonal relationships (Mendoza- Denton et al. (2002). The authors conclude that individuals can develop rejection expectations based upon membership in a devalued

group (stigma), and the environment then determines which expectations become activated.

Sense of Belonging

Maslow (1954) described social belonging as a basic human need in *Motivation and Personality*, and some of the early research on belonging by Anant (1966, 1967, 1969) indicated that there was a negative relationship between belongingness and anxiety. Belonging research is also based in Durkheim's theory (1951) that suicide could be explained in terms of a lack of social integration (Baumeister & Leary, 1995). Interestingly, Tinto's theory of integration is also based in Durkheim's theory (1993), and Tinto himself, in an 'expert interview' on his theory, stated that if he was developing his theory today, he might more accurately call it 'sense of belonging' or 'fit.' (Wolf-Wendel, Ward, & Kinzie, 2009).

Hagerty, Lynch-Sauer, Patusky, Bouwsema & Collier (1992) defined sense of belonging as "the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that environment." (p.173). Sense of belonging is essentially a psychological experience, wherein there are precursors and consequences to the experience of belonging, or of not belonging (Hagerty et al., 1992; Hagerty, Williams, Coyne, & Early, 1996). Hagerty et al. (1992) proposed that these precursors include energy for involvement, desire for meaningful involvement, and the potential for shared or complementary characteristics, and the consequences are involvement, attributions of meaningfulness, and a foundation for behavioral and emotional responses (Hagerty et al., 1992). In an empirical test of belonging, Hagerty et

al. (1996) found that belonging was related to social support; specifically, that belonging was significantly related to more perceived support and positive social support actions. In addition, income was negatively related to sense of belonging, but only for women in the lower socioeconomic group, defined as income below \$40,000/year (Hagerty et al., 1996).

In their seminal work, Baumeister & Leary (1995) conducted an extensive summary of the empirical literature on belonging in the field of psychology, and ultimately characterized the need to belong as a fundamental human motivation affecting a wide variety of human behavior, emotion, and cognition. As such, the need to belong motivates goal-directed actions that are designed to satisfy it (Baumeister & Leary, 1995). This view supports Maslow's original theory that the need to belong is a part of the hierarchy of needs, which must be satisfied so that healthy self-esteem and self-actualization can occur (Maslow, 1954). Since belonging is a basic motivation and need, negative affect, including anxiety, stress, and even psychosis can result when those needs are not satisfied. The motivation to belong also has an important effect upon cognition, in that belongingness concerns shape human thought, and people interpret situations and behaviors in terms of their implications for relationships (Baumeister & Leary, 1995). Even anticipating being alone without supportive others affects cognitive processes negatively. Baumeister, Twenge, & Nuss (2002) found that thinking about the possibility of social exclusion led to significant impairment in logic and reasoning, while thoughts about misfortunes such as accidents or sickness did not impair complex cognitions. Baumeister, Dwall, Ciarocco, & Twenge (2005) found that anticipated social rejection or lack of belonging impaired participant's ability to self-regulate. This indicates that it

is not simply worry or anxiety in general, but worry focused on social belonging, that leads to the impairment. Humans are wired to connect with others, and when that need is threatened or is not satisfied, the ability to regulate behavior and affect, along with intelligent thought, is significantly impaired.

The transition to college could be interpreted as an event indicating a potential change in one's belongingness status, triggering behaviors and feelings designed to satisfy the need to belong. Currently, there is a surge of interest and research on belonging within the field of higher education. Strayhorn (2008) conceptualizes sense of belonging in college students as the extent to which students are integrated into the college and feel as if they matter and are valued by both individuals and a community, which is in line with the psychological research on belonging discussed above. Strayhorn also states that belonging is the result of feeling that one has access to sufficient support (Strayhorn, 2008; 2012), which is consistent with the psychological literature on belonging (Baumeister & Leary, 1995; Hagerty et al., 1992; Hagerty et al., 1996; Maslow, 1954). Similar to Baumeister & Leary's research (1995), Strayhorn (2012) posits that there exist several core elements of sense of belonging. These include: sense of belonging as a basic human need; a drive or motive which is sufficient to drive human behavior, it takes on increased importance in certain contexts, such as the new student transition process (being a newcomer to an established group, i.e., college), it is related to mattering, social identities affect college students' sense of belonging, sense of belonging engenders other positive outcomes, and finally, sense of belonging changes as contexts and circumstances change and must be satisfied on a continual basis (Strayhorn, 2012).

Empirical research on belonging within higher education has been conducted by a number of researchers and can be characterized in two ways: research on specific identity groups, their experiences with belonging, and the impact of certain college experiences on belonging, and general research with college students on belonging. Research over the last twenty years has focused on belonging, campus climate, and racial identity (Hurtado & Carter, 1997; Johnson, Soldner, Brown Leonard, Alvarez, Kurotsuchi Inkelas, Rowan-Kenyon, & Longerbeam, 2007; Hausmann, Ye, Ward-Schofield, & Woods, 2009; Wells & Horn, 2015). Racial and ethnic minority students tend to experience a lower sense of belonging on campus than white students (Johnson et al., 2007), and sense of belonging has been found to have a significant effect upon persistence (Hausmann et al., 2009). In addition, for students belonging to racial and ethnic minority groups, belonging is strongly correlated with their perceptions of the racial climate of the campus. Hurtado & Carter (1997) studied Latina student's belonging in college and found that there was a strong relationship between sense of belonging in college and membership in social-community organizations, frequent discussions of course content outside of class, tutoring other students, and frequently talking with faculty outside of class. However, they found no relationship between sense of belonging and GPA. Hurtado & Carter (1997) found that the perception of a campus environment having racial/ethnic tension was related to lower sense of belonging for Latina students. Wells & Horn's (2015) study drawing from this work found that Asian-American student's perceptions of their campus, and specifically their perceptions that their Asian culture was congruent with or fit with the campus culture, was significantly correlated with their sense of belonging. In an interesting twist to these studies,

Hausmann et al. (2009) devised an intervention to see if a university communication along with a gift bearing the university insignia would affect student's sense of belonging. They found it had a positive effect on sense of belonging for White students, but no effect for African-American students.

Other studies on belonging have investigated a diverse set of variables and their relationship to belonging. Hoyle & Crawford (1994) examined social self-esteem and belonging in 469 college students, concluding that there was a significant positive correlation between social self-esteem and belongingness. Morrow & Ackermann (2012) found a positive relationship between student's intentions to persist in college and motivation, along with perceived peer and faculty support, but only indirect relationships with belonging. Finally, in their study on sense of belonging, academic motivation, sense of class belonging, and instructor characteristics, Freeman, Anderman, & Jensen (2007) found that social acceptance was a significant positive predictor of belonging, along with perceptions of professors as being pedagogically caring.

Studies investigating the relationship between belonging and either first-generation status or social class are few and far between. Social class and first-generation status often overlap, but it is important to remember that first-generation students may have parents who are blue-collar workers and yet make enough money to be middle-class. Social class is much more than rich or poor (Barratt, 2011); it is a complex interaction between income, education, and social and cultural capital. Two studies have empirically and quantitatively investigated first-generation students and sense of belonging (Pittman & Richmond, 2007; Stebleton, Soria, & Huesman, 2014), and one meta-analysis explored social class and social integration, with belonging as one measure

of integration (Rubin, 2012). All three studies found that first-generation status and/or low SES had a negative relationship to belonging. Stebleton and colleagues (2014) found that first-generation students reported lower levels of sense of belonging, greater levels of stress and depression, and less use of mental health services than their continuing-generation counterparts. They used a factor described as 'satisfaction and belonging', part of the survey *Student Experience in the Research University (SERU)*, out of which two items measure belonging (Stebleton et al., 2014). Pittman & Richmond (2007) adapted a measure of school belonging (*The Psychological Sense of School Membership*) for college students and found first-generation college students had significantly lower levels of belonging than continuing-generation students, though when examining SES, differences in belonging were non-significant. Interestingly, this difference in significance between generational status and SES was not explained or explored. However, the fact that the authors defined SES as the type of job held by parents (skilled worker, unskilled worker, professional worker, etc.) rather than the usual way of defining SES, may have influenced the results. Higher levels of social belonging in the study were associated with positive outcomes such as higher grades and healthy psychological behaviors such as feelings of scholastic competence and high self-worth. Higher levels of belonging during high school were also significantly associated with higher levels reported in college, indicating that prior experience with belonging can impact later belonging in a different school setting (Pittman & Richmond, 2007).

Rubin (2012) conducted a meta-analysis on social integration and class in college. He found the largest significant effect size (.18) for the relationship between social class and social integration overall, measured by the SAQ-Social, which is a multi-dimensional

scale measuring social integration, across gender, year of study, and also measure of class (parental education and parental income). The SAQ-Social measures quantity and quality of formal social activities (four items), informal social activities (eight items), loneliness (two items), and sense of belonging (one item). Working-class status was associated with lower integration (Rubin, 2012). When examining the multiple measures utilized to assess social integration (sense of belonging, the SAQ- Social, and participation in formal and informal social activities), sense of belonging had the second largest effect size after the SAQ-Social (Rubin, 2012). This indicates the importance of belonging in measuring social integration in college.

Several qualitative studies have examined social class in college (Martin, 2015; Ostrove, 2003; Ostrove & Long, 2007). For example, Ostrove (2003) interviewed female college students, and concluded that working-class students more often expressed feelings of alienation and consciousness of class, in contrast to middle- and high- income students. Martin's (2015) qualitative study of first-generation low-income white college students concluded that these students appear to deny that social class matters, while at the same time expressing feelings of both pride and exclusion and alienation based on social class. Finally, Soria, Stebleton & Huesman (2013) conducted a large study examining income/class and academic integration and social integration (including satisfaction, sense of belonging, and climate) at six public institutions. Their results indicated that working-class students had significantly lower levels of belonging than middle- and upper-income students, along with lower social and academic integration.

In addition to empirical research, a number of books have been published addressing the experiences of low-income and/or first-generation student's experiences in

higher education from a first-person narrative perspective. J.D. Vance, the author of *Hillbilly elegy: A memoir of a family and culture in crisis* (2016) writes about the saving graces of just one supportive family member or mentor in not only getting to college, but simply surviving his youth in a poverty-stricken and drug and alcohol fueled small rural town in the South. The author writes about attending a military school and the structure and discipline the experience instilled in him. If he had attended a typical college directly after high school, he might have dropped out due to his lack of experience with the required self-motivation and discipline. Vance also writes about the social and cultural capital he develops as a result of his experience with Yale Law school; capital that was essential in order to land a legal position after law school (Vance, 2016). Vance's story about applying to Yale is indicative of the cultural capital needed to even apply to graduate school: the application required a reference letter from the Dean of his college, and since he did not know the Dean, Vance felt intimidated by asking him for a letter of reference. Vance almost dropped the application completely because he could not bring himself to ask for a reference. A middle or upper-class student is more likely to know what a Dean is, to feel comfortable with the system that expects that asking for references from strangers is just par for the course, and to feel as if one deserves a reference from a Dean.

This fine place so far from home: Voices of academics from the working class (Dews & Lester Law, 1995) also chronicles the experiences and often the struggle and dislocation of people from the working-class not only in attending college but choosing the academic life as a career. Experiences often mirror, in narrative form, the research studies discussed here so far: feelings of not belonging in private colleges/Ivy league

institutions where students easily discuss their world travels and upper-class knowledge of food; major differences in speech in terms of everything from volume to language and slang expressions, and the lack of validation from faculty on academic work. In one essay, the author writes about the first time she got up the gumption to take a paper to a professor's office hours, and the validation that brought her to tears when he told her that her idea was very good, but also challenged her, telling her how improvements in her writing could make her good idea even better (Johnson-Black, 1995).

These narrative stories support the empirical research on the connection between socioeconomic status, cultural and social capital, climate/environment, and the psychological experience of social belonging in higher education (Barratt, 2011; Johnson-Black, 1995; Vance, 2016). Students who identify as working class or first-generation show lower levels of belonging or integration in college, and further, this impacts social and academic integration and adjustment to college (Jury, Smeding, Stephens, Nelson, Aelenei, & Darnon, 2017; Martin, 2015; Ostrove, 2003; Ostrove & Long, 2007; Pittman & Richmond, 2007; Rubin, 2012; Soria et al., 2013; Stebleton et al., 2014).

Several studies have examined social class or first-generation students, belonging, and academic performance. Low SES and first-generation students do appear to have significantly lower grades, on average, than continuing generation and middle-upper SES students in college (Chen & Carroll, 2005; Terenzini, Springer, Yeager, Pascarella, & Nora, 1996; Tibbetts, Harackiewicz, Canning, Boston, Priniski, & Hyde, 2016; Prospero & Vohra-Gupta, 2007; Riehl, 1994; Stephens, Fryberg, Markus, & Covarrubias, 2012a; Stephens, Townsend, Hamedani, Destin, & Manzo, 2015). Ramos-Sanchez & Nichols

(2007) found that self-efficacy, along with academic performance (measured by GPA) were lower for first-generation students. Self-efficacy was not found to be a mediator for academic performance; but overall, high self-efficacy at the beginning of the year predicted better college adjustment at the end of the year for all students (Ramos-Sanchez & Nichols, 2007). Finally, a few recent studies have examined belonging or a construct that could be construed as similar to belonging, such as fit or integration. These authors found that first-generation students had lower levels of fit, belonging, or integration, and this negatively impacted grades (Phillips, Stephens, & Townsend, 2016; Prospero & Vohra-Gupta, 2007). For example, Phillips, Stephens, & Townsend (2016) examined endorsement of interdependent or independent values, finding that first-generation students were more likely to endorse interdependent values, which negatively impacted feelings of fit, while lower fit negatively impacted grades throughout their time in college.

These are all important findings, because they tell us that social class appears to have a significant impact on how students adjust to college, and further, that social class impacts student's psychology: their feelings of fitting in and belonging. In addition, belonging may impact academic achievement, a precursor in many cases to dropping out and not completing a degree. Thus, though improved access to college is important, if students perceive they do not belong in institutions of higher education once they are there, they do not have equal chances of success.

One of the problems in the study of belonging in the field of higher education appears to be that authors often say they are studying 'sense of belonging' but do not appear to be using a validated and reliable instrument measuring the construct (Hoffman,

Richmond, Morrow, & Salomone, 2002; Strayhorn, 2012). Instead, these authors appear to assess involvement, peer and faculty relationships, or other constructs, and then call them “sense of belonging.” For example, Pittman & Richmond (2007) utilized an adapted form of the *Psychological Sense of School Membership*, usually used with high school students, and adapted some of the questions to refer to college. Whether or not a sense of school membership is the same construct as a sense of belonging has not been examined. Stebleton et al. (2014), in their study of first-generation students and their use of mental health resources, utilized a measure from *Student Experiences in the Research University (SERU)*, composed of items assessing satisfaction (4 items) and belonging (2 items), which when combined the authors called “belonging”. According to the psychological literature on belonging discussed above, belonging is its own construct, and has never been connected to the construct of satisfaction, which appears to be a construct created for studies on higher education.

In summary, the study of belonging in higher education, and especially the impact of class (SES and/or first-generation status) upon belonging and other important outcomes, is just beginning. No study has yet assessed the differences between first- and continuing -generation students in their perceptions of belonging in college on a large scale, while using an accepted and validated belonging instrument.

People who hold a stigmatized identity may be more susceptible to threats to this identity, experiencing stereotype threat (Steele, 2010). First-generation students have a stigmatized identity in the context of higher education. Experiencing stereotype threat as a part of campus or institutional climate, may then impact the ability to become integrated socially and academically, leading to feeling as if one does not belong or fit in.

This area of research is seeing a surge of studies investigating behavioral interventions purported to reduce stereotype threat and increase belonging in college for first-generation students and students with other stigmatized identities as well. Studies focusing on interventions designed to boost student's achievement and feelings of fit and belonging appear to show certain interventions have a positive effect upon academic achievement and belonging (Cohen, Garcia, Apfel & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Critcher & Dunning, 2015; Jury, Smeding, Stephens, Nelson, Alelai, & Darnon, 2017; Stephens, Townsend, Hamedani, Destin & Manzo, 2015; Yeager, Walton, Brady, Akcinar, Paunesku, Keane, Kamentz, Ritter, Duckworth, Urstein, Gomez, Markus, Cohen, & Dweck, 2016). Interventions utilized by these authors are usually exercises involving affirmations of student's values or peer education on how being a first-generation student impacts adjustment to college. Not all these studies have utilized first-generation students however; most of the affirmation studies have explored race and compared Caucasian and African-American high school and college students (Cohen, Garcia, Apfel & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009). Though not all of them have focused on first-generation status, they have found that stigmatized groups seem to benefit from these interventions, so they appear to hold potential for the success of first-generation students in college.

Summary

First-generation college students, those whose parents have not graduated from college themselves, are now at last half and possibly the majority of students enrolled in

college in the United States. Access has increased, yet the persistence and graduation rates of first-generation students lags behind their continuing-generation peers (NCES, 2017). Access to college without success only harms students, since once they leave college, they often leave saddled with student loan debt, without a degree that allows them to access careers that will connect them to opportunities for a better life.

First-generation student status is linked to lower persistence and graduation rates, and lower levels of preparedness for college, along with less involvement and longer time to degree. Current research on identity threat/stereotype threat and first-generation and low-income students illustrates the essential role of social psychological processes in determining college success. The research reviewed thus far shows that the experience of stigma and stereotype threat has an impact on social belonging, a psychological motivation and basic need shared by all human beings. The environment or culture of college itself- social and environmental cues- may instigate stereotype or identity threat in first-generation students, causing them to feel as if they do not belong and making it difficult to integrate into the campus, and thus, to succeed academically and to graduate.

Working- class and first-generation students have very different experiences during college than their middle/high income and continuing-generation peers. They often feel different, less-than, as if they are not college material, often along with positive feelings as well; of pride in their background and commitment to their values. Though a fair amount of research has examined the constructs of belonging, stereotype threat, and first-generation students separately, no quantitative studies have connected all three as the current study proposes to do. In addition, studies that do address belonging and its impact on academic performance have not yet examined generational status; but most

often examine race/ethnicity, comparing white students to students of color. It is still unclear if it is first-generation student status or low-income (or both) that matters more in determining student experiences and outcomes in college, since some studies examine income, some working-class students (or alternatively SES), and others generational status. No research studies have explicitly utilized generational status to predict belonging and academic performance, while examining the impact of mediational variables as well. Since involvement in co-curricular activities, along with peer and faculty interactions is often conflated with sense of belonging, the current study utilizes a measure of involvement to address this issue. In addition, as reviewed above, many studies purportedly examining belonging examine fit, involvement, or contact with peers. These are all different constructs than an actual psychological, validated measure of belonging. The current study utilizes a validated measure of psychological belonging to address this deficiency in the higher education literature, bringing together the psychological literature and the higher education literature on belonging.

The current study proposes to link these variables to examine the relationships between first-generation student status, stereotype threat, involvement, and social belonging upon academic performance during the first year of college. A focus on skill-building and the improvement of cultural capital alone is not making a large enough difference in the outcomes for first-generation students. Research needs to be conducted that will uncover the impact of generational status upon the psychology of students in college, and further, the impact upon successful transitions. We cannot assume that the deficiency model will improve outcomes (throwing more skills, more capital, and more money at first-generation students), and yet that is what the majority of current

interventions and programming for first-generation students presumes. The current study will quantitatively examine the impact of being first-generation upon belonging and ultimately upon academic performance, which directly impacts persistence and graduation.

METHODOLOGY

The purpose of the current study is to investigate the impact of college students' generational status and sense of belonging upon academic performance in college. It is hypothesized that due to the stigma and stereotype threat felt by those students whose parents did not graduate from college, first-generation college students will have lower levels of belonging on campus than continuing-generation students. Feeling a connection and sense that one belongs in college is essential to develop healthy psychological habits, connections to others, motivation, and academic performance (Chen & Carroll, 2005; Terenzini, Springer, Yeager, Pascarella, & Nora, 1996; Tibbetts, Harackiewicz, Canning, Boston, Priniski, & Hyde, 2016; Pittman & Richmond, 2007; Prospero & Vohra-Gupta, 2007; Riehl, 1994; Stebleton, Soria, & Huesman, 2014; Stephens, Fryberg, Markus, & Covarrubias, 2012a; Stephens, Townsend, Hamedani, Destin, & Manzo, 2015). If first-generation college students do not develop a sense that they belong or "fit" in college, it is hypothesized that their grades will suffer, and they will probably be less likely to persist and graduate. Since persistence and graduation could not be assessed in the current study, the intermediate outcomes of belonging and the impact upon academic performance were analyzed.

Research Questions

1. Is there a difference in sense of belonging between first-generation and continuing generation college students?

2. To what extent is any difference in students' sense of belonging by generational status mediated by peer and faculty interactions, controlling for pre-college characteristics?
3. Is there a relationship between generational status and academic performance as measured by GPA?
4. To what extent is the relationship between generational status and GPA mediated by sense of belonging and peer and faculty interactions?
5. To what extent is the relationship between sense of belonging and academic performance, controlling for peer and faculty interactions, moderated by generational status?

Research Design

The design of the current study involves survey research and is correlational in nature. Survey research typically involves collecting data directly from participants about their opinions on topics or issues (Gay, Mills, & Airasian, 2012). In the case of the current study, the survey method was utilized due to the self-report nature of the constructs and scales measuring affective and cognitive domains. The researcher wanted to assess how student's sense of belonging, along with quality and quantity of peer and faculty relationships, impact academic performance in college. Pre-existing scales measuring sense of belonging and interactions with faculty and peers (the General Belongingness Scale, and scales measuring faculty and peer interactions/involvement) were used in the study.

This self-report survey data was collected in order to determine if there were relationships among the variables in question, which defines the research design as correlational (Gay, Mills, & Airasian, 2012). Specifically, it was hypothesized that continuing-generation students would be advantaged over first-generation students on academic performance. In addition, the purpose was to determine if sense of belonging and faculty and peer involvement mediated the relationship between generational status and academic performance, while controlling for background characteristics that tend to have an impact on academic performance (high school GPA, ACT scores, Pell grant status, gender, and race). It is important to note that correlational research is not causal and does not imply a cause and effect relationship (Gay, Mills, & Airasian, 2012). However, a high correlation may allow prediction (Gay, Mills, & Airasian, 2012).

Institution

The study was conducted at Montana State University (MSU), a land grant, public university with a student population of 16,703 (MSU Office of Planning and Analysis, Campus Profile, 2018) and a Carnegie Classification of Doctoral University with Higher Research Activity (Carnegie Classification of Institutions of Higher Education, 2018). MSU distributes the Beginning College Student Survey of Engagement (BCSSE) each year to new incoming students during summer orientations. According to BCSSE statistics from fall 2017, twenty percent of incoming first-time students who attended orientation on campus identified themselves as first-generation college students (MSU Office of Planning and Analysis, personal communication, 2018). The BCSSE defines

first-generation students as those whose parents did not graduate from college with a bachelor's degree.

As of 2015-16 (the most recent year of data available), eighty-four percent of MSU students received financial aid, including grants, federal loans, Pell grants, and scholarships (National Center for Education Statistics, 2018). Twenty-five percent of students received Pell grants, which students must qualify for based on parental income (National Center for Education Statistics, 2018). For the 2010 cohort, MSU had an overall six-year graduation rate of fifty-four percent (National Center for Education Statistics, 2018).

According to the MSU Office of Planning and Analysis (2018a), the four-year graduation rate for first-time, full-time first-generation college students entering in 2012 was twenty-two percent, while the six-year rate was thirty-one percent. In comparison, Pell grant recipients had a twenty-two percent four-year graduation rate in 2013, and a forty-five percent six-year rate, higher than first-generation students (Montana State University, 2018b). The overall four-year graduation rate for all new, first-time, full-time students entering in 2013 was twenty-seven percent, and the six-year rate for students entering in 2012 was fifty-two percent (Montana State University, 2018c). Thus, the six-year graduation gap between first-time, full-time first-generation students and first-time, full-time students is twenty-one percent, which is a significant percentage.

With a significant percentage of first-generation college students, along with a significant persistence and graduation gap, one would hope programs and services specifically designed to address the needs of first-generation students exist. In 2015, MSU obtained a TRiO grant to implement Student Support Services (SSS) within the

Division of Student Success (MSU TRiO Student Support Services, 2018). The TRiO program is the only service at MSU that specifically serves first-generation college students as part of their mission. TRiO is designed for underserved populations of students; eligibility for services is based upon being low-income, first-generation, and/or living with a disability (MSU TRiO Student Support Services, 2018). The needs of someone who has a learning or physical disability are most likely different from someone whose parents are not familiar with higher education, yet the services offered do not differ dependent upon which category (or categories) one falls into. MSU's TRiO SSS offers peer mentoring, along with ten hours per week of free tutoring through SmartyCats tutoring, and organized events such as awards ceremonies, provost speakers, and breakfasts (MSU TRiO Student Support Services, 2018). They also offer a small special orientation just for TRiO students, called "Smart Start", which introduces students to resources on campus, along with community building (J. Collins, personal communication, August 9, 2018). TRiO SSS offers academic support, combined with the development of a community cohort. However, none of the events or materials appear to focus on what it means to be a first-generation college student in terms of belonging, culture, or climate- the more psychosocial aspects of the experience. The programs tend to focus on navigating college and utilizing resources, including understanding and navigating financial aid and accessing academic assistance such as tutoring (J. Collins, personal communication, August 9, 2018). The services offered appear to be quite traditional services offered by most universities: fun events and activities designed to connect students to their peers, along with a support network of mentors and tutors. Additionally, the SSS program only has the capacity to serve about one hundred-fifty

students; a small portion of the total first-generation students on campus (J. Collins, personal communication, August 9, 2018). The Hilleman Scholars program, started in 2016, also appears to serve first-generation college students, including a “bridge program” over the summer prior to the first year (J. Collins, personal communication, August 9, 2018). However, they currently take only approximately 50 students, and they do not expressly recruit/serve first-generation colleges students; they recruit Montana high school students with excellent academic records who are eligible for Pell grants. Some of the participants are first-generation college students, since there is cross-over between income and generational status. For all of these reasons, it was beneficial to focus on the effects of the psychological experience of a broader sample of first-generation college students (their feelings of belonging) upon their actual academic performance.

Montana has vast areas that are still defined as “frontier” with only seven people per square mile on average (United States Census Bureau Quick Facts, Montana, 2018a). As a public, land-grant institution in the rural state of Montana, MSU has an obligation to provide access to first-generation college students, along with programs and supports that assist these students in graduating from college as the first in their family. Indeed, one of MSU’s stated values is “Student Success: Value students and believe in creating an environment in which they can be successful and reach their full potential” (Montana State University, *Mountains and Minds: Learners and Leaders*, 2018). Since a minority of Montana residents hold bachelor’s degrees or higher (thirty percent in 2017) (United States Census Bureau Quick Facts, Montana, 2018b), it should be a priority to encourage

first-generation students to enter college, and to support them so that they graduate with their degree.

Sample

Participants were new first-time undergraduates entering Montana State University in fall 2018. Montana State University is a mid-sized, public, land grant university in the western United States. A sample of first-time, first-year, full and part-time students was obtained from the Director of Planning and Analysis at MSU. The director utilized probability sampling to obtain a sample size of 1000 from the approximately 4000 total new, first-time students entering MSU fall term of 2018 (Gay, Mills, & Airasian, 2012). Stratified random sampling was used in order to ensure adequate sample sizes of first-generation and continuing-generation students (Gay, Mills, & Airasian, 2012). Utilizing a representative sample ensured that inferences could be made about the population, in this case, all new first-year students at MSU. The population of new, first-time students at MSU was 3,387 this fall semester 2018. Total student enrollment has been rising each year steadily since 2010, when headcount was 13,559, to fall 2018 when total headcount was 16,902 (Montana State University, 2019). Since the BCSSE indicates that about twenty percent of the incoming class are first-generation students, that means about 800 incoming students are first-generation college students. Therefore, with a 95% confidence level and +/- 3% confidence interval, 457 first-generation student responses would be needed to compare to the continuing-generation responses. Therefore, first-generation students were oversampled to get an adequate subsample on this key variable. In addition, to attempt to encourage

participants to respond in higher numbers to the survey, the survey was sent out and then followed up with two reminders. To address sampling bias, (Gay, Mills, & Airasian, 2012) the sample was compared to the population on the following variables: high school GPA, ACT scores, Pell grant status, race, gender, and first-generation status.

Data Collection

After obtaining IRB approval, Qualtrics software was utilized to create the survey. The “from” email address appeared as the researcher’s MSU email address. The email content and the introduction to the survey in Qualtrics explained that the research was being conducted as part of the researcher’s dissertation requirements, along with an interest in understanding student’s experiences with peers and faculty at MSU. Items in the survey included the belonging measure, items from the Wabash survey measuring peer and faculty involvement, and an item assessing generational status. The instructions for the survey clearly stated that it was confidential, but not anonymous, and that by continuing the survey, participants agreed that their high school GPA and ACT scores, Pell grant status, and race, along with fall term grades, would be obtained at the end of fall term. The survey was sent out to the 1000 participants at the end of October 2018, again by the researcher. By this time, participants had time to settle in and begin to make the transition to MSU, since they had been attending for approximately two months (end of August-end of October). Therefore, participants could more accurately respond to the items asking about faculty and peer involvement and relationships. All participants who completed the survey were given five hundred ChampChange points, applied to their accounts by the Allen Yarnell Center for Student Success. In addition, one participant

was randomly selected to receive a \$50 Columbo's Pizza gift card. The incentives were selected in order to strike a balance between incentives that might appeal to those students who already feel more connected to the institution, vs. incentives that might appeal to any student. ChampChange points may be earned by any MSU student, through social and academic participation, such as tutoring sessions, library visits, and social/engagement events. The researcher decided not to utilize an MSU bookstore gift card, since this might also appeal to students who already care about and feel connected to MSU, thus increasing the likelihood that students already high in belonging would respond to the survey and skew the results.

The survey was left open for a total of two weeks, with a reminder sent out at the end of week one and towards the end of week two by the researcher, to only those who had not yet responded. At the end of two weeks, the survey was closed, and data downloaded. Email addresses had failed to work for 65 participants, so that the survey was actually sent to 935 participants. A total of 188 participants completed the survey, for a response rate of twenty percent. Items which were obtained after participants responded to the survey were the pre-college variables: high school GPA, ACT/SAT scores, race, gender, and Pell grant status. They also included the outcome measure of first semester grades once fall term grades were reported in December, operationalized as fall-term cumulative GPA. The researcher sent the list of respondents to The Office of Planning and Analysis (OPA), and they obtained these variables for the respondents, and sent the password-protected data file back to the researcher using BOX software.

Variables and Measurement

Predictor Variables

The predictor or independent variable was generational status (first-generation, defined as students having neither parent graduating from college with a four-year degree; and continuing-generation students, those who have at least one parent having graduated with a four-year degree or higher). The predictor variable was categorical. The survey item asked: "What is the highest level of education each of your parents/guardians completed?" The response options were: 1 = Did not finish high school, 2 = High school graduate/GED, 3 = Attended college but no degree, 4 = Vocational/technical certificate or diploma, 5 = Associate or other 2-year degree, 6 = bachelor's or other 4-year degree, 7 = Masters, 8 = Law, 9 = Doctorate). Categories were collapsed, so that first-generation students were those with response options 1-5, while continuing-generation students were those who had response options 6-9. Therefore, for the current study, first-generation was defined as students who did not have any parent or parents who graduated from college with a bachelor's degree. The first-generation status variable was dummy coded so that the reference group of continuing-generation students = 0, and first-generation students = 1. A total of twenty-eight percent of the sample self-identified as first-generation students, while seventy-two percent identified as continuing-generation students. A total of seventeen percent of students who attended orientation and completed the BCSSE at MSU identified as first-generation students. Since this information is not solicited from every entering student, but only from those attending orientation and taking the BCSSE, it is difficult to tell how accurate this data is. Thirty-

one percent of students who did fill out the BCSSE declined to answer the question about parental education.

Mediating Variables

A mediating variable or variables explains the relationship between the predictor, or independent, and the outcome, or dependent, variables. Mediators can be the mechanism through which the predictor produces an effect upon the outcome (Gay, Mills, & Airasian, 2012). Past literature has demonstrated there are variables that covary with generational status and may explain differences in academic performance by generational status. Thus, it was necessary to include these mediating variables in the model in order to create the best specified model of the relationship between generational status and academic performance. These mediating variables are sense of belonging and peer/faculty involvement, consisting of the *Good Teaching and High-Quality Interactions with Faculty scale*, and *Influential Interactions with Peers scale*. Sense of belonging was measured by the *General Belongingness Scale*, described below.

General Belongingness Scale (GBS). Sense of belonging has been interpreted and operationalized quite differently in the higher education literature, and often confounded with measures of involvement and/or peer interactions, along with engagement (Wolf-Wendel, Ward, & Kinzie, 2009). In addition to these issues, some studies have found that various measures of what might be termed involvement or integration have been found to be related to feelings of belonging in college (Soria et al., 2013), and the concept of involvement and integration is closely and theoretically related to belonging (Astin, 1975, 1984).

Students' sense of belonging was assessed using the General Belongingness Scale (GBS) (Malone, Pillow, & Osman, 2012). The measure was developed by the authors because they determined a need for a general measure of belongingness. The measure aligns with the psychological literature on belonging and is rooted in Baumeister and Leary's (1995) vision of belonging, which developed both from regular social contact and feelings of belongingness, along with Hagerty et. al.'s (1992) conception of belonging as rooted in both social relationships, and spirituality, nature, animals, and ideologies. The current measure used in this study reflects these theories, and measures belongingness across friends and family, societal others, and an overarching sense of belonging (Malone et. al., 2012). This overarching sense of belonging reflects belonging at a campus community or institutional level as well, since the questions were altered to apply specifically to Montana State University.

When tested on a sample of 213 students, the one factor reliability of the GBS was high: coefficient alpha .94 (Malone et al, 2012). Validity of the scale was tested as well, and it was found to be correlated with other theoretically related constructs. For example, the acceptance items were correlated with "Big Five" personality traits such as agreeableness and extraversion, and rejection items were correlated with neuroticism (Malone et al, 2012). In addition, since belonging is connected to satisfaction and negatively related to anxiety and depression in the literature, this was examined as well. The authors found that when entered as two predictors in regressions, "Acceptance/Inclusion" strongly predicted life satisfaction and happiness, and the "Rejection/Exclusion" strongly predicted depression (Malone et. al., 2012).

The GBS consists of twelve items on a seven- point Likert scale ranging from “strongly agree” to “strongly disagree”, with six items clustering on acceptance/inclusion and six clustering on rejection/exclusion (items in Appendix A). Items were altered to be specific to Montana State University for the current study, and the negative items were reverse-scored. The variables (or items) were ordinal, while the scale was continuous. To determine reliability, Cronbach’s alpha reliabilities (Field, 2009) were conducted on the GBS scale. Reliability were compared to the original reliability obtained by the authors of the scale. Generally, alpha scores that are .7 or above are considered very good, and even .5-.6 may be considered good as well, especially when using psychological measures such as the GBS scale (Field, 2009). The alpha for the GBS was .95, which indicates that the items formed a scale with high internal consistency reliability. The mean GBS score was 64, $s = 13.3$, $\text{min} = 20$, $\text{max} = 84$, $\text{skewness} = -.97$ and $\text{kurtosis} = .67$. See table one.

Student Experiences Survey Items. For the measures of peer/faculty involvement, items were utilized from the Student Experiences Survey from the Wabash Study. These included items that comprised two scales: *Good Teaching and High-Quality Interactions with Faculty*, and *Influential Interactions with Peers*. These scales and items were developed from the National Study of Student Learning (Cruce, Wolniak, Seifert, & Pascarella, 2006; Pascarella, Wolniak, Seifert, Cruce, & Blaich, 2005). These scales (*Good Teaching and High-Quality Interactions with Faculty and Influential Interactions with Peers*) measure a range of good practices that include student-faculty interaction,

active learning/time on task, quality of teaching, prompt feedback from faculty, and influential interactions with other students (Pascarella and colleagues, 2007).

Good teaching and high quality interactions with faculty is a twenty-three-item scale that combines items from four subscales: Faculty interest in teaching and student development (e.g., the extent to which faculty are interested in helping students grow in more than just academic areas, the extent to which faculty are generally interested in teaching, and the extent to which faculty are willing to spend time outside of class to discuss issues of interest and importance to students); Prompt feedback (e.g., how often faculty informed students of level of performance in a timely manner, how often faculty checked to see if students had learned the material well before going on to new materials); Quality and impact of non-classroom interactions with faculty (e.g., extent to which non-classroom interactions with faculty have had an impact on: intellectual growth and interest in college; personal growth, values, and attitudes; and career goals and aspirations); and Overall exposure to clear and organized instruction (e.g., frequency that faculty give clear explanation, frequency that faculty make good use of examples and illustration to explain difficult points, frequency that class time was used effectively, frequency that course goals and requirements were clearly explained). The internal consistency reliability for the twenty-three-item scale is .92 (Pascarella and colleagues, 2007). In addition, good teaching and interactions with faculty positively predicts student's reading comprehension, critical thinking skills, internal attribution for academic success, and openness to diversity and challenge (Cruce et al., 2006). In the current study, faculty interest in teaching and student development; prompt feedback, and quality and impact of non-classroom interactions with faculty were utilized; a total of twelve

items. These items were utilized in the Student Experiences Survey, and it was important to keep the current survey relatively short to increase the likelihood that participants would complete the survey. Internal reliability was computed, and the alpha for the quality and impact of non-classroom interactions with faculty scale (.90), indicated high internal consistency. The mean score was 45, $s = 7.29$, $\text{min} = 19$, $\text{max} = 60$, skewness = -.74, kurtosis = 1.23. See table 1.

Influential interactions with peers is a nine-item scale that combined items from a scale measuring student perceptions of positive peer interactions (e.g., the student friendships one has developed at the institution have been personally satisfying; interpersonal relationships with other students have had a positive influence on one's intellectual growth and interest in ideas; interpersonal relationships with other students have had a positive influence on one's personal growth, attitudes, and values) and a single item measuring frequency of co-curricular involvement (number of hours per week spent in co-curricular activities). The nine-item scale has an internal consistency reliability of .85 (Pascarella and colleagues, 2007). Interactions with peers significantly impact both cognitive development and orientations to learning, including learning for self- understanding, openness to diversity and challenge, and preferences for higher-order cognitive tasks (Cruce et al., 2006). In addition, Wabash National Study (WNS) research assessing out of class or co-curricular experiences found that non-classroom interactions with faculty and meaningful discussions with diverse peers had a positive impact upon need for cognition (Padgett, Goodman, Johnson, Saichaie, Umbach, & Pascarella, 2010; Trolian, 2014). Internal reliability was computed for the current study, and the alpha for Peer Involvement (.81) indicated high internal consistency. The mean score for peer

involvement was 27, $s = 5.45$, $min = 10$, $max = 37$, $skewness = -.47$, $kurtosis = .04$. See table 1.

Table 1. Descriptive statistics for all scales and continuous variables.

	\bar{x}	s	min	max	$skewness$	$kurtosis$
GBS	64	13.3	20	84	-.97	.67
Peer Involvement	27	5.5	10	37	-.47	.04
Faculty Involvement	45	7.9	19	60	-.74	1.23
GBS_Updated	43	9.0	15	56	-1.0	.51
Peer Involvement_Updated	21	4.8	5	27	-.86	.36
College GPA	3.32	.61	1.35	4.0	1.01	.48
High School GPA	3.58	.40	2.33	4.0		
ACT Comprehensive	25	3.94	15	35		

Re-configured Variables. In order to determine the underlying factor structure for the GBS and the peer involvement scales, since they were found to be highly correlated (described later), a principal axis factor analysis was conducted. The assumption of independent sampling was met. The assumptions of normality, linear relationships between variables, and the variables being correlated at a moderate level were checked. Two factors were requested, based on the fact that the items were designed to be two different scales measuring different constructs: sense of belonging, and influential peer interactions. After rotation, the first factor accounted for thirty percent of the variance, and the second factor accounted for twenty-seven percent of the variance. These results appear to indicate that though the two scales are highly similar, they are measuring something different, which is why belonging was not removed from the conceptual model. Table 2 displays the items and factor loadings for the rotated factors.

Two new and updated scales were created using “compute variables” in SPSS: Belonging_Updated and Peer Involvement_Updated, utilizing the information in the factor analysis. The items loading strongly on the sense of belonging factor and included in the Belonging_Updated scale were: Belong_Outsider (reverse coded), Belong_Isolated (reverse coded), Belong_Stranger (reverse coded), Belong_Accepted, Belong_Included, Belong_Not care (reverse coded), Belong_Distant (reverse coded), Belong_Sense of, and Belong_Place at table. Reliability was calculated for the new scale. This new scale had an alpha of .94, which is considered very high (Field, 2009). The items loading strongly on the peer involvement scale and included in the Peer Involvement_Updated scale were: Peer interactions_Close relationship with peers, Peer interactions_Personally satisfying, Peer interactions_Positive effect on intellectual growth, Peer interactions_Positive effect on personal growth, and Belong_bonds with friends. The reliability was calculated for this new scale as well, and the alpha was .93, again, considered very high (Field, 2009). Belong_connected, Belong_Not included in plans, and Peer interactions_Difficult to make friends loaded fairly equally on both factors and so were excluded from the scales. Finally, two items: Peer interactions_would not help with problem, and Peer interactions_attitudes and values different from own did not load highly on either factor, indicating they may be measuring a separate and different construct than belonging and positive peer interactions. These were both negative/reverse coded items, stating: “few of the students I know would be willing to listen to me and help me if I had a personal problem”, and “most students at this institution have values and attitudes different than my own”.

It may be that these items are measuring affect and cognition related to stigma and stereotype threat. Much of the current behavioral intervention research has focused on how first-generation and working-class students often espouse different values from other students; values that are usually out of line with the traditional culture of higher education and more focused on interdependence vs. independence (Phillips, Stephens, & Townsend, 2016; Prospero & Vohra-Gupta, 2007). This item may be capturing this feeling of not fitting into the culture of higher education. In addition, the item stating that other students would not help out if the person had a problem may also be capturing the feeling of “every man/woman for themselves” or the culture of independence espoused by the traditional university. Some previous research (Morrow & Ackermann, 2012) has found that feeling as if one has strong social supports is highly related to belonging, which may be what this item is measuring as well, since it is basically asking if students have anyone who would assist them or support them if they were in trouble. Both of these items will be evaluated using a chi-square analysis against generational status, and will be entered into the regression models to see how they impact both sense of belonging, and college GPA.

Table 2. Factor loadings from principal axis factor analysis with varimax rotation for a two-factor solution for GBS and peer involvement (n = 184).

Item	<u>Factor Loading</u>		<u>Communality</u>
	<u>1</u>	<u>2</u>	
Belonging_Outsider	.78		.74
Belonging_Stranger	.77		.75
Belonging_Isolated	.74		.65
Belonging_Accepted	.73		.77
Belonging_Included	.68		.72
Belonging_Not care	.67		.66
Belonging_Distant	.66		.63
Belonging_Sense of	.65		.75
Belonging_Place at table	.62		.68
Peer_Difficult make friends	.52	.37	.53
Peer_Not help if problem	.31		.26
Peer_Different attitudes/values			.28
Peer_Close relationships		.85	.75
Peer_Satisfying relationships		.84	.80
Peer_Positive intellectual growth		.80	.76
Belonging_Bonds w/friends		.76	.74
Peer_Positive personal growth		.74	.71
Belonging_Connected	.50	.55	.64
Belonging_Not included/plans	.50	.50	.55

Note: Loadings < .01 are omitted.

Control Variables. The control variables utilized in this study included high school ACT scores, high school GPA, race, gender, and Pell grant status. These were all obtained by the OPA from the participant's institutional records. In the sample high school ACT comprehensive scores had a mean of 25, s = 3.94, min = 15, max = 35. The MSU population also had a mean ACT score of 25. High school cumulative GPA had a

mean of 3.58, $s = .40$, $\min = 2.33$, $\max = 4.0$. The MSU population had a mean GPA score of 3.54. Race was transformed from a multi-category variable to a categorical dummy-coded variable, since the non-white racial categories were very small. They included Hispanic (four percent), Multiracial (seven percent), Indian (two percent), Black (one percent), and International Student (three percent), which were categories utilized by the OPA. Each had such a small number of cases that they were grouped together and defined as “Student of Color”, dummy coded as “1,” while the “Caucasian/White” category was kept as is, and was dummy coded as “0.” Students of color comprised seventeen percent of the sample, and sixteen percent of the population at MSU. The gender variable was dummy coded as female = 1 (sixty-five percent), and male = 0 (thirty-five percent), and these were the only two categories available, again from the OPA. While females were a majority of the sample, at sixty-five percent, they are a minority at MSU, at forty-five percent. The Pell grant status variable was dummy coded as well, with Pell grant recipient = 1 (twenty-six percent), and non-recipient = 0 (seventy-five percent). Pell grant recipients in the sample, at twenty-six percent, were more numerous than the population at MSU, at twenty-one percent.

Outcome Variables. The dependent variable was academic performance, operationalized as first-term college GPA, and measured on a 4-point scale. GPA was a continuous variable, ranging from 0-4. GPA is one of the more commonly used measures of academic performance in the education literature (Mayhew et al., 2016; York, Gibson, & Rankin, 2015). York et al.’s (2015) study of education literature’s definition of academic success found that 17 studies utilized GPA as the measurement of academic

performance, while 4 studies utilized grades. Though there are certainly arguments that GPA does not always capture the full picture of academic performance (Young, 1990), it has been determined to be a valid and easily available proxy (Mayhew et al., 2016; York et al., 2015). College GPA is also a very reliable positive predictor of retention and graduation (Mayhew et al., 2016). The mean first-term fall GPA was 3.32, $s = .61$, $\min = 1.35$, $\max = 4.0$, skewness = -1.01, kurtosis = .48, see table 1. The assumption of normality was not met, since the dependent variable of college GPA was negatively skewed, and the Kolmogorov-Smirnov test (.15) and the Shapiro-Wilk test (.89) were statistically significant for the cohort as a whole at $p < .0001$, and also for both groups, first-generation and continuing-generation students, ($p < .001$). In order to address this issue, a median split was performed on the College GPA variable in SPSS, to attempt to normalize the data and create a categorical variable. The median of college GPA was 3.5. A dummy variable was created, where “low” was assigned a 0, and defined as a GPA from 0-3.4999, and “high” was assigned a 1 and defined as a GPA from 3.5-4.0. Though necessary in order to perform analyses, splitting GPA into a categorical variable with two categories, either high or low, and such a high median, means that some of the variance in the low category is not captured, and this is a limitation. This means that for the purposes of this study, a participant with a GPA of a 1.35 is the same as a participant with a GPA of a 3.4. However, in reality these participants may differ in significant ways that are not analyzed in the current study.

Participants

The characteristics of the sample are presented in table 3 below.

Table 3. Sample and population descriptive statistics.

Characteristic/Variable	Sample	Population: MSU
First-Generation	28% (n = 51)	16.7%
Continuing-Generation	72% (n = 133)	52.6% (30.7% No response)
White/Caucasian	82% (n = 150)	84%
Person of Color	17% (n = 32)	16%
Female	65% (n = 119)	44.6%
Male	35% (n = 65)	55.4%
Pell Grant Recipient	26% (n = 47)	20.8%
No Pell Grant	75% (n = 137)	79.2%
Average High School GPA	3.58	3.54
Average ACT COMP score	25	25

The characteristics of the sample were similar overall to the characteristics of the population of first-year, first-time students entering MSU in fall term 2018 (MSU Office of Planning and Analysis, 2018d). However, there was a major difference for the predictor variable of first-generation status, since for the fall of 2018, thirty-one percent of students did not respond to the parental education question on the BCSSE. Therefore, it is unknown what the actual percentage of first-generation students is for the 2018 cohort of students. In addition, some of the control variables were different between the sample and the population. In the sample, females were in the majority, at sixty-five percent, while at MSU, females are in the minority at forty-five percent. Females may

have been in the majority of respondents for the sample because females tend to respond to and fill out surveys at a higher level than males (Keusch, 2015; Porter & Whitcomb, 2005). In addition, there are slightly higher number of Pell grant recipients in the current sample when compared to the MSU population.

T tests and chi-square analyses were conducted in order to see if there were differences between first-generation and continuing-generation students in the sample on the control variables: ACT scores, high school GPA, Pell grant status, race, and gender. The results were statistically significant for both Pell grant status and race. First-generation students were more likely to be Pell grant recipients than were continuing-generation students, and there was a significant association between generational status and Pell grant status, $X^2 = 11.48, p < .001$. First-generation students were also more likely to be students of color than were continuing-generation students. There was a significant association between generational status and race, $X^2 = 4.76, p < .05$. These results support the decision to control for these variables, since there are positive relationships between generational status, race, and Pell grant status, both in the current sample and in the national data.

Analysis

The purpose of the current study was to determine the effects of first-generation student status, belonging, peer and faculty involvement and co-curricular involvement on academic performance in college, while controlling for student's pre-college characteristics (Cohen, Cohen, West, & Aiken, 1983). First, differences in sense of belonging between first-generation and continuing generation college students were

examined. Research has shown that first-generation college students tend to have lower levels of social belonging in college than continuing-generation students, impacting their academic performance (Pittman & Richmond, 2007; Rubin, 2012; Stebleton, Soria, & Huesman, 2014). Next, it was explored whether any difference in students' sense of belonging was mediated by peer and faculty interactions, since belonging and peer involvement are often found to be highly related or confounded in multiple research studies (Hoffman, Richmond, Morrow, & Salomone, 2002; Pittman & Richmond, 2007; Strayhorn, 2012).

The relationship between generational status and academic performance, as measured by GPA, was also examined, along with the extent to which this relationship was mediated by belonging and peer and faculty interactions, while controlling for pre-college characteristics. Peer and faculty involvement were thought to influence the outcome of academic performance (Cruce et al., 2006; Padgett, Goodman, Johnson, Saichaie, Pascarella and colleagues, 2007; Umbach, & Pascarella, 2010; Trolan, 2014). Finally, the relationship between sense of belonging and academic performance was hypothesized to be moderated by generational status. Ultimately, it was hypothesized that the effects of belonging would be conditional by generational status, so that first-generation student's sense of belonging would have a larger impact upon their academic performance than belonging would for continuing-generation students. Research examining stigma and stereotype threat and its impact on first-generation students has indicated that feelings of belonging might have an outsized impact on college grades for first-generation students (Cohen, Garcia, Apfel & Master, 2006; Cohen, Garcia, Purdie-

Vaughns, Apfel, & Brzustoski, 2009; Critcher & Dunning, 2015; Jury, Smeding, Stephens, Nelson, Alelai, & Darnon, 2017).

The predictor variable was categorical (first-generation or continuing-generation), and the other independent variables (good teaching and high-quality interactions with faculty, influential interactions with peers, co-curricular involvement, and sense of belonging, were interval or continuous variables. The final dependent variable, GPA, was categorical and dummy-coded, since it was converted from a continuous variable. OLS (block regression) was selected as the first analysis method since there was more than one independent variable, along with continuous or interval independent and dependent variables (Cohen, Cohen, West, & Aiken, 1983; Gay, Mills, & Airasian, 2012). In addition, OLS with the block entry method is utilized when there are theoretical reasons to group certain variables together into blocks, entered in a sequential order (Fields, 2009). OLS tells us how much of the variance in the dependent variable can be attributed to each of the independent variables and determines the degree to which variables are related (Gay, Mills, & Airasian, 2012). Logistic regression was selected for the research questions with GPA as dependent variable, since GPA was converted to a categorical variable. The conceptual framework is illustrated below in figure three.

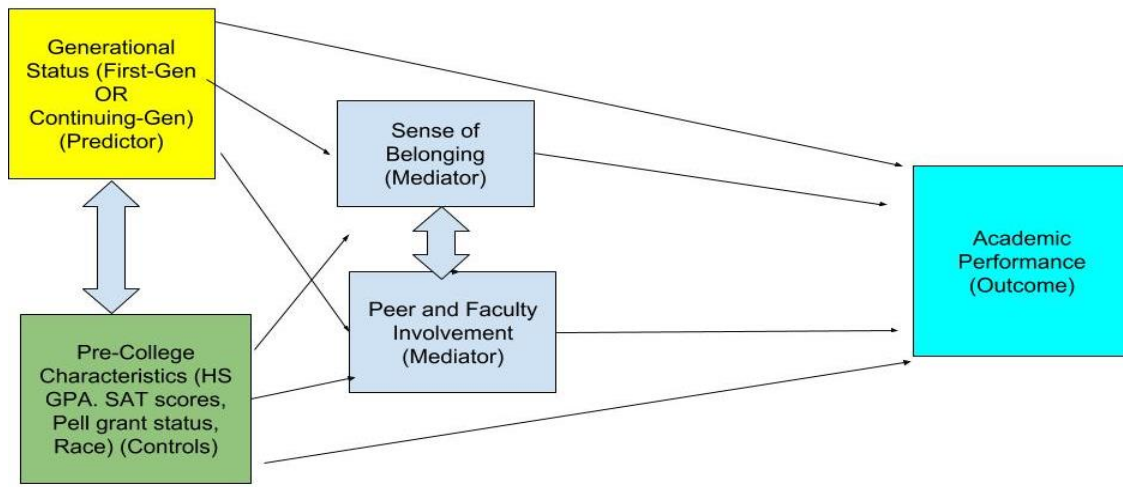


Figure 3. Conceptual framework.

Data Conditioning and Assumption Checking

Data were cleaned, so that they could be systematically examined for missing or incomplete answers. Numbers that were out of range (of a Likert scale, for example) were not possible since the researcher used Qualtrics software. A minimum 60% completion rate of items within the scaled measures was required to generate a scale score and be used in the data analysis. Twenty-three participants did not reach this sixty percent minimum completion rate, and so were deleted from the rest of the analysis.

Three participants had only a few items missing from one or more scales, and these single items were replaced using mean replacement, by calculating the total mean of the scale for that participant. There were also a total of eighteen missing cases for ACT comprehensive scores, and nineteen for high school GPA, which were replaced using the mean of all participants' scores on the ACT comprehensive, and on high school GPA. Out of all the ACT comprehensive and high school GPA data, eight participants had

neither an ACT comprehensive score nor a high school GPA. These scores were replaced in the same manner; by using the mean of all participant's scores on the ACT and for high school GPA. In order to determine if the data was missing in any systematic manner or was correlated with certain values of the independent variables, chi square tests were conducted on each of the pre-college characteristics, and there were no statistically significant differences between participants with missing data vs. no missing data.

Since the Office of Planning and Analysis provided ACT and SAT scores, and some participants had both and some had one or the other, the researcher decided to use the ACT comprehensive score for all participants. SAT scores were converted to ACT scores utilizing the ACT/SAT concordance tables (College Board ACT Inc., 2018). For the one participant who had a high school GPA from a country outside of the U.S., the MSU Office of International Programs was contacted, and they provided the U.S. equivalent GPA score.

All three scales (GBS, faculty interactions and peer interactions) were re-coded in SPSS so that higher numbers were equivalent to higher levels of belonging and of positive faculty and peer involvement, and then the negative items were reverse-coded. Scale total scores were calculated in SPSS for each of the scales by creating new variables: General Belongingness Scale (GBS) Total, Good Teaching and High-Quality Interactions with Faculty Total, and Influential Interactions with Peers Total. Item scores were summed to create the scale score total for the GBS, faculty interactions, and peer interactions scales.

Assumptions that the data are normal are necessary to utilize parametric statistics (Leech Barrett, & Morgan, 2015). For linear regression, the assumptions that need to be met are that the relationship between each of the predictor variables and the dependent variable are linear and that the error, or residual, is normally distributed and not correlated with the predictor variables (Leech, Barrett, & Morgan, 2015). Therefore, p plots showing the predicted by actual residuals, and the linear regression line of the dependent variable were produced in SPSS. Multicollinearity can be a problem as well, which is when there are high intercorrelations among predictor variables, which would mean that these variables are too similar and cannot be distinguished as truly measuring different constructs (Leech, Barrett, & Morgan, 2015). Therefore, when regression was computed in SPSS, the correlation table was examined for high correlations among predictors. In addition, the tolerance levels were examined to determine if multicollinearity was occurring between variables. Finally, Cook's distance and casewise diagnostics were calculated in SPSS to determine if outliers existed and if they might be contributing to the heteroskedasticity of the errors.

The initial regression conducted to examine assumptions indicated that some of the tolerance levels were low. $1 - \text{Adjusted } R^2 (.27) = .73$. This meant that tolerance levels below .73 could mean that multicollinearity was occurring. The tolerance levels for the following were below .73: Sense of Belonging = .34, Peer Involvement = .38, and ACT comprehensive = .67. Correlations were computed using SPSS, in order to see if assumptions of linear regression were met. When examining the bivariate correlations between independent variables as well, Sense of Belonging (the GBS) and Peer Involvement were highly correlated (.77), indicating that they were likely measuring

similar constructs, which can interfere with an accurate regression model. The correlation between high school GPA and ACT comprehensive was .42, a moderate correlation. Since high school GPA and ACT scores measure similar constructs, ACT comprehensive was removed as a variable from regression models. In addition, since the GBS and Peer Involvement were highly correlated, and the *t* test comparing the GBS and Peer Involvement means for first-generation and continuing-generation students was statistically significant only for Peer Involvement (described in the next chapter), the GBS was removed from the initial regression models as an independent variable. Therefore, the rest of the analysis described below utilizes the Peer Involvement scale as a substitute for the GBS. See table 4 for correlations between all the variables in the study.

Table 4. Correlation matrix of all variables used in study.

	1	2	3	4	5	6	7	8	9	10
1 GEN Status	1.00									
2 Gender	.051	1.00								
3 Race	.143	-.088	1.00							
4 High School GPA	-.077	.130	-.029	1.00						
5 ACT Comprehensive	-.135	-.210	-.103	.369	1.00					
6 Pell Grant Recipient	.250	.172	.042	-.224	-.277	1.00				
7 Peer INV Total	-.188	-.039	-.011	.113	.043	-.115	1.00			
8 Fall College GPA	-.054	.110	-.066	.516	.239	-.150	-.006	1.00		
9 Belong Total	-.089	-.029	-.053	.108	-.116	-.088	.757	.010	1.00	
10 Faculty INV Total	-.041	-.048	.027	.114	-.084	-.056	.355	.149	.474	1.00

Finally, the regression line for the transformed college GPA variable (now categorical) was produced in SPSS, which indicated that the dependent variable followed a linear regression line closely, meeting the assumption of linearity. Then the standardized predicted vs. residuals for the dependent variable college GPA were produced, which indicated some possible heteroskedasticity in the data. To examine the issue more closely, casewise diagnostics were produced in SPSS with standardized residuals, along with Cook's distance values. To meet assumptions, ninety-five percent of cases should have a standardized residual ± 2 . Since the sample size was 188, ninety-five percent is 179, so we could expect that 9 cases could have values outside of ± 2 . However, there were 11 in the sample. In addition, there were 4 cases that were ± 3 . The 4 cases that had residuals of ± 3 were removed from the analysis. When examining Cook's distance values, they were all acceptable, with values below 1. Therefore, the final sample size was 184.

The analysis plan described below, by research question, was the plan with an expectation of met assumptions. Since ultimately, not all assumptions were met, the analysis plan was changed. The revised analysis is described in chapter four, with the results.

Research Question 1

Is there a difference in students' sense of belonging between first-generation and continuing generation college students? Independent *t* tests were conducted in SPSS to compare the mean GBS score and mean peer involvement score between the two groups, first-generation and continuing-generation students.

Research Question 2

To what extent is any difference in students' sense of belonging by generational status mediated by peer and faculty interactions, controlling for pre-college characteristics?

OLS regression was conducted controlling for student background characteristics and examining the indirect effects of first-generation on sense of belonging, as mediated by peer and faculty interactions. In the SPSS linear regression function, generational status was entered into the first block, then control variables; high school GPA, gender, race, and Pell grant status into the second block, and Influential Peer Interactions scale total and the Good Teaching and High-Quality Interactions with Faculty scale total into the third block. The GBS scale total was entered into the dependent variable section.

Research Question 3

Is there a relationship between generational status and academic performance as measured by GPA?

An independent t test was conducted in SPSS with generational status as the predictor and college GPA as the dependent variable. An independent t test, along with chi-square was conducted, since the analysis was conducted with GPA as both a continuous and a categorical variable (dummy coded). GPA was converted to a categorical variable since assumption checking found that the continuous variable was negatively skewed.

Research Question 4

To what extent is the relationship between generational status and GPA mediated by sense of belonging and peer and faculty interactions?

Logistic regression was conducted in SPSS, rather than OLS regression as was first planned, due to the results of assumption testing. GPA was converted to a categorical variable, so logistic regression was conducted, controlling for background characteristics and examining the indirect effects of generational status and peer and faculty interactions on academic performance. Generational status was entered into the first block, and then the control variables; high school GPA, gender, race, and Pell grant status into the second block. Then the Influential Peer Interactions scale total and the Good Teaching and High-Quality Interactions with Faculty scale totals were entered into block three. The dependent variable was college GPA.

Research Question 5

To what extent is the relationship between sense of belonging and academic performance, controlling for peer and faculty interactions, moderated by generational status.

Though OLS regression had been planned since GPA was continuous, it was no longer appropriate, and logistic regression was conducted. To determine the presence of conditional effects, the cross-products terms for generational status*peer involvement were calculated using the compute variable function in SPSS. Generational status was entered into the first block, and the control variables; high school GPA, gender, race, and

Pell grant status into the second block. Then Influential Peer Interactions scale total and the Good Teaching and High-Quality Interactions with Faculty scale totals were entered into block three. Finally, the interaction term of generational status*peer involvement was entered into block four. The dependent variable was college GPA.

RESULTS

The purpose of the current study was to investigate the impact of college students' generational status and sense of belonging, along with faculty and peer involvement and interactions, upon academic performance in college. It was hypothesized that due to the stigma and stereotype threat felt by those students whose parents did not graduate from college, first-generation college students would have lower levels of belonging on campus than continuing-generation students. It was also hypothesized that peer and faculty interactions would mediate the effects of belonging upon academic performance, and that generational status would moderate the impact of belonging upon academic performance, operationalized as fall term college GPA.

Research Questions

Research Question 1

Is there a difference in students' sense of belonging between first-generation and continuing generation college students?

Results of the independent samples *t* test examining the mean difference in belonging between first-generation and continuing-generation students indicated the difference between means was not statistically significant. The following assumptions were tested and met: 1. The variances of the population were fairly equal, 2. observations were independent, and 3. the GBS score, the dependent variable, was normally distributed. However, the assumption that group sizes were equal was not met, since first-generation students had $n = 51$, and continuing-generation students $n = 133$. There

was no statistically significant difference between first-generation ($\bar{x} = 62$) and continuing-generation ($\bar{x} = 65$) students in their sense of belonging: $t(182) = 1.2, p = .23$.

Since the researcher made the decision to remove belonging from the regression due to the high correlation with peer involvement, as described in chapter 3, the peer involvement score was also examined in a t test as the dependent variable. The following assumptions were tested and met: 1. The variances of the population were fairly equal, 2. observations were independent, and the peer involvement total, the dependent variable, was normally distributed. However, the assumption that group sizes were equal was not met, since first-generation students had $n = 51$, and continuing-generation students $n = 133$. There was a statistically significant difference between first-generation ($\bar{x} = 25$) and continuing-generation ($\bar{x} = 28$) students, with first-generation students self-reporting lower levels of positive peer involvement and interaction: $t(182) = 2.6, p = .01, d = .60$. The effect size of .60, according to Cohen (1988), is a medium to large effect size, indicating that the effect is larger than typical in the behavioral and social sciences. See tables 5 and 6 for summary.

In addition, t tests were also conducted on the new Belonging_Updated scale, and the new Peer Involvement_Updated scale, described in the previous chapter. Departing from the results above, there was no significant difference between first-generation ($\bar{x} = 42$) and continuing-generation ($\bar{x} = 44$) students on the Belonging_Updated scale: $t(182) = 1.33, p = .184$. There was also no significant difference between first-generation ($\bar{x} = 20$) and continuing-generation ($\bar{x} = 21$) students on the Peer Involvement_Updated scale: $t(182) = 1.43, p = .154$. See tables 5 and 6.

Table 5. T test results comparing first-generation and continuing-generation students on GBS scale and belonging_updated scale.

GBS Scale	<i>n</i>	\bar{x}	<i>s</i>	<i>t</i>	<i>df</i>	<i>p</i>
Continuing-Generation	133	65	13.53	1.2	182	.23
First-Generation	51	62	12.63			

Belonging_Updated Scale						
	<i>n</i>	\bar{x}	<i>s</i>	<i>t</i>	<i>df</i>	<i>p</i>
Continuing-Generation	133	44	9.13	1.3	182	.184
First-Generation	51	42	8.47			

Table 6. T test results comparing first-generation and continuing-generation students on peer involvement scale and peer involvement_updated scale.

Peer Involvement	<i>n</i>	\bar{x}	<i>s</i>	<i>t</i>	<i>df</i>	<i>p</i>
Continuing-Generation	133	28	5.55	2.58	182	.01**
First-Generation	51	25	4.86			

Peer Involvement_Updated						
	<i>n</i>	\bar{x}	<i>s</i>	<i>t</i>	<i>df</i>	<i>p</i>
Continuing-Generation	133	21	4.85	1.43	182	.154
First-Generation	51	20	4.75			

** $p < .01$

In order to determine if there were significant differences between first- and continuing-generation students on the two items “attitudes and values different from own”, and “would not help with problem”; along with testing the proposition that these items were serving as proxies for stereotype threat or cultural mismatch, chi-square analyses were conducted. These two items, along with the peer involvement scale as a whole, were reverse scored prior to using them in the analysis. Higher numbers equaled higher levels of positive peer involvement. Therefore, these negative items were reverse scored so that 1 = strongly agree, while for the positive items, it was the opposite, and 1 = strongly disagree. Generational status was the predictor and the scale (strongly agree,

agree, neutral, disagree, and strongly disagree) choices were used as the outcome categories for the variable. Agree/strongly agree and disagree/strongly disagree were collapsed for the sake of interpretation. For “attitudes and values different from own”, there was no significant association between generational status and the item scales, $X^2 = 2.46, p = .78$. For first-generation students, thirty-seven percent agreed or strongly agreed that students had attitudes and values different from their own, while twenty-nine percent of continuing-generation students agreed or strongly agreed that students had attitudes and values different from their own.

For “would not help with problem”, there was a significant association between generational status and the item, $X^2 = 12.55, p < .05$. For first-generation students, fifty-one percent agreed or strongly agreed that if they had a problem, peers would not help them, and thirty-four percent disagreed/strongly disagreed. For continuing-generation students, thirty-five percent agreed/strongly agreed that if they had a problem, peers would not help them, and fifty-nine percent disagreed/strongly disagreed. In summary, first-generation students were significantly more likely than continuing-generation students to agree that none of their peers would assist them if they had a problem. It was hypothesized that these items were measuring a different construct than the other items within the peer involvement scale; possibly stigma or stereotype threat or feelings of cultural mismatch. These items were entered separately into the regression model predicting academic performance, described later in this chapter.

Research Question 2

To what extent is any difference in students' sense of belonging by generational status mediated by peer and faculty interactions, controlling for pre-college characteristics?

To investigate if peer and faculty interactions altered the relationship between generational status and sense of belonging while controlling for Pell grant status, high school GPA, race, and gender, OLS regression was computed in SPSS. Block 1 in SPSS included generational status. Block 2 in SPSS included generational status and all controls. Block 3 included generational status, all controls, faculty involvement, and peer involvement. The assumptions of linearity, normally distributed errors, and uncorrelated errors were checked and met. Means and standard deviations are presented in table 7. Generational status (Model 1) did not significantly predict sense of belonging $F(1, 182) = 1.5, p = .23, R^2 = .01$. Generational status, Pell grant status, high school GPA, race, and gender (Model 2) did not significantly predict sense of belonging $F(4, 178) = .69, p = .60, R^2 \text{ change} = .01$. However, when faculty involvement and peer involvement were added to the model, they significantly improved the prediction; $R^2 \text{ change} = .60, F(2, 176) = 142.2, p = .0001$. This is a large effect according to Cohen (1988). The beta weights and significance values, presented in table 8, indicate which variables contributed the most to predicting sense of belonging, when all variables were entered as predictors. With this combination of predictors, peer involvement has the highest beta, (.69), though both peer involvement and faculty involvement significantly contributed to predicting sense of belonging.

Table 7. Means, standard deviations, and intercorrelations for GBS, predictor and control variables (n = 184).

Variable	\bar{x}	s	1	2	3	4	5	6	7
GBS	64.1	13.3	-.09	-.09	.11	-.05	-.03	.76**	.47**
<u>Predictor Variable</u>									
1. Gen Status	.28	.45		.25**	-.08	.14**	.05	-.19**	-.04
2. Pell Grant Status	.26	.44			-.22**	.04**	.17**	-.16	-.06
3. High School GPA	3.6	.40				-.03	.13**	.11	.11
4. Race	.18	.39					-.09	-.01	.03
5. Gender	.65	.48						-.04	-.05
6. Peer Inv	27	5.5							.36**
7. Faculty Inv	45	7.3							

** $p < .01$

Table 8. OLS regression analysis summary with generational status predicting sense of belonging, with peer and faculty involvement as mediators, controlling for pre-college characteristics (n = 184).

Variables	Model 1		Model 2		Model 3	
	Coefficient	t ratio	Coefficient	t ratio	Coefficient	t ratio
First-Gen (reference group = continuing-gen)	-0.9	-1.2				
Students of Color (reference group= White)			-.05	-.61	-.07	-1.5
Females (reference group= males)			-.04	-.54	.003	.05
Pell grant (reference Group=No Pell grant)			-.04	-.51	-.01	-.14
HS GPA			.10	1.22	.000	-.01
Peer Inv					.69	13.55***
Faculty Inv					.23	4.70***
R ²	.01		.02		.63***	
R ² Change	.01		.01		.60	

* $p < .05$; ** $p < .01$; *** $p < .001$

OLS regression was computed again, using the new updated versions of both belonging and peer involvement created in the factor analysis. To investigate if the relationship between generational status and belonging changed when peer involvement (updated) and faculty interaction were added, while controlling for Pell grant status, high school GPA, race, and gender, OLS regression was computed in SPSS. Block 1 in SPSS

included generational status. Block 2 included generational status and all controls. Block 3 included generational status, all controls, peer involvement_updated, and faculty involvement. Block 4 included generational status, all controls, peer involvement_updated, faculty involvement, and stigma/stereotype threat variables. The assumptions of linearity, normally distributed errors, and uncorrelated errors were checked and met. Means and standard deviations are presented in table 9. Generational status (Model 1) did not significantly predict sense of belonging_updated $F(1, 180) 1.7$, $p = .20$, $R^2 = .01$. Generational status, Pell grant status, high school GPA, race, and gender (Model 2) did not significantly predict sense of belonging_updated $F(5, 176) .52$, $p = .47$, $R^2 \text{ change} = .02$. However, when faculty involvement and peer involvement_updated were added to the model, they significantly improved the prediction; $R^2 \text{ change} = .57$, $F(7, 174) 1248.23$, $p = .0001$. This is a large effect according to Cohen (1988). Finally, when the two peer involvement items, “would not help with problem”, and “attitudes and values different from own” were added to the model, they significantly improved upon model 3’s prediction of belonging_updated; $R^2 \text{ change} = .02$, $F(9, 172) 1005.7$, $p = .01$. The beta weights, presented in table 10, indicate which variables contribute the most to predicting sense of belonging_updated, when all variables were entered as predictors. With this combination of predictors, peer involvement_updated has the highest beta, (.62), though peer involvement_updated, faculty involvement, and race all significantly contributed to predicting sense of belonging_updated in the final model. The two peer involvement items, “would not help with problem”, and “attitudes and values different from own” did not reach traditional

statistical significance, though there does appear to be a trend in that direction, since they were $p = .09$ and $p = .08$, respectively. Especially considering the small sample size, these are fairly close to .05. In its entirety, the results indicate that sixty percent of the variance in sense of belonging_updated was explained by the final full model, model 4.

Table 9. Means, standard deviations, and intercorrelations for GBS_updated and predictor variables (n = 184).

Variable	\bar{x}	s	1	2	3	4	5	6	7	8	9
GBS_Updated	43.2	8.97	-.10	-.09	.10	-.08	-.04	.74**	.48**	.25**	.28**
<u>Predictor Variable</u>											
1. Gen Status	.28	.45		.25**	-.08	.16*	.05	-.11	-.04	-.18*	-.08
2. Pell Grant	.26	.44			-.22**	.06	.17*	-.07	-.06	-.08	-.10
3. HS GPA	3.6	.40				-.05	.13	.09	.11	.11	-.08
4. Race	.18	.38					-.08	.02	.02	-.06	-.01
5. Gender	.65	.48						.03	-.05	-.01	-.09
6. Peer Inv_U	20.8	4.8							.40**	.14	.23**
7. Faculty Inv	45	7.3								.14	.03
8. Peer Inv_											
<i>Would not help</i>	3.2	1.28									.38**
9. Peer Inv_											
<i>Attitudes/values</i>	3.0	1.03									.28**

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 10. OLS regression analysis summary; generational status predicting sense of belonging updated with peer involvement updated and faculty involvement as mediators, controlling for pre-college characteristics (n = 184).

Variables	Model 1		Model 2		Model 3		Model 4	
	Coefficient	t ratio	Coefficient	t ratio	Coefficient	t ratio	Coefficient	t ratio
First-Gen (reference group = Continuing-Gen)	-.10	-1.3	-.07	-.85	.01	.10	.02	.44
Students of Color (reference group= White)			-.07	-.86	-2.3	-2.0	-.10*	-1.1*
Females (reference group= Males)			-.05	-.65	-.05	-.95	-.04	-.77
Pell grant (reference Group=No Pell grant)			-.04	-.51	-.02	-.29	-.01	-.11
HS GPA			.09	1.1	.01	.25	.02	.31
Peer Inv_ Updated					.65	12.4***	.62	11.7***
Faculty Inv					.22	4.1***	.22	4.1***
Peer Inv_ <i>Would not help</i>							.09	1.7
Peer Inv_ <i>Attitudes/Values</i>							.09	1.8
R ²	.01		.03			.60***		.62**
R ² Change	.01		.02			.57		.02

* $p < .05$; ** $p < .01$; *** $p < .001$

Research Question 3

Is there a relationship between generational status and academic performance as measured by GPA?

The following assumptions were tested and met: 1. The variances of the population were fairly equal, and 2. observations were independent. However, the assumption that group sizes were equal was not met, since first-generation students had $n = 51$, and continuing-generation students $n = 133$. The chi-square test showed no statistically significant association between first-generation ($\bar{x} = 3.27$) and continuing-generation ($\bar{x} = 3.34$) students and their first-term college GPA, $X^2 = 2.77, p = .10$.

Research Question 4

To what extent is the relationship between generational status and GPA mediated by sense of belonging and peer and faculty interactions?

To investigate if peer and faculty interactions altered the relationship between generational status and college GPA while controlling for Pell grant status, high school GPA, race, and gender, logistic regression was computed in SPSS. OLS regression could not be used, since college GPA was converted to a categorical variable in order to address non-normal, negatively skewed data. Belonging was eliminated as an independent variable, as described earlier, due to the high correlation with peer involvement. The assumptions for logistic regression of observations being independent and independent variables being linearly related to the log were checked and met. Block 1 included generational status. Block 2 included generational status and all controls. Block 3 included generational status, all controls, peer involvement, and faculty involvement.

High school GPA had a large positive impact on college GPA. The odds of a high college GPA increased by fifteen times with each one unit increase in high school GPA. This was true across all models. When the pre-college variables were controlled for in model 4, the odds of a high college GPA was six percent more likely with each one unit increase in faculty involvement, $X^2 = 6.49$ $df = 2$, $n = 182$, $p < .05$. Faculty involvement had a positive and significant relationship with college GPA. Peer involvement did not have a statistically significant relationship with high college GPA, $p = .70$, and had a negative relationship to GPA throughout all of the models. Table 11 presents the model summaries.

Table 11. Logistic regression predicting college GPA (n = 182).

Variables	Model 1		Model 2		Model 3		Model 4	
	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)
First-Gen (reference group = Continuing-Gen)	.53	1.69	.27	1.3	.37	1.5	-4.1	.02
Students of Color (reference group= White)			.55	1.73	.55	1.7	.49	1.63
Females (reference group= Males)			-.27	.76	-.36	.70	-.41	.67
Pell grant (reference Group=No Pell grant)			-.43	1.5	.46	.28	.50	1.66
HS GPA			2.7	14.8***	2.7	14.7***	2.73	15.3***
Peer Inv					-.05	.95	-.02	.99
Faculty Inv					.06	1.07*	.06	1.06*
First-Gen x Peer Inv							-.17	.84
Nagelkerke R ²	.02		.27***		.31*		.33*	
Nagelkerke R ² Change	.02		.25		.04		.02	

* $p < .05$; ** $p < .01$; *** $p < .001$

Since new scales were created using the factor analysis described in the previous chapter, logistic regression was computed again in SPSS with the new scales:

Belonging_Updated and Peer Involvement_Updated, as mediators. Logistic regression was computed in order to assess the impact of the new variables created from the factor analysis on the outcome variable, college GPA. Block 1 included generational status.

Block 2 included both generational status and all controls. Block 3 included generational status, all controls, peer involvement_updated, and faculty involvement. Block 4 included

generational status, all controls, peer involvement_updated, faculty involvement, and belonging_updated. Block 5 included generational status, all controls, peer involvement_updated, faculty involvement, belonging_updated, and the stigma/stereotype threat variables. The assumptions for logistic regression of observations being independent and independent variables being linearly related to the log were checked and met.

The prediction model had a statistically significant probability of accurately predicting high/low first-term college GPA in the sample, $X^2 = 39.27$ $df = 5$, $n = 182$, $p < .001$. When faculty involvement and peer involvement_updated were added to the third model, they significantly improved the prediction of college GPA, $X^2 = 11.29$, $df = 7$, $n = 182$, $p < .001$. Table 12 presents the model summaries, which indicate that in the final model, the odds of having a high first-term college GPA increase by nineteen times for every unit increase in high school GPA scores. High school GPA was a consistently significant predictor across all of the models, $p < .001$. When peer involvement_updated and faculty involvement were added to the model, faculty involvement significantly contributed to the model predicting college GPA, $p < .01$, and peer involvement_updated significantly contributed as well, $p < .01$. Faculty involvement was a positive predictor; the odds of a high college GPA increased by nine percent for each one-unit increase in faculty involvement. However, peer involvement_updated was a negative predictor; the odds of a high college GPA decreased by thirteen percent for each one unit increase in peer involvement. Belonging_updated, when added to model 5, did not contribute significantly to the prediction of college GPA, $p = .54$.

The two items, “attitudes and values” and “would not help,” were used separately from the peer involvement scale as a whole, and were reverse scored. The original items read, respectively: “Most students at this institution have values and attitudes different from me,” and “Few of the students I know would be willing to listen to and help me with a personal problem.” The original Likert scale had 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree. So that higher numbers for participant’s responses equaled higher levels of positive peer involvement, the negatively worded items were reverse scored. This meant that for the items above, 5 = strongly disagree, 4 = disagree, 3 = neutral, 2 = agree, and 1 = strongly agree. Therefore, higher numbers for these items mean that there is less stereotype threat present. The peer_involvement item “attitudes and values”, though it did not meet traditional significance levels, at $p < .07$, was close to .05. Again, with a small sample size, this is important. Feeling as if one’s attitudes and values were similar to one’s peers had a positive impact upon college GPA. In the final model, the odds of a high college GPA increased by forty-two percent for each one -unit increase in the attitudes and values item.

Table 12. Logistic regression with belonging_updated and peer involvement_updated predicting college GPA (n = 182).

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)
First-Gen (reference group = Cont. Gen)	.53	1.69	.27	1.3	.33	1.39	.34	1.4	.27	1.3	-3.28	.04
Students of Color (reference Group=White)			.55	1.7	.54	1.7	.49	1.64	.57	1.8	.60	1.8
Females (reference group= Males)			-.27	.76	-.41	.66	-.43	.65	-.46	.63	-.50	.60
Pell grant (reference Group=No PG)			.43	1.5	.52	1.68	.51	1.67	.50	1.65	.51	1.66
HS GPA			2.7	14.8***	2.74	15.45***	2.73	15.42***	2.95	19.09***	3.07	21.4***
Peer Inv _Updated					-.11	.90**	-.13	.88*	-.14	.87*	-.15	.86*
Faculty Inv					.08	1.10**	.07	1.08**	.08	1.09**	.08	1.08*
Belonging_Updated							.02	1.02	.01	1.01	.03	1.03
Peer Inv_ <i>Would not help</i>									.04	1.04	.002	1.00
Peer Inv_ <i>Attitudes and values</i>									.37	1.45	.35	1.42
Belonging_Updated*First-Gen											-.08	.92
Nagelkerke R ²	.01		.21		.25		.25		.27		.28	
Nagelkerke R ² Change	.02		.27***		.34**		.34		.36		.38	

* $p < .05$; ** $p < .01$; *** $p < .001$

Research Question 5

To what extent is the relationship between sense of belonging and academic performance, controlling for peer and faculty interactions, moderated by generational status?

To investigate if generational status would moderate the relationship between peer involvement and academic performance (college GPA) while controlling for Pell grant status, high school GPA, race, gender, and faculty interactions, logistic regression was computed in SPSS. Sense of belonging, measured by the GBS, was eliminated from this part of the analysis due to its high correlation with peer involvement. Linear regression could not be used since college GPA was converted to a categorical variable in order to address non-normal, negatively skewed data. The final block added was block 4 for the interaction terms. Block 4 included generational status, all controls, peer involvement, faculty involvement, and finally, the interaction terms for generational status * peer involvement. The assumptions for logistic regression of observations being independent and independent variables being linearly related to the log were checked and met. Table 11 presents the model summaries.

The final block with interaction terms (peer involvement*first-generation), block 4, was significant, $X^2 = 4.09$, $df = 1$, $n = 182$, $p < .05$. The log likelihood of this model (199.9) was slightly lower than the model without the interaction terms (204.02), indicating a better fit of this model to the data. However, the coefficient for the interaction terms indicated that being a first-generation college student did not have a statistically significant moderating effect upon peer involvement upon college GPA, p

<.056. Though the p value of .056 does not meet traditional standards of statistical significance, it is extremely close to .05. Along with a relatively small sample size, it should be noted that this indicates a strong trend towards statistical significance. If a larger sample was obtained, it might be that it would reach statistical significance, indicating that first-generation student's college academic performance, as measured by GPA, is more strongly related to positive peer interactions than for continuing-generation students. However, it is impacted negatively, so that the odds of a high GPA are reduced by sixteen percent for each one unit increase in peer involvement for first-generation students. Finally, compared to the null model, where college GPA was predicted correctly fifty percent of the time, model 3 predicted GPA correctly seventy-two percent of the time. The final model with interaction terms predicted GPA correctly seventy percent of the time. These results are presented in table 11.

Finally, logistic regression was computed again, using the new scales of `Belonging_Updated` and `Peer Involvement_Updated`, along with the two Peer Involvement items that did not load highly on any factors: “would not help with problem” and “attitudes and values”. These scales were created from the factor analysis conducted in the previous chapter. The final block with interaction terms was block 6. Block 6 included generational status, all controls, `peer involvement_updated`, faculty involvement, `belonging_updated`, stigma/stereotype threat variables, and the interaction terms of generational status * `belonging_updated`.

Table 12 presents the model summaries, which shows that there was no statistically significant interaction between generational status and `belonging_updated`

(generational status * belonging_updated) in terms of improving the prediction of college GPA, $p < .09$. Though the p value of .09 does not meet traditional standards of statistical significance, it does generally meet the standards for exploratory research. However, belonging had a negative impact upon college GPA for first-generation students.

In the final model, model 6, high school GPA significantly improved the probability of predicting high/low college GPA, $p < .001$, as did peer involvement_updated, $p < .05$, and faculty involvement, $p < .05$. Peer involvement continued to have a negative impact on college GPA. The odds of a higher college GPA decreased by fourteen percent for every one unit increase in peer involvement_updated. Faculty involvement had a positive effect on college GPA, so that the odds of a higher college GPA increased by eight percent for every one unit increase in faculty involvement. The single item, “attitudes and values”, though not statistically significant, was still significant for exploratory research, at $p < .09$, in the final model with the interaction terms. Though not significant, “attitudes and values” had a positive impact on college GPA, similarly to the previous findings using the original scales, presented in table 11. Since the reverse-scored version of the item was included in the regression, as described earlier, this meant that agreement that one’s peers had attitudes and values similar to one’s own was positively related to a higher college GPA. Compared to the null model, where college GPA was predicted correctly fifty percent of the time, model 5 predicted GPA correctly seventy-seven percent of the time. The final model, model 6 with interaction terms, predicted GPA correctly seventy-six percent of the time.

Summary

The purpose of this study was to examine the explanatory relationship between generational status and belonging, and generational status and college GPA, or academic performance, while also assessing peer involvement and faculty involvement as mediators, along with the impact of pre-college variables. Empirical quantitative research is just beginning to be conducted in this area of stereotype threat and belonging, and the deleterious effects upon success in college for first-generation students. The current study explored this area of research, examining the impact of social belonging upon academic outcomes in college.

In the current study, OLS regression was conducted, along with logistic regression, to examine these explanatory relationships. Though the General Belongingness Scale and the Peer Involvement Scale were found to be highly correlated, it was also found, through conducting factor analysis, that for the most part, each scale was measuring something distinctly different in the current sample. However, in restructuring them according to the factor analysis results, the reliability measurements of both increased, and two items on the peer involvement scale (“attitudes and values” and “would not help”) appear to have been responsible for some of the significant differences between first- and continuing-generation MSU students. Chapter five will explain and discuss the results by question, and will connect the current study back to the literature. Chapter five will also provide recommendations for future research, along with recommendations for supporting first-generation college students at Montana State University with the results of the current study in mind.

CONCLUSION

Introduction

Extensive previous research indicates that social belonging is a basic human need, which leads to a wide variety of affect and behaviors designed to satisfy that need (Anant, 1966, 1967, 1969; Baumeister & Leary, 1995; Durkheim, 1951; Maslow, 1954). Not being able to satisfy the need to belong can lead to anxiety, depression, and even psychosis. As such, it should not be surprising that belonging plays an essential role in the transition to college, along with persistence and completion. Stigma and stereotype threat also appear to affect belonging, so that stigmatized groups are more strongly affected by identity threat or stereotype threat in college (Hurtado & Carter, 1997; Johnson, Soldner, Brown Leonard, Alvarez, Kurotsuchi Inkelas, Rowan-Kenyon, & Longerbeam, 2007; Hausmann, Ye, Ward-Schofield, & Woods, 2009; Wells & Horn, 2015). The experience of feeling as if one does not belong may lead to mental health issues, academic disidentification, poor grades, and sometimes, leaving college.

As a nation, we must change institutions in order to impact the ability of first-generation college students to graduate from college. The graduation rates for first-generation students are far below the average for those students who have a familial history of involvement in higher education (Cataldi, Bennett, & Chen, 2018; Chen & Carroll, 2005; DeAngelo & Franke, 2016; Engle & Tinto, 2008; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Riehl, 1994; Soria, 2015). At MSU, a public land grant institution, first-generation college students are at least twenty percent, and quite

possibly a higher percentage, of the student body. Similarly to the national statistics, first-generation students at MSU are less likely to persist and graduate than their continuing-generation peers (Montana State University, 2018c). Thirty-one percent of first-generation students at MSU graduate within six years, while fifty-two percent of all entering first-time, full-time students graduate (Montana State University, 2018c). In chapter two, the process by which it was hypothesized that first-generation students are affected by stereotype threat, lower belonging, and consequently, lower grades and decreased persistence was visualized in figure 2. The relationships among these variables were explored utilizing both OLS regression and logistic regression. In the following sections, the results presented in chapter four will be discussed by research question, and recommendations will be made both for future research on the topic, and for addressing the issue in practice, in the context of MSU.

Findings

In this next section, each research question is presented, along with a discussion of the results that were presented in chapter four.

Research Question 1

Is there a difference in students' sense of belonging between first-generation and continuing generation college students?

The hypothesis that there would be a significant difference between first- and continuing-generation students on their levels of belonging on the GBS was not supported. However, when the peer involvement scale was utilized in place of the

belonging scale, statistically significant differences were found between the mean scores for first- and continuing-generation students. First-generation students reported significantly lower levels of positive influential peer interactions than did continuing-generation students. In addition, the items that influenced this difference were items that did not load well or highly on the peer involvement scale in the factor analysis conducted in the previous chapter. These items were: “It has been difficult to meet and make friends with other students” (reverse-coded), and “few of the students I know would be willing to listen to and help me with a personal problem” (reverse-coded). First-generation students did not differ significantly from continuing-generation students on the other individual items that made up the peer involvement scale, which focused more on feeling close with peers, having satisfying friendships, and friendships that had a positive influence on personal and intellectual development.

The few previous studies that have included a measure of belonging and have examined generational status have found that first-generation students had lower levels of belonging (Pittman & Richmond, 2007; Rubin, 2012; Stebleton, Soria, & Huesman, 2014). However, these studies utilized a variety of different measures of belonging. For example, Rubin (2012) assessed a number of social integration measures, and one single item asked about belonging. Therefore, these previous findings align with the current study and findings. It is significant that it was only two items from the peer involvement measure that showed significant differences based upon generational status, and these items asked about feelings of support from peers and ease in making friends. This finding is supported by the literature on social support and its positive relationship with

belonging. It may not be the general notion of friendships and closeness with peers in college that matters as much as the notion of being supported in times of stress and difficulty.

It is also interesting that the reported number of hours per week of involvement in co-curricular activities did not differ significantly between first- and continuing-generation students either, at least at this point in their college experience. This goes against the literature in this area that first-generation college students tend to be less involved in co-curricular activities in college. It might be that these things take time to develop, and since the current study assessed student's feelings and perceptions after only two months in college, it was simply too early in the process to see significant differences in social belonging, along with co-curricular involvement.

Research Question 2

To what extent is any difference in students' sense of belonging by generational status mediated by peer and faculty interactions, controlling for pre-college characteristics?

The hypothesis that peer and faculty interactions would mediate the relationship between generational status and sense of belonging was not supported. In both versions of the scales, faculty and peer interactions had a statistically significant effect upon sense of belonging, accounting for sixty percent of the variance in the sense of belonging variable. In addition, when the updated version of peer interaction was utilized, and the two individual items, "attitudes and values" and "would not help" were entered in the final model, these came close to statistical significance as well, and accounted for two

percent of the variance in sense of belonging. This R^2 change was statistically significant. The entire model utilizing the updated scales predicted sixty-two percent of the variance in sense of belonging. Though the results illustrated the large impact peer and faculty interactions had upon student's sense of belonging, they were not technically mediators between generational status and belonging, since there was not a significant direct relationship between generational status and belonging.

These results support the literature on involvement, satisfaction, fit, and belonging in college discussed in chapter two. These constructs are quite intertwined (Wolf-Wendell, Ward, & Kinzie, 2009), so it makes sense that they are often used as a substitute for one another in empirical research, whether purposefully or mistakenly. However, the current study supports the need for clarity when measuring involvement vs. belonging. The two constructs are highly correlated in the current study (at an alpha of .70), yet the factor analysis results made it clear that the peer involvement scale and the belonging scale, for the most part, loaded separately on two different factors. This indicates that they were measuring different constructs, as some researchers have suggested (Strayhorn, 2012).

In addition, faculty involvement, or the high-quality interactions with faculty scale, significantly predicted belonging. These results support the importance of good teaching and positive relationships with faculty in helping new students feel as if they fit and belong in college. These items from the Wabash study were created to operationalize Chickering and Gamson's principles of good practice in undergraduate education (Kuh, 2001). Chickering and Gamson (1987, 1991) created this list of principles, which include

student-faculty contact, cooperation among students, active learning, prompt feedback to students, time on task, high expectations, and finally, respect for diverse students and diverse ways of knowing. The current results support the contention that experiencing these good practices- through high quality interactions with peers and with faculty- have significant effects upon sense of belonging in college for all students. Since belongingness has an impact upon healthy transitions to college, along with persistence and completion, this is an important finding.

Research Question 3

Is there a relationship between generational status and academic performance as measured by GPA?

The hypothesis that there would be a direct effect of generational status upon academic performance, operationalized as college GPA, was not supported. There was no statistically significant difference between first-generation and continuing-generation student's GPA their first term at MSU. Overall, the literature states that on average, first-generation college students tend to have lower college GPA's than continuing-generation students (Chen, 2005; Ramos-Sanchez & Nichols, 2007; Riehl, 1994). However, this is not always a consistent finding. Zalaquett (1999), for example, did not find a significant difference between first-generation and continuing-generation college student's cumulative GPAs over a period of three years in college. The author theorized that it might be that first-generation students, many from rural areas, felt a level of comfort at the university (a public university in a rural area/small town in Texas), which might have mediated the results. However, the author did not examine this possibility empirically.

The current study used a small sample of 184 participants, which may have impacted the results. The sample was just over the minimum required to be able to conduct regression with multiple independent variables. The current study also measured GPA the first semester in college. It might be that this outcome takes time to develop. For example, Murphy & Zirkel (2015) found that feelings of belonging in the first weeks of college impacted the second term GPA of students of color (and not white students), but not the first term GPA. This indicates a process that occurs over time. Additionally, some of the research on GPA as an outcome seems to lean in the direction of mediation or of conditional effects: mediating variables are influencing GPA, or, there are interaction effects upon GPA (hypothesized in the current study). The current sample also leaned in the direction of rather high first term GPAs on average, since the mean GPA for the sample was 3.32. Therefore, it might be that with more variability in the dependent variable, there would have been an effect.

Research Question 4

To what extent is the relationship between generational status and GPA mediated by sense of belonging and peer and faculty interactions?

The hypothesis that sense of belonging, peer interactions, and faculty interactions would mediate the relationship between generational status and college GPA was partially supported. The results differed in a significant manner when the new updated belonging and peer interaction scales, created through the factor analysis, were utilized in the analysis. Utilizing the original scales, high school GPA had a consistently positive relationship with college GPA, even when all other variables were entered into each

block. This finding is consistent with the literature examining the impact of high school GPA and test scores upon academic success in college (Mayhew et al., 2016). In addition, faculty interactions had a positive relationship with college GPA. Higher levels of agreement with the items measuring high quality interactions with faculty increased the odds by six percent that participants would have high college GPAs. This finding is supported by the literature examining the impact of positive faculty interactions in college. Positive interactions with faculty during in college is fairly consistently associated with increased retention and persistence (Mayhew et al., 2016). In addition, some studies have found that positive faculty interactions have a positive effect upon course completion and course grades. Two studies found that perceived teaching clarity and organization predicted better retention, as explained by the moderating influences of increased grades, and satisfaction with college (Pascarella, Salisbury, & Blaich, 2011; Wolniak et al., 2012). When students feel as if faculty care about their intellectual and personal growth and development, have positive interactions with them outside of the classroom, and perceive them as excellent teachers, it has a large impact upon academic performance, and therefore, upon persistence.

When the new updated peer and faculty interaction scales were utilized, results were significantly different, in several important ways. First, the hypothesis was supported for peer interactions. In this model, peer interactions_updated had a slight negative relationship to college GPA. Higher levels of positive peer interactions reduced the odds by fourteen percent that students would have a high first-term college GPA at MSU. Belonging_updated was not significantly related to college GPA. The impact of

positive peer interactions upon grades and persistence is supported in the literature on college outcomes (Fischer, 2007; Mayhew et al., 2016; Wolniak et al., 2012).

Friendships with peers on campus tend to have a positive impact upon persistence, while more ties with friends off-campus predicts drop-out (Fischer, 2007). In addition, a number of studies have found that it is not the number of friendships, but quality that matters in terms of persistence (Crissman, 2002; Wolniak et al., 2012). It is interesting that in the current study, peer involvement had a negative relationship with college GPA. This may indicate a developmental transition process quite common to new students: struggling to figure out how to balance time with friends and social interactions vs. doing what is needed to study and complete homework in order to succeed academically. Managing time is a fairly common challenge for students new to college, where there is much less structured time than in high school, and students must decide how much time to spend on studying rather than socializing. This may be what is occurring in the current study.

The two single items “attitudes and values” and “would not help” were entered into the final model as predictor variables. “Attitudes and values” was very close to traditional levels of significance, and in a small sample size, this is important. Though not statistically significant ($p < .07$), reported agreement that other student’s values and attitudes were similar to their own was associated with a positive increase (forty-two percent) in the odds of having a high college GPA. This is interesting, particularly because this item can be assumed, on the surface, to be clearly related to belonging. When a person feels as if they have similar values and attitudes as others in their

community, they are more likely to feel a sense of belonging and affiliation, as part of that community. However, the results indicated these are two different constructs, as one (attitudes and values/peer interactions) appears to be predicting the other (belonging) (see research question two). Current research studying first-generation students and students of color in college examines values alignment and the impact of values upon belonging, grades, and persistence. As discussed in the literature review, a number of researchers have found that first-generation students tend to endorse more interdependent values than continuing-generation students, which then impacts feelings of belonging and fit in college (Phillips et al., 2016; Stephens et al., 2012; Stephens, Markus, Fryberg, Johnson & Covarrubias; 2012a). Some of these studies have conducted behavioral interventions which involve validating student's personal values, or encouraging students, through a variety of methods, to think about more independent values. They all resulted in positive impacts upon academic performance. These results appear to be in alignment with Rendon's (1994) studies on validation and Bourdieu's (1986) theory of cultural capital, particularly embodied capital. The college culture embodies values- independence, competition, intellectualism- that do not necessarily align with the embodied values and ways of being of students without a familial link to higher education. If students do not see themselves reflected in those around them in college- validating their experiences, values, and ways of being- they may feel as if they do not belong, and may leave. Though it is obvious that positive peer interactions overall matter in the current study, attitudes and values alignment with peers is an interesting result and deserves further study.

Research Question 5

To what extent is the relationship between sense of belonging and academic performance, controlling for peer and faculty interactions, moderated by generational status?

Since belonging was eliminated from the first part of the analysis due to high correlations with peer interactions, that part of the question was not assessed. Instead, the interaction between peer interactions and generational status was examined. The hypothesis that generational status would moderate the relationship between peer interactions and college GPA was partially supported. The model itself, model 5, was statistically significant, indicating that adding the interaction terms for first-generation and peer interactions improved the predictive power of the model. However, the coefficient for the interaction terms was not significant, though it came very close to statistical significance ($p < .06$). The negative beta value for the interaction terms indicated a conditional effect; dependent upon whether or not a student is first-generation or not, peer interactions had a differing impact upon college GPA. Peer interactions had a larger negative impact upon GPA for first-generation students, vs. continuing-generation students. Though not measured directly, this may support the contention that stigma and stereotype threat are impacting the interactions first-generation students have with peers on campus. These interactions may confirm the fear that they do not belong or fit in, triggering stereotype threat, and leading to worsening academic performance. It may also indicate that first-generation students, who often receive less guidance and knowledge on how to navigate college, struggle more with the transition to college than do continuing-generation students. First-generation students tend to struggle more in

terms of managing and balancing time with friends and other commitments that continuing-generation students do not have, vs. time spent on studying/academic work (Collier & Morgan, 2008). This may negatively impact their grades, since good time management practices are associated with higher GPAs in college (Britton & Tesser, 1992).

The logistic regression was then performed again, with the new updated scales for belonging and peer interactions. This time, the hypothesis was partially supported as well. Both peer interactions_updated and faculty interactions significantly influenced the odds of a high college GPA in the final model. Peer interactions had a small negative impact on the odds of a high GPA, while faculty interactions has a small positive impact on the odds of a high GPA. Belonging_updated did not significantly impact college GPA. The single item “attitudes and values” was significant for exploratory research standards at $p < .09$, positively impacting the odds of getting a high college GPA. The interaction between belonging and generational status also was significant in terms of exploratory research, at $p < .09$. First-generation college student’s higher sense of belonging increased the odds by eight percent that they would have a low college GPA. This may align with the findings of the negative effect of peer involvement on college GPA, and could be due to new student’s attempting to balance study time vs. social time. However, that could not be determined in the current study.

Overall, the results of the current study support the literature on the impact of positive interactions with faculty in college upon academic performance. The results also support the importance and positive impact of peer interactions and involvement upon

feelings of belonging on campus. Though belonging and peer involvement actually had a slightly negative impact upon grades in the current study, that may be due to the period of transition new students experience in college. It takes time to develop the ability to balance social interactions and relationships with academic work and studying (Greenfield, Keup, & Gardner, 2013). First-year experience programs help guide students through the process of figuring out how to best manage and balance their time between studying and socializing. Both Astin's involvement theory (1984) and Tinto's interactionist theory (1993) support the positive impact of peer interactions and college integration upon persistence and retention. According to Astin, peers are the most important source of influence in college (1993). However, the current research goes deeper, since peer and faculty interactions measured feelings of support in times of difficulty, along with prompt feedback from faculty, good teaching, and positive relationships with faculty outside the classroom. "Attitudes and values" and "would not help", the two single items from the peer interactions scale, also appeared to be measuring something distinct from generalized peer interactions in the current study. First-generation college students were more likely to state that their peers would not help or listen to them if they had a problem. Feeling as if one's attitudes and values were different from one's peers in college had a negative impact upon all participant's first-term GPAs. In addition, both sense of belonging and peer interactions were significant for exploratory research in terms of a conditional effect (or moderating) on college GPA. In other words, sense of belonging and peer interactions had a larger negative impact upon college GPA for first-generation students at MSU. The results indicate a need to go

beyond traditional student development theories of involvement and integration, towards the validation and affirmation of intersectional identities of students, which aligns with Rendon's (1992; 1994) theory of cultural validation.

Limitations

There were a few limitations with the current study. First, the sample size was small, at 184 participants. With eight predictor variables, the minimum sample size, at twenty observations per variable, is 160 (Field, 2009). The current study meets those requirements, but is just over 160. Many studies utilizing similar design and variables have sample sizes of hundreds or thousands of participants. In addition, the study was conducted at a single institution, making it difficult to generalize outside of MSU. However, as a problem of practice, the intent of the current study is to analyze first-generation student's experience at MSU specifically. Another limitation involved the small sample size and the nature of the college GPA data. The mean GPA for the sample was quite high, which is why the variable was negatively skewed. Since it was skewed and violated assumptions for linear regression, a median split had to be conducted so that a categorical variable could be created: high vs. low GPA. Forcing the variable into two categories can hide the effects of variance in a sample, since a GPA of 1.5 and a GPA of 3.0 were all defined as "low GPA."

Examining additional variables, such as amount of time spent working and time spent studying vs. socializing, along with living on- vs. off- campus, would have allowed the researcher to further assess why first-year, first-time, first-generation students self-

reported lower levels of positive peer interactions than continuing- generation students at MSU. In addition, it could have assisted in the interpretation of why peer involvement had a larger negative impact upon college grades, especially for first-generation students.

Some research indicates that the process through which stigma and stereotype threat impact belonging and then academic performance takes time to develop (Murphy & Zirkel, 2015). The current study only examined student's academic performance their first term at MSU. Finally, the current research and data is self-report, which tends to be less reliable than data coming from direct observations (Mayhew et al., 2016). It is important to remember that the current results are based upon participant's perceptions about their own feelings and behavior.

Future research should attempt to replicate the results of the current study with more participants from a variety of different institutional types, in order to see if the results hold with a higher sample size, along with across different institutional types. It might be that, in alignment with the literature, first-generation students experience stigma and threat more strongly at private, wealthier institutions. In addition, further exploration of the peer involvement items asking about help and support from peers and attitudes and values alignment would be helpful. This would help delineate why attitudes and values alignment was related to student's grades, and whether they might have more of an influence on first-generation student's grades. A mixed methods study could add a qualitative component, asking follow-up questions of students around values alignment with peers, and feelings of support in times of difficulty.

Recommendations for Practice

A variety of programs, services, and interventions have been proposed and put into practice which hold promise for encouraging and supporting first-generation student's feelings of belonging and fit in college. As research has illustrated, there are significant connections between belonging, persistence, and college completion. A few examples of these programs include TRiO, which has been in existence since the 1960's; bridge programs for underrepresented students, and psychological interventions. Behavioral/psychological interventions appear to hold much promise, particularly for supplementing intensive programs such as TRiO, and for scaling up practices so that they may impact large numbers of students. These interventions specifically target the psychology of first-generation and working-class students, initiating recursive processes already likely to occur in educational settings (Yeager & Walton, 2011). In addition, changes to policies and practices also may support the success and persistence of first-generation students in college.

Gathering Accurate Data on First-Generation Students

At the most basic level, institutions need an accurate assessment of the number of first-generation students on campus. As discussed in the literature review, data on first-generation students ranges widely across institutions. In order to serve any student population, an accurate count and identification of them must exist. At MSU, the BCSSE is the instrument utilized to assess generational status on campus. However, it is distributed during orientations over the summer. Orientations are not required, and

overall, students who are better prepared and come from families with money and with historical experience with higher education are more likely to attend, since it requires travel and overnight stays. In addition, asking questions that might induce feelings of identity or stereotype threat are not necessarily best to ask at the times when students are feeling most vulnerable; at the beginning of the transition process. This might be why thirty percent of the students taking the BCSSE at MSU did not answer the parental education question. It could also be because students often are not able to accurately identify what level of education their parent/s complete. For these reasons, it would be best to gather this data on the admissions application, through the Office of Admissions.

In addition, if the only measure of income and class is through Pell grant status, it is almost a guarantee it will be inaccurate. Many low-income and working-class students do not take out Pell grants, and depending upon a number of factors, sometimes middle-income students qualify for Pell grants. The creation of an index or measure of class in the United States would allow institutions to track class, along with making it more visible (Jonas, 1999; Soria, 2015). However, the culture of the United States, based in the same values as the traditional university- the myth of meritocracy, and the values of independence and hard work- makes it unlikely we will acknowledge that class both exists and matters (Jonas, 1999). But this does not keep an individual college or university from asking about and tracking this data, along with making it public and visible. The question/s could be assessed through self-report on the admissions application, or, could be a composite of several data points: parental education, income,

Pell grant status, and possibly others (Rubin, Denson, Kilpatrick, Matthews, Stehlik, & Zyngier, 2014; Soria, 2015).

Programs/Interventions that Build Social and Cultural Capital

Programs that help first-generation students build social networks and capital prior to attending college and during college appear to work well. These include bridge programs, along with TRiO programs that occur prior to college, such as Educational Talent Search and Upward Bound, and the Student Success Services (SSS) programs during college, such as MSU's SSS program. These programs provide tutoring, social support and a cohort of similar students, financial aid information and assistance, and peer mentoring (Soria, 2015). TRiO programs have documented success with working-class, low-income, and first-generation college students (Graham, 2011; The Pell Institute, 2009; Soria, 2015). TRiO participants are more likely to graduate with a four-year degree than their peers who are not in TRiO (Balz & Esten, 1998; The Pell Institute, 2009). TRiO program participants also tend to consistently report high levels of satisfaction with the program around job counseling and placement, intellectual growth in college, and course curricula (Balz & Esten, 1998). Upward Bound, a TRiO program for students in high school, resulted in participants being fifty percent more likely to attain a bachelor' degree, and twenty-two percent more likely to apply for financial aid than a control group (The Pell Institute, 2009). TRiO Upward Bound programs bring high school students to colleges over the summer, on weekends, and after school to take a college courses, and include enrichment components such as community service

activities, along with tutoring and mentoring. This early exposure to college in a relatively safe and supportive environment assists with building social and cultural capital, while remediating academic under-preparedness and possibly alleviating feelings of stigma as well. Graham (2011) writes about her personal experience as a female, first-generation, low-income African-American student with Upward Bound, and later on, the McNair Scholars program. She states that these programs were essential to her college attendance and success, for a variety of reasons. She was assisted with college navigation processes that are unfamiliar to those without familial experience with college, such as financial aid and FAFSA applications. But Upward Bound also placed her directly into the college environment over the summer, so she understood what it was like to live away from home, get along with roommates, and go to resident assistants for help. She also received free assistance and instruction in test-taking (the ACT/SAT), and took math and science to prepare her for college courses. Finally, Graham had a cohort of students similar to her in many ways whom she felt comfortable with and could go to for advice.

Even with the consistent success of TRiO programs, success is by definition limited since such a small population is served and funding is limited. TRiO programs are estimated to serve only five percent of the population of eligible students (Balz & Esten, 1998). At Montana State University, the TRiO program has the capacity to serve approximately 150 students (J. Collins, personal communication, August 2018). With close to 17,000 students, at least twenty percent of whom identify as first-generation, that is 3,400 first-generation college students; which means MSU is not even serving five percent of the population of first-generation college students. Another option is that

institutions can scale up and implement TRiO-type programs on their own with state, federal, or institutional funds.

Bridge programs are one example of a program similar to or modeled on TRiO, serving first-generation, working-class, and low-income students, yet funded in a multitude of ways. Bridge programs usually occur the summer prior to the first year in college, and can help students get a head start on building peer relationships and social networks, along with the cultural capital necessary to navigate college (Soria, 2015). Strayhorn (2012) implemented a bridge program for students of color and assessed sense of belonging pre and post- program. Students took an introductory English course, received assistance in math, and did a variety of educational and co-curricular activities together, along with living in the residence halls. Many of the students involved in the bridge program spoke about this intense experience with a cohort of similar students over the summer helping the university feel smaller and more manageable. Sense of belonging scores rose slightly at the end of the program, though they dipped again at the end of the first term (Strayhorn, 2012). One aspect that appeared to be missing from the program was guided assistance in figuring out how to negotiate or re-negotiate ties back home (rather than sever them completely, or leave college) (Strayhorn, 2012). One Latina student left after the first term because her parents called her every day and told her they could not function without her; they did not speak English, and stopped answering the door or the phone because she was not there to translate.

Bridge programs do not necessarily have to be summer-long programs; first-generation students in one study reported they benefitted from making several short

campus visits prior to the fall term (Bryan & Simmons, 2009). These programs appear to work well because they offer intense, intentional experiences with small groups of students. They offer a chance to acclimate to college prior to the rush and craziness of a new year with (often) thousands of students on campus. These experiences usually include intentional meetings with academic advisors, connections with supportive faculty and peer mentors, club/organization/leadership involvement, academic preparation, and instruction in college navigation skills (Greenfield et al., 2013; Kezar, 2000; Soria, 2015). Montana State University's Hilleman Scholars Program could be identified as a "bridge" type program, and begins with a "summer success academy" for a month and a half over the summer, prior to the start of fall semester (Hilleman Scholars Program, 2019). However, it serves a small number of students; approximately fifty each year; and is not limited to first-generation students (J. Collins, personal communication, August, 2018). However, since they do target low-income students, they most likely capture a number of first-generation students as well, due to the overlap between low-income and first-generation status.

Another practice or program that appears to hold promise are spaces or centers on college campuses devoted specifically to first-generation and/or working-class/low-income students. For example, Brown University has an Undocumented, First-Generation and Low-Income Student Center (U-FLi) (Brown University, 2019). They offer a wide variety of supportive services and spaces, such as a "Class Dissonance" series, scholars program, and an "Undoc-U Series." They state on their webpage that they purposefully use an equity and strengths/asset-based approach to their programs

(Brown University, 2019). Dartmouth University (2013) created an arts-based educational series on their campus called “Class Divide.” It was a three-year initiative involving talks, workshops, and programming around class. As one of the creators states in their video, people at Dartmouth like to talk about every kind of diversity and difference there is, except for class (Dartmouth University, 2013). The initiative was a way to dissect class and make it more visible.

These types of programs and initiatives create supportive programming for identified students, and can also change and influence the broader campus climate in a positive direction. Especially as MSU grows in enrollment and attracts more out-of-state students who might be less likely to be first-generation, a dedicated center for first-generation and working-class students could be beneficial. These kinds of spaces can also send a symbolic message to the college community and potential students of all kinds that MSU honors its land grant, agricultural, inclusive roots.

Psychological Interventions to Increase Belonging

Over the past decade or so, a group of studies have been published based on behavioral interventions designed to address and alleviate stereotype or identity threat. Called everything from mindsets (Yeager, Paunesku, Walton, & Dweck, 2013) to psychological lay theories, to social-psychological interventions (Walton & Cohen, 2007; Yeager & Walton, 2011), they share commonalities. These interventions use what we know about social psychology to address student’s perceptions about themselves and how they learn, who they are and how they fit into their environments, and their attributions for other’s behavior. In addition, they depend upon the educational environment to

initiate recursive processes that magnify the positive results over time (Yeager & Walton, 2011). For these reasons, they are very promising in terms of use in a variety of settings in higher education, such as orientation, welcome week, and within college classrooms. They also do not cost a lot of money, though they do require understanding, careful implementation, and intentionality in use (Yeager & Walton, 2011). For these reasons, these practices can be scaled up and used to affect large numbers of students in higher education.

One strand of this research focuses on cultural mismatch theory and is significant in light of the results of the current study. First-generation college students have been found to endorse more interdependent values than continuing-generation students (Fryberg & Markus, 2007; Stephens et al., 2012a; Stephens et al., 2012b; Stephens et al., 2014). Yet American education tends to endorse and enact more independent values: those of individual hard work, individual accomplishment, and competition (Fryberg & Markus, 2007). Both of these premises have actually been empirically tested in a series of recent studies (Stephens et al., 2012a). Stephens and her co-authors surveyed administrators from the top fifty national universities and top twenty-five liberal arts institutions, along with fifty second-tier institutions (half national and half liberal arts). The majority of administrators agreed overall that American universities tend to promote and value independent norms more than interdependent norms (Stephens et al., 2012a).

The author also conducted three more empirical studies following students through the first three years of college to examine how social class, along with values and motives for attending college, impacted academic performance. They found that interdependent

motives negatively impacted grades at the end of the first year. Examples of these motives included “help my family out after I’m done with college,” “be a role model for people in my community,” “bring honor to my family,” “show that people with my background can do well,” “give back to my community,” and “provide a better life for my own children.” (Stephens et al., 2012a). In a subsequent study, the authors also experimentally manipulated cultural match/mismatch, and then assessed student’s performance on an anagram test. When the university culture was presented as focusing on norms of independence, first-generation students solved fewer anagrams than continuing-generation students (Stephens et al., 2012a). When culture was presented as interdependent, there was no difference in performance between the two groups (Stephens et al., 2012a). The authors also discovered that cultural mismatch influenced student’s perceptions of academic tasks: it made students perceive the task as more difficult, leading to worsening academic performance. This would appear to be a test of stereotype threat, and builds upon other studies in this area (Walton & Cohen, 2007; 2011) which found similar results with white students and students of color. These studies confirm that stereotype threat or identity threat is occurring in the typical college or university. Further, the middle-class values of independence endorsed by American universities seem to influence stereotype threat.

There are a number of solutions that would address the issue of cultural mismatch. One is utilizing university communications- admissions materials, university mission and values, and websites- to emphasize interdependence over independence (Stephens et al., 2012a). These materials could emphasize giving back to one’s community and

maintaining ties to family, rather than values such as improving oneself, figuring out interests and goals, and exploring what one should do for a career. Though important, these emphasize the individual over community. Another change to university culture involves traditional transition and welcome programs for new students. Many first-year experience and orientation programs focus on the expectations of university and academic life. Universities could begin acculturating students to the norms of working in small groups with peers, relying on others, asking for help, and connecting one's own interests (the traditional major and career exploration) to the needs of one's home, community, and family; i.e., impacting the lives of others. These expectations and values relate back to Chickering and Gamson's principles of good practice in undergraduate education (Chickering & Gamson, 1987), particularly cooperation among students and respect for diverse students and diverse ways of knowing. These principles might be better utilized to illustrate how they can be leveraged to alleviate cultural mismatch and better welcome our first-generation students, along with other diverse groups, to college. In addition, these principles are a good reminder that most students need guidance, instruction and support around how to balance peer interactions and studying/academic work. Helping students get used to working cooperatively in small groups in and outside of classes can assist their feelings of fit and belonging, in addition to relying on and utilizing peers as mentors and co-learners.

Other related studies have devised behavioral interventions that were hypothesized to lessen the effects of cultural mismatch, along with other transition issues that appear to affect first-generation students more strongly than continuing-generation

students. For example, Stephens et al. (2014) devised a program put on during orientation, where a panel of diverse college seniors answered pre-planned questions from a moderator. These questions focused on how the students adjusted to college, along with their transition experiences. They linked their transition experiences to their social-class backgrounds explicitly; i.e.; “because my parents didn’t go to college, they weren’t always able to provide me with the advice I needed... but there are other people who can provide that advice, and I learned that I needed to rely on my adviser more than other students” (Stephens et al., 2014). The other experimental condition provided general transition advice, minus the focus on social-class background. The participants in these interventions completed a survey afterwards, and a video testimonial. They were told that the video would be shared with participant’s/new students the following year to help them adjust to college. This intervention did a few things: they normalized the difficulty in transitioning to college, emphasizing that these difficulties are temporary, but might be more difficult due to social-class differences. This might help students locate difficulty outside of themselves and their intellectual abilities. The intervention also utilized repetition to help students take on the viewpoints as their own, since they had to take what they learned and convey it to future students. This also involved repetition in a new context, which is essential for learning. The results of the study indicated that the intervention or experimental condition reduced the social-class achievement gap between first-generation and continuing-generation students by sixty-three percent (Stephens et al., 2014). The intervention also resulted in improvements in first-generation student’s psycho-social outcomes, including psychological adjustment,

and social and academic engagement (Stephens et al., 2014). The Stephens et al., (2014) study disputes the notion that one must be “difference-blind” in order to alleviate the impact of stereotype threat upon performance in college. Supporting students in learning about how their background and identity impacts their experiences in college can be empowering, and might be one of the keys that will address stereotype and identity threat. In combination with the results of Walton and Cohen’s studies (2007; 2011), this grouping of studies utilizing behavioral interventions indicate that learning about how social class impacts transitions, normalizing transition difficulties/belonging uncertainty and indicating their temporary nature, along with emphasizing cultural norms of interdependence, can all have a large impact upon the performance of first-generation students in college.

Similarly to the behavioral interventions utilized in the studies described above, college transition programs could be changed and improved to include these practices. Orientation, welcome week, and first-year experience programs should include intentional and diverse peer interactions that involve sharing stories of the challenging yet temporary nature of the transition to college. This should include how social identities impact the transition. This includes not only social class- first-generation and working-class or low-income status- but also sexual orientation, gender, and race/ethnicity. Many orientations include short programs or breakout sessions for students with these identities (Council for the Advancement of Standards in Higher Education, 2019; Perigo & Upcraft, 1989; Ward-Roof, 2010). However, they tend to focus on the campus resources and services for these students, rather than the more specific challenges based in the

identity itself within the context of American higher education. In addition, many programs also locate these issues in a deficiency model, focusing on changing the behavior of students. This is not always necessarily wrong- many students do need to learn how to study in college, how to balance and manage their time differently; i.e., how to alter the behaviors they learned in high school (Ward-Roof, 2010). But we also need to change the very culture of the American college itself and the focus on independence and competitiveness. Institutions need to examine their own programs, practices, and the values on which they operate in order to truly welcome first-generation students to college. Finally, this research indicates how beneficial peer mentoring and leadership can be, and that institutions could scale up these practices to truly impact persistence and graduation outcomes. The students going through transition programs their first year should be recruited to support these programs, and the next incoming class, the following year. These practices impact both the new students along with the continuing students who serve as mentors and leaders (Jacobi, 1991).

Montana State University would benefit from examining how their policies, practices, and programs across the university welcome (or do not welcome) first-generation students to campus. This includes continuing to assist them throughout their time at MSU in connecting with peers and feeling a sense of belonging on campus, along with learning skills of self-efficacy; how to plan their time, say no, and balance academic work and socializing. Utilizing some of the psychological interventions described in this section might assist MSU in scaling up its retention and completion practices, which

would positively impact the population of low-income, working-class, and first-generation college students.

Summary

The current study concluded that first-generation college students self-reported lower levels of positive peer interactions during their first semester at MSU. More specifically, first-generation students were more likely to think that it was difficult to make friends and that their peers would not listen or help them if they had a problem. Though results did not reach traditional levels of significance, belonging and peer interactions had a larger negative impact on academic performance for first-generation vs. continuing-generation students. Faculty interactions had a significant positive impact upon academic performance for all students. Finally, a factor analysis supported the contention that peer involvement/interaction is a construct separate and distinct, though highly related, to sense of belonging.

There are a number of strategies and programs that we know work in increasing the success and persistence of first-generation students in college. These include TRiO programs, along with other bridge programs, and transition programs such as orientation and first-year experience. However, these programs in and of themselves have not consistently moved the needle on completion for large numbers of students. New research that addresses the mismatch between the values of first-generation college students and American higher education holds much promise. The results indicate that relatively small short-term interventions can have a large impact upon how students perceive difficulty and

struggle- both academic and psychosocial- and thus upon academic performance in college. It is the manner in which transition programs are created and implemented- the quality and content- and not so much that “welcome week” or a “first-year experience seminar” exists, that really matters. If we as a nation truly want to level the playing field and make higher education a more equitable and inclusive place, we need to make institutional changes that will help students without a historical connection to higher education feel welcome and validated, and able to succeed in and navigate the college experience.

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APPENDICES

APPENDIX A

SURVEY ITEMS

Measure of General Belongingness Scale (GBS)

Items are measured using a Likert scale, with options of strongly agree (1), agree (2), agree somewhat (3), undecided (4), disagree somewhat (5), disagree (6), and strongly disagree (7):

- When I am with other people at MSU, I feel included
- I feel accepted by others at MSU
- I feel like an outsider at MSU (reverse coded)
- When I am with other people at MSU, I feel like a stranger (reverse coded)
- I feel connected with others at MSU
- I feel isolated from the rest of the world at MSU (reverse coded)
- Friends at MSU do not include me in their plans (reverse coded)
- I have a sense of belonging at MSU
- I have a place at the table with others at MSU
- I have close bonds with friends at MSU
- Because I do not belong at MSU, I feel distant during the holiday season (reverse coded)
- I feel as if people at MSU do not care about me (reverse coded)

Student Experience Survey (SES) Items

Influential interactions with peers is a 9-item scale with an alpha reliability of .85 that combines items from two subscales from the *Student Experiences Questionnaire*. The scales and constituent items are:

Positive peer interactions:

- The respondent has developed close personal relationships with other students.*
- The student friendships the respondent has developed at this institution have been personally satisfying.*
- Interpersonal relationships with other students have had a positive influence on the respondent's personal growth, attitudes, and values.*
- Interpersonal relationships with other students have had a positive influence on the respondent's intellectual growth and interest in ideas.*
- It has been difficult for the respondent to meet and make friends with other students (reverse-coded).*
- Few of the students the respondent knows would be willing to listen to and help the respondent with a personal problem (reverse-coded).*
- Most students at this institution have values and attitudes different from the respondent (reverse-coded).*

*The response options for this item are "strongly agree," "agree," "neutral," "disagree," or "strongly disagree."

Good teaching and high-quality interactions with faculty is a 23-item scale with an alpha (internal consistency) reliability of .92 that combines items from four subscales. The scales and constituent items are:

Faculty interest in teaching and student development

- Most faculty with whom the respondent had contact are genuinely interested in students.
- Most faculty with whom the respondent had contact are interested in helping students grow in more than just academic areas.
- Most faculty with whom the respondent had contact are outstanding teachers.
- Most faculty with whom the respondent had contact are genuinely interested in teaching.
- Most faculty with whom the respondent had contact are willing to spend time outside of class to discuss issues of interest and importance to students.

For each item, the response options are “strongly agree,” “agree,” “neutral,” “disagree,” or “strongly disagree.”

Prompt feedback

- How often faculty informed the respondent of their level of performance in a timely manner.*
- How often faculty checked to see if the respondent had learned the material well before going on to new material.*

*The response options for this item are “very often,” “often,” “sometimes,” “rarely,” or “never.” The alpha reliability of this scale is .68.

Quality of non-classroom interactions with faculty

- Non-classroom interactions with faculty have had a positive influence on personal growth, values, and attitudes.
- Non-classroom interactions with faculty have had a positive influence on intellectual growth and interest in ideas.
- Non-classroom interactions with faculty have had a positive influence on career goals and aspirations.
- Since coming to this institution, the respondent has developed a close, personal relationship with at least one faculty member
- The respondent is satisfied with the opportunities to meet and interact informally with faculty members.

For each item, the response options are “strongly agree,” “agree,” “neutral,” “disagree,” or “strongly disagree.” The alpha reliability of this scale is .85.

Generational Status Item:

“What is the highest level of education each of your parents/guardians completed?” (The response options are: 1 = Did not finish high school, 2 = High school graduate/GED, 3 = Attended college but no degree, 4 = Vocational/technical certificate or diploma, 5 = Associate or other 2-year degree, 6 = Bachelors or other 4-year degree, 7 = Masters, 8 = Law, 9 = Doctorate).

APPENDIX B

SURVEY MATERIALS

Email Invitation to Participants:

Dear First-year Student at MSU,

MSU is dedicated to enhancing the experience of new students on our campus. The best way we can do this is by asking you about your experiences and perceptions at MSU. You have been selected as part of a scientific sample of first-year students at MSU. Your response is very important to ensure the accuracy and representativeness of the responses and we need your help!

By completing this survey you will be providing MSU with important information that will help us shape the first-year student experience on our campus. **ALL** respondents will receive **500 ChampChange points** on their account, and **ONE** randomly selected respondent will also receive a **\$50 Columbo's Pizza gift card** as thanks!

Follow this link to the Survey:

[\\${l://SurveyLink?d=Take the Survey}](#)

This survey will only take about 5 minutes to complete. Your responses are voluntary and will be kept strictly confidential. Your participation or non-participation will not affect your grade or class standing in any way. This survey has been reviewed and approved by the Montana State University Institutional Review Board (IRB). If you have any questions about the survey, please email Christy Oliveri at oliverichristy@gmail.com. If you have any questions about your rights as a participant in this study, you may direct them to the Institutional Review Board at 994-4706.

I look forward to receiving your responses and learning about how we can enhance the student experience at MSU for the next generation of incoming students.

Many Thanks,

Christy Oliveri, Doctoral candidate

Email Reminder to Participants (sent only to those who have not completed):

Dear First-year MSU student:

Just a quick reminder to please complete the student experience survey you were sent last week. On average, it takes about 5 minutes, and it is SO important to complete it so that your voice is included! This information will help us enhance the student experience on our campus for future students. **All participants receive 500 ChampChange points, and ONE winner will receive a \$50 Columbo's Pizza gift card!**

Follow this link to the Survey:

[\\${l://SurveyLink?d=Take the Survey}](#)

Thank you so much!

Christy Oliveri, MSU Doctoral student