

**THE INFLUENCE OF SIBLINGS WHO ATTENDED HIGHER EDUCATION ON
FIRST-GENERATION COLLEGE STUDENTS**

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ABSTRACT

Understanding undergraduate student success is central to addressing issues in the current education climate. Many barriers exist for students; however, even more barriers exist for first-generation college students. Especially difficult for first-generation college students is access to social capital with regards to higher education. The current study focused on addressing the following overall research question: does having a sibling who attended college make a difference in the academic outcomes of a student? The sample for the study included all undergraduate students who enrolled as first-semester freshman in a large, Research 1 university in the Northeastern United States from fall 2016 through fall 2021. Transfer students were excluded. The data were provided by the selected institution's Office of Institutional Research and Assessment (IRA). These data included the primary variables that were used to define academic success-- the student's first semester GPA, first to second semester retention, first to second year retention, and four-year graduation rate. Additional variables were collected which included student's SAT scores, high school GPA, gender, and data from a survey that is administered to all incoming freshmen- the New Student Questionnaire (NSQ), which included information about the level of education of each student's

mother, father, and siblings. The analysis of the data revealed that as the number of family members who attended college increased, so did high school GPA, 1st semester GPA, 1st to 2nd semester retention, and 4-year graduation rate. Ultimately, this indicates that as the number of family members who attended higher education increases so does student success. Siblings play a critical role in that they add an additional access point to social capital for the student in question. While siblings are important though, the results suggest that the number of family members who have attended college and not the relationship to the student may be a more important consideration.

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CHAPTER 1

INTRODUCTION

Undergraduate retention and success are central issues to the current education climate. While many barriers exist for students, even more barriers exist for first-generation college students (Atherton, 2014; Chen & Carroll, 2005; Choy, 2001; Hinz, 2016; Pascarella et al., 2004; Terenzini et al., 1996; Walpole, 2003). First-generation college students are more likely not of traditional college age, nonwhite, less academically prepared for college than non-first-generation college students, and more likely to be from a lower socioeconomic class (Atherton, 2014; Chen & Carroll, 2005; Choy, 2001). These demographic characteristics make attaining college success more difficult both academically (Atherton, 2014; Dika & D'Amico, 2016; Martin, 2015) and socially (Garriott et al., 2015; Stephens et al., 2012; Wilson & Kittleson, 2013). Therefore, understanding how first-generation college students experience college and potential barriers to success is an important step in developing interventions which can help first-generation college students attain the same level of success as their non-first-generation college student counterparts, also referred to as continuing-generation college students.

In reviewing the body of research on first-generation college students, the data consistently show that these students

are at greater risk for academic difficulty when they matriculate in college. Also consistently, this literature typically uses Bourdieu's theory of social capital as one of the primary theoretical explanations of this phenomenon (this is elaborated in Chapter 2). An inference that has been drawn from Bourdieu's theory is that one of the most important resources for the development of social capital are an individual's parents. This assumption easily translates into the assumption that non-first-generation college students can utilize their parents who have previously attended college as a resource in their development of social capital. Through this relationship, a student can gain an understanding of the rigor and expectations of higher education before experiencing it themselves. Since first-generation college students do not have access to this resource they enter college with lesser degrees of social capital, thus putting them at risk for failure.

While the general hypothesis about the relationship of parental education and college success is widely supported, there are several problems and gaps in this research. One of the most significant problems is that there is no consensus about the correct definition of "first-generation". As mentioned above, a logical conclusion that can be drawn from Bourdieu's theory is that parental education is an important source of social capital. But what do we mean when we talk about parental

education? The primary source of controversy is between two major operational definitions: (1) Did the parents attend college at all? or (2) Did the parents attend college but did not obtain a degree? It can be seen from these that the definition used by an institution will have a significant impact on how the institution reports the number of its first-generation students. Clearly, the second definition will produce a larger percentage of the student body classified as "first-generation". Even within these two broad definitions there are variations. Did one parent attend college but the other one didn't? Does it matter if the parent that attended college was the father or the mother? Does it matter if the college attended was a 2-year institution or a 4-year college or university? Does it matter how long the parent attended college? These varying definitions focusing on parental education make it difficult to compare results across research and limits the generalizability of the results.

While there are varying definitions of first-generation college students based on parental education, this assumption itself can be questioned. Based on this very logic, it is just as reasonable to assume that a student can obtain the necessary information from any number of sources. Specifically, the existing literature has paid almost no attention to the relationship between first-generation college students and other

members of their family in general, and to their siblings in particular. Based on either of the operational definitions of first-generation college student presented above, it is possible that a first-generation college student may have access to someone with lived experience attending college but would still be considered a first-generation college student.

It is this gap in the literature that this study will attempt to fill. This study will seek to better understand the impact having a sibling who has attended college has on a first-generation college student. Through data obtained from the New Student Questionnaire, I will seek to answer the primary research question: does having a sibling who attended college make a difference in the academic outcomes of a student? The basis of this research will utilize social capital theory (Bourdieu, 1986) to explain how siblings may impact first-generation college students. The results of this research will help practitioners understand how first-generation college students experience college which can be used to develop interventions which can help first-generation college students attain the same level of success as their non-first generation counterparts.

CHAPTER 2

REVIEW OF LITERATURE

Bourdieu's Social Capital Theory

While several theoretical frameworks can be used as a lens through which to view how first-generation college students experience college, a large number of studies have specifically used Social Capital Theory. First introduced by Pierre Bourdieu in 1986, capital refers to accumulated experiences and understanding which are collected by an individual through lived experience, which can then be applied by that individual to further advance their situation. Bourdieu also describes capital as taking many forms including social capital, cultural capital, and human capital. Social capital consists of social connections and institutional relationships which can be gathered by an individual from other persons or agents, institutions as a whole, and experiences of others which have been communicated to the individual.

Similarly to work done by Bourdieu, James Coleman brought the concept of human capital to the forefront and outlined the different forms of capital and how capital can be transferred from one person to another. Human capital is measured by the education outcomes of an individual such as degree attainment,

credentials, and awareness of one's abilities. This differs significantly from the work of Bourdieu which was primarily rooted in economic capital. As a person builds their social capital and expands their social network, they in turn expand their ability to gather information and understanding which increases their human capital. If one cannot gain the needed access to social capital, they cannot improve their human capital. Thus, Coleman wrote that social capital "facilitates certain actions; it constrains others" (Coleman, 1988, p.105)

While both social and human capital seek to gain skills and information through access to others, their primary divergence is the focus on social systems and the individual. Social capital is critical for advancing one's human capital. It is logical that if an individual cannot access the social networks and agents necessary to build their human capital, they have no other ways of doing so, and thus cannot achieve their goals. This paradigm is an interesting one to use when attempting to understand first-generation college students. First-generation students face significant challenges in gaining social capital with regards to higher education which ultimately impacts their ability to develop their own human capital (high GPA, degree attainment, etc.).

Especially difficult for first-generation college students is the access to social capital with regards to higher education. As guidance from parents is a primary form of gaining social capital, first-generation college students are already at a deficit since, by definition, their parents did not attain a college degree themselves. The student is then required to seek other forms of social capital to attain knowledge which continuing generation college students can gain from their parents, creating a disparity in that first-generation college students need larger social networks to obtain the same amount of social capital compared to continuing generation college students.

Further, the amount of social capital that a first-generation college student can gain from their parents may not be consistent across all students which was inferred by the work of Peralta and Klonowski. In their 2017 review of literature, Peralta and Klonowski found that the operational definition of a first-generation college student varied widely among published studies. Of the 24 studies reviewed, nine provided different operational definitions and 15 studies provided no operational definition. Among the different operational definitions used were, "neither parent earned a bachelor's degree" and "parents were not college educated." These two examples of definitions used in the literature highlight that some first-generation

college students may have parents who were college educated but did not attain their degree, while others have no experience at all attending or applying to higher education. This would drastically affect the amount of potential social capital a student may gain from their parents, especially given the possibility that a student can be considered first-generation yet have two parents with experience applying to an institution and taking college level courses. One potential reason for the variability in the definitions used throughout the literature is that institutions use varying definitions. The definition employed by an institution can impact the number of first-generation students identified and could have both marketing and financial aid implications.

A study by Dumais and Ward in 2010 reported findings which inform why parental education, and thus social capital, is critical to not only understand but also how a lack of social capital can create a barrier which prevents students from even entering higher education. Using the operational definition that first-generation college students are, "students whose parents have not attended college" Dumais and Ward performed logistic regression analysis on data from 2,799 first-generation college students. Their results showed that first-generation college students were less likely to even enroll in a 4-year institution. While not surprising, the operational definition

used in this study indicates that students who cannot gain any social capital from their parents may lack the social capital necessary to even take steps to apply to college. This particular study is strengthened by the use of an operational definition which would exclude students whose parents did not attain a degree but may hold some social capital which could be transferred onto the student.

This issue regarding parents' social capital and the impact this has on students is further explained by a study by Strayhorn in 2010 which sought to measure the influence of background traits, academic preparation for college, and sociocultural capital on academic achievement in college. Using survey data from more than 300,000 first-generation college students who identified as either African American or Latinx, hierarchical linear regression analysis revealed that first-generation college students who reported more instances where they discussed college with their parents earned higher grades in college. This demonstrates that as the number of social interactions concerning college increases, students gain social capital, which they can then activate when building their human capital.

The issue of first-generation college students and access to social capital is further compounded by their other

relationships apart from their parents as demonstrated by Kim et al. in 2018. Exploiting the gap in knowledge in both social capital and having no standard definition for first-generation college students, Kim et al. surveyed 359 students across multiple classes at a single university. Based on their responses, students were then allocated to either the first-generation college student group or continuing generation college student group. The first-generation college student group was further divided into respondents who indicated they had a sibling who attended college and those that did not (first-generation college students). The ANOVA results indicated that first-generation college students who had a sibling who attended college had higher levels of parental support, higher levels of peer support, better psychological and physical assistance scores, and academically performed more similarly to continuing generation college students than first-generation college students. This finding is yet another indicator that: (1) social capital does predict human capital in the form of academic success: (2) while first-generation college students can gain social capital from sources apart from their parents, they must seek out that additional support that is more readily available in the homes of continuing generation college students: and, (3) the operational definition of first-generation college students can have a significant impact on the

data that are collected and analyzed which has a direct impact on our understanding of first-generation college students.

The Impact of Socio-Economic Status on Student Success

While it is feasible that underrepresented minorities are not always first-generation college students the demographics are comparable, and since no definitive definition of first-generation college students exists in the literature, previous literature of underrepresented minority students in higher education may be helpful in understanding first-generation college students.

Careers in science, technology, engineering, and math (STEM) have grown rapidly in recent years. The U.S. Department of Labor and Statistics projects that in the next 10 years careers related to STEM will grow at a rate of more than 6%, with individual jobs (e.g., mathematical science occupations, STEM related secondary teachers, and computer engineers) projected to grow as much as 28%. This increase has created a need for more STEM professionals to be trained to enter the workforce.

Of those who already hold positions in STEM professions, professionals from traditionally underrepresented minorities are woefully underrepresented both as professionals (Clark, 2009) and as academics. While there is no difference in the intent to major in a STEM related major between racial and ethnic groups, underrepresented minority students are less likely to graduate with a STEM related degree (Chang et al., 2014). Further, minority students enroll in STEM programs less than white or Asian students (Covington et al., 2017; Williams, 2013).

One of the most prominent themes in the existing body of research regarding first-generation college students/underrepresented minority and STEM education is that of academic preparedness (Covington et al., 2017; Strayhorn, 2010; Williams, 2013). As seen in this literature, underrepresented minority students often lack the necessary skills (e.g., study skills and self-management) to succeed in higher education. Furthermore, there is also an association between academic preparedness and a student's socioeconomic status (SES) (Byrd & Macdonald, 2005) and race and ethnicity (Tierney & Sablan, 2014). When explored deeper, the impact of SES on course success and degree attainment in STEM education is critical.

It has been documented that underrepresented minority students are more likely to be from lower socioeconomic statuses which is a significant predictor of academic readiness (Tierney

& Sablan, 2014). This is understandable as low SES students often come from communities where taxes are low which results in underfunded school districts (Williams, 2013). This could also result in the inability of the school to offer advanced placement courses, and/or college prep programs which research has shown participation in is a positive indicator of academic readiness (Tierney & Sablan, 2014). This lack of access to college level courses and programs impairs students' ability to be exposed to the rigor which will be expected at the onset of the students' college experience. Further, an inability to access and participate in advanced placement courses can also result in students not being exposed to baseline information necessary which could help them succeed later in higher education.

In addition to the inability of school districts to offer advanced placement courses and/or college prep programs, districts from lower SES areas often pay teachers less than more affluent suburban school districts. This inequality of teacher pay may create an environment where the teachers in lower SES school districts are more likely to be entry-level teachers who are less experienced, and less prepared to help students enter the higher education pipeline (Williams, 2013). As seen in Strayhorn et al. (2010) the ability to contact a mentor for information regarding the college admission processes, college

information and discussing the reasons to attend college had a significantly positive effect on students' high school GPA and students' academic preparedness.

Interestingly, this leaves students from lower SES school districts at a distinct disadvantage. Given their location in lower socioeconomic areas, these schools are often underfunded and struggle to offer the courses and programs which are shown to have a positive impact on students' ability to become academically prepared to enter higher education. This would logically create an area where degree attainment and financial resources remain low causing a positive feedback loop where students' exposure to information about entering and persisting in college remains limited, stifling high school students' understanding on how to navigate the world of higher education.

To combat this lack of academic preparation, some entities have enacted curricula to better help prepare high school students for the transition to higher education. In a study by Bragg and Taylor (2014), the state of Illinois implemented a college and career readiness program. The Illinois college and career readiness program which began in 2007, sought to align high school mathematics, reading, and writing curriculum with that of college-level coursework. This was done to better prepare high school students and alleviate the need for developmental education once students did reach college. The

results of the Illinois college and career readiness program, though, were mixed. Overall, at the end of the intervention, students who completed the Illinois college and career readiness program were still not deemed college ready despite the change in academic preparation. Students did, however, make improvements in their pre- and post-test assessment scores suggesting the program could have merit (Tierney & Sablan, 2014).

This improvement does demonstrate that while students were not able to become college ready within the timeframe of the study, students were more academically prepared than prior to the intervention. It should also be noted that, methodologically, the assessment of the Illinois college and career readiness alignment pilot program did indicate that there were inconsistencies in the approaches taken at different sites in the pilot program. Therefore, while this study is methodologically flawed in its efforts to align high school and college curriculum, the basic effort to do so resulted in better students' preparation.

Ultimately, the literature regarding the association between underrepresented minority students and college readiness supports that underrepresented minority students are at a higher risk for entering higher education academically unprepared. This is due to a lack of access to courses and resources which help

ground students in the expectations and rigor of college classes. If and when these students matriculate into an institution of higher education, they are now subject to developmental education courses, financial implications, and delays in degree completion which can all serve to frustrate students.

The Potential Influence of Siblings

As demonstrated by Kim et al. in 2018, siblings can be influential in family member's academic success. Overall, literature on siblings' influence on each other exists but gaps still remain. Primarily, the research on siblings pertaining to higher education has focused on college choice (Aguirre & Matta, 2021; Ceja, 2006; Goodman et al., 2015), persistence (Shields, n.d.), and academic success (Hurtado-Ortiz & Gouvain, 2007). Cumulatively, the literature on siblings in higher education shows that there is an impact from one sibling to another (Aguirre & Matta, 2021; Bissell-Havran et al., 2012; Ceja, 2006; Goodman et al., 2015; Hurtado-Ortiz & Gouvain, 2007; Shields, n.d.). While the body of research is extensive, gaps remain.

Traditionally, research on sibling pairs focuses heavily on birth order whereby the older sibling's impact on the younger sibling is evaluated (Aguirre & Matta, 2021; Goodman et al., 2015; Shields, n.d.). This research has generally been concerned

with college choice. One such study completed by Aguirre and Matta explored how social networks, specifically siblings, affected college choice. The study found that having an older sibling enter college was a positive predictor of the younger sibling attending college. While significant, the study has limited generalizability as it was done on siblings attending higher education in Chile.

Similarly, a study of 348 students attending college in the United States found that older siblings do positively impact their younger siblings in attending college and persisting in college (Shields, n.d.). Through both interview and surveys the researcher demonstrated that having an older sibling who attended college resulted in more credit hours completed than students who did not report an older sibling who attended college.

One of the major limitations of this body of literature is that most studies only investigate the impact of an older sibling on their younger sibling. This creates a potential gap in the literature as it is feasible that a younger sibling may attend college prior to their older siblings. This is especially important to understand when conducting research on first-generation college students. As it has already been addressed, first-generation college students are often older than

continuing-generation college students which indicates that first-generation college students sometimes take time between secondary education and higher education. In this gap, potentially younger siblings could apply to and attend college prior to their older siblings doing so. When paired with Bourdieu's (1986)'s Social Capital Theory, regardless of the order that siblings attend college, the first sibling to attend college should provide some social capital to their sibling.

Ultimately, the body of research on siblings in higher education clarifies that having a sibling does impact a student in the journey through higher education but significant gaps in the literature remain. Research has still yet to significantly address how younger siblings impact older siblings if the younger sibling attended college first. Also in question is the intersection between first-generation college students and having a sibling. One of the few studies to address this was a study completed by Ceja (2006).

Exploring the college choice of first-generation Chicana students, Ceja demonstrated that having an older sibling attend college positively influenced their younger siblings to attend. Further, the older siblings were credited with educating their parents on the college application process and navigating financial aid. This study is significant in that it suggests

that the modeling of going through the application process provides some support for younger, first-generation college students.

Defining College Success

While previous literature has looked at the experiences and barriers of first-generation college students, only a small number of studies have sought to define and understand success of this specific group of students. Understanding the rates of student success among first-generation college students, and the reasons for this success, is paramount to any future understanding of how to develop strategies to better serve first-generation college students. While various methods for quantifying success have been utilized in the literature, some consistencies are present.

Currently, published studies on first-generation college students and success have used multiple ways to define what a successful first-generation college student is. The most common way of defining success has been by using a student's college GPA to determine the success of the student over the course of time (Cole & Espinoza, 2008a; Dennis et al., 2005; Dumais &

Ward, 2010; McCallen & Johnson, 2019; Strayhorn, 2010). While GPA is a common way to define success, many studies combine college GPA with other factors to gain a richer understanding of success.

One example of a study which incorporated multiple ways of quantifying student success was completed in 2005 by Dennis et al. In this analysis, the researchers surveyed 100 participants to measure first-generation college students' motivation, subjective adjustment to college as well as the perceived availability of social supports, in addition to students' GPA. Measurements such as student motivation are important factors to consider when attempting to define success, as previous literature has concluded that first-generation college students are less prepared than continuing generation college students. Therefore, it would be understandable that at the beginning of a student's enrollment in college individual class grades would not be as strong as compared to class grades in a student's final semester. While unique in its interpretation of success, this study's sample consisted of 70% women and 84% Latinx students which is not a representative sample and therefore can only be applied generally with reservation.

Apart from utilizing college GPA, other quantitative data have been used to define college success with regards to first-

generation college students. To understand college success across the entire college experience Dumais and Ward (2010) completed a study using data collected from the National Education Longitudinal Study and Postsecondary Education Transcript Study. The dependent variables analyzed in this study included not only college GPA but also the rate of bachelor's degree enrollment, and the receipt of a bachelor's degree. While a less commonly used variable, both the enrollment in a 4-year degree program and the completion of that degree are undoubtedly measures of a successful student. Interestingly, the analysis of the data revealed that while being a first-generation college student has a negative impact on initially enrolling at a 4-year institution, once enrolled, first-generation college students did not differ from non-first-generation college students with regards to their degree attainment. This demonstrates that while the GPAs of both first-generation college students and non-first-generation college students may have differed, the successful completion of a degree- the purpose of attending college- was the same.

Other studies have defined success in various other ways. This has been done both strictly quantitatively (Cole & Espinoza, 2008a; Dennis et al., 2005; Dumais & Ward, 2010), through a mixed methods approach (McCallen & Johnson, 2019), as well as qualitatively (Demetriou et al., 2017). In both mixed

method and qualitative studies, an attempt has been made to define success through the behaviors of the students which may explain their successful completion, or impending completion of a degree. An example of this was reported by Demetriou et al. (2017). In this study the authors conducted highly structured interviews with 16 first-generation college students who were within one semester of completing a bachelor's degree. The purpose of the study was to identify common behaviors of these successful college students. Analysis of the data revealed three common behaviors of successful students. These included actively engaging in coursework both during class time as well as outside of structured class time, engaging with faculty in mentored research opportunities, and participating in study organizations or community activities. These data suggest that both academic and social engagement, especially with faculty, are beneficial to first-generation college students.

Conversely, this study has some methodological limitations which must be considered. The most prominent is the issue surrounding the question of defining a successful student. While an operational definition was provided in an attempt to standardize what a successful student is, questions can be raised whether simply being on track to graduate is sufficient evidence to suggest that the behaviors of these students can be reliably used as behaviors which would benefit other first-

generation college students. Further, the generalizability of this study is also questionable provided that the insights in this analysis come from only 16 individuals all of whom were financially needy, from a single state and all attended the same institution. Finally, methodologically, inconsistencies inherent to qualitative research must be taken into account. This includes potential recall bias of the students' experiences as well as inconsistencies in the coding and analysis of the data which could call into question the validity of these data.

To combat the methodological inconsistencies of qualitative research yet have the context necessary to understand how behaviors are influenced by first generation status, some mixed methods studies exist. One such study completed by McCallen and Johnson in 2019 attempted to identify and understand how institutional agents are accessed and promote success in first-generation college students. The data were collected from 43 surveys and 10 structured interviews and all included participants who were first-generation college students. All quantitative data were collected using the National Survey of Student Engagement. Structured interviews were then collected with 10 students recruited through the in-person survey sessions. The researchers assessed students' college GPA, college experience, agents who distributed cultural capital

(i.e., faculty, academic advisor, etc.), and student behaviors regarding the interaction with the institutional agents.

Through the computation of Pearson correlations and coding of qualitative data, the study concluded that college GPA was significantly and positively associated with the frequency of talking about career plans with a faculty member, frequency of meeting with faculty members outside of coursework, and number of supportive agents of cultural capital. Similarly, college experience was also positively associated with meeting with faculty to discuss career plans and higher numbers of supportive agents. Of the agents of cultural support which were identified in the analysis, the majority of participants identified faculty (88%) and academic advisors (53%).

Similar to Cole and Espinoza (2008) and Dennis et al. (2005), the study sample has issues regarding generalizability. This included that the sample had a disproportionate number of both female and Latinx participants. There is also the potential of bias in the reporting of the data both quantitatively and qualitatively. Another methodological issue was the selection of the study sample. All survey participants were actively recruited and entered to potentially win a gift card for participation. This could introduce self-selection bias in a number of ways. First, only engaged students would be aware of

the opportunity to participate in this study. Additionally, only students who have the opportunity to participate in the data collection methods could participate. As seen in much of the literature, first-generation college students have less time to be involved in activities outside of required class time due to the need to work due to less financial security. Therefore, the students who participated in the survey were not representative. This is compounded even more as the sample of participants interviewed was drawn from the survey sample which has been established as not generalizable.

Summary

Overall, many studies have analyzed how being a first-generation college student impacts success. Success has many implications and can be categorized as either academic success (i.e., GPA) or social success (e.g., successfully transitioning to college or enjoying college). While many different operational definitions exist, most of the current literature employs multiple ways to define success in an effort to encapsulate any potential variability. This, however, has led to multiple gaps in the literature and several methodological limitations.

Overall, limitations of studies seeking to understand the impact first-generation college students' status has on college

success typically revolve around a lack of generalizability. This is an interesting limitation to address, though, as demographic studies have documented that first-generation college students are more likely to be from an underrepresented minority group and be female. These demographics suggest that all studies on first-generation college students will have generalizability limitations. Future research attempting to control for this will have further issues as a true gold standard definition of a first-generation college students does not exist. Regardless, future studies should seek to include as generalizable a study sample as possible.

CHAPTER 3

METHODOLOGY

As previously discussed, undergraduate retention and success are central issues which must be addressed to create a more equitable environment for first-generation college students compared to continuing-generation college students. While significant research has been completed on first-generation college students and academic success, less research has been completed to better understand alternative pathways by which first-generation college students access social capital beyond that of their parents [insert sib references here]. A better understanding of how first-generation college students access social capital and how this impacts their academic success will not only have an impact on future support programs specifically for first-generation college students, but all incoming college students by understanding how to measure and optimize students' human capital.

As the literature on first-generation college students has demonstrated, understanding the role of social capital is critical in understanding student success and developing strategies to improve student success. Lacking in the literature is both a focus and understanding of the role other social relationships (i.e., outside of that of the parents) play in

building the social capital of first-generation college students. Thus, the current study addressed the outstanding question of whether siblings impact first-generation college students' success through building their social capital.

The basic assumption of this research is that first-generation college students will have less academic success as compared to non-first-generation college students. These difficulties will be demonstrated in several ways:

- (1) Lower first semester GPAs
- (2) Lower first semester to second semester and first year to second year retention
- (3) Lower levels of motivation
- (4) Lower levels of self-perceived preparedness for college
- (5) Lower expectations for success in college

This study investigated this question by including first-semester, first-generation college students as two subgroups: (1) those first-generation college students who do not report having a sibling who attended college and (2) those whose sibling(s) attended college before them, and how these students compare with continuing-generation college students with respect to their academic success.

As demonstrated in the literature, first-generation college students do not achieve the same levels of academic success as CGCS (Atherton, 2014; Chen & Carroll, 2005; Dika & D'Amico, 2016; Pascarella et al., 2004; Terenzini et al., 1996). Therefore, understanding why this phenomenon occurs is critical to addressing the issue. As mentioned in Chapter 2, one underlying explanation for this difference in academic success is that first-generation college students lack social capital which would allow them to better navigate the environment of higher education. First introduced by Pierre Bourdieu in 1986, social capital is the network of social relationships which allow an individual to acquire knowledge. This was later expanded by Coleman in 1988, to identify that social capital leads to human capital which is gained through operationalizing one's social capital allowing them to gain experiences and skills. Coleman also highlighted that social capital was primarily drawn on from the parents. While this may be true, Bourdieu's explanation of social capital would suggest that other familial relationships can also be a source of social capital.

Using this rationale, it is conceivable that siblings who attend college, despite not having parents who attended, may be significant sources of social capital for their siblings. This phenomenon has only been explored in a limited capacity (Kim

et al., 2018). Unfortunately, though, the study completed by Kim and colleagues did not isolate the study population to only freshman. Throughout a student's first semester in college, they undoubtedly gain their own human capital through the experiences they have. Therefore, to truly understand the impact that social capital gained through siblings has, a study must isolate the study population to only those freshmen entering their first college semester.

Based on this gap in the existing literature, the current study focused on addressing the following overall research question: does having a sibling who attended college make a difference in the academic outcomes of a student? Several specific hypotheses were addressed in answering this general question:

Hypothesis 1: First-generation college students with siblings who attended college will have greater academic success as compared to first-generation college students with no siblings who attended college.

Hypothesis 2: Continuing-generation college students will have greater academic success as compared to first-generation college students with no siblings who attended college.

Hypothesis 3: First-generation college students with siblings who attended college and continuing-generation college students will be comparable with regards to academic success.

To test these hypotheses, methodology similar to the study published by Kim et al., will be used. Student data will first be categorized into two groups, continuing-generation college students and first-generation college students. For this study, continuing-generation college students will be defined as students who have at least one parent who attended some college. Those categorized into the first-generation college student group will be operationally defined as students where neither parent attended college. Following the initial stratification, the first-generation college student group will be subdivided into students who indicated they had a sibling who attended college before themselves, and first-generation college students who did not indicate they have a sibling attend college (Figure 1).

The sample for the study included all undergraduate students who enrolled as first-semester freshman in a large, Research 1 university in the Northeastern United States from fall 2016 through fall 2021. Transfer students were excluded as previous enrollment in higher education will have afforded these students access to social capital which first-semester freshman will not.

The data used for this dissertation were provided by the selected institution's Office of Institutional Research and

Assessment (IRA). These data included the primary variables that were used to define academic success-- the student's first semester GPA, first to second semester retention, first to second year retention, and four-year graduation rate. In addition, the IRA provided data on the student's SAT scores, high school GPA, and gender. IRA also provided data from a survey that is administered to all incoming freshmen- the New Student Questionnaire (NSQ). The NSQ is an 82 or 83 item survey (depending on the admission year) which is administered to all incoming undergraduate freshman and transfer students who complete placement exams prior to the first semester of college at the participating institution. The NSQ is used primarily by the participating institution to monitor changes in students' characteristics, attitudes, intentions, and aspirations.

Among the variables included in the NSQ are the student's self-reported learning disability, as well as high school grades in math, English, foreign language, and science. Based on the results of other studies regarding first-generation college students, financial factors such as anticipated work hours, family income and student income were also included. Most critically, the NSQ asks the students to self-report the educational levels of their father, mother and, if applicable, siblings. These data were used to define first-generation status.

While all of the variables which are included are grounded in the literature surrounding first-generation college students and academic success, they are not without some limitations. This analysis is a secondary analysis. Therefore, the data were not collected by the principal investigator. Moreover, the critical variable of parental and sibling education is self-reported. The possible limitations of this issue will be discussed in Chapter 5.

CHAPTER 4

RESULTS

Introduction

Chapter 4 will be presented in three sections. Section I will present descriptive data on the sample used for the analyses. Section II will present the results to answer the primary research question. Finally, Section III will present a summary of the results. Before any of the results are presented, several issues need to be discussed as a context for the data analysis.

The first issue concerns the sample size used for the analyses. The data set contains all students admitted to the institution who enrolled in their first semester across a six-year span (fall, 2016 through fall, 2021). This resulted in a sample of more than 30,000 students. While this sample provides an excellent longitudinal view of the possible impact of having a sibling attend college, a sample size this large has enormous power. While this is beneficial from several perspectives it also means that almost any inferential analysis that is conducted will produce statistically significant results. Consequently, all analyses that will be reported will include the appropriate effect size metric. Since a large number of analyses were conducted on the data, emphasis will be placed on those where the effect size is considered at least medium (Cohen, 1968).

A final issue involves the way the analyses were approached. Since the study is exploratory a decision was made to focus on univariate

analyses where individual variables are investigated singly. As mentioned above, this has the effect of producing a large number of statistical tests, but it was felt that this approach was more appropriate for this research. Some multivariate analyses will be presented where this seemed appropriate.

I. Sample Description

Table 4.1 includes the number of students in each of the admission cohorts used for the research.

Table 4.1: Admission Cohort Sample Sizes

Semester	Number of Students
FALL	29,736
SPRING	421
Total	30,157

As shown in Table 4.1, both fall and spring admission cohorts are included in the sample. Most of the analyses will involve this entire data set. However, certain variables (for example, four-year graduation) are appropriate only for students who are in the fall admission cohorts since most programs are based on a four-year matrix starting with the first fall semester. Descriptive data for gender and race are presented in Table 4.2 and 4.3.

Table 4.2: Gender Distribution

Gender	Frequency	Percent of Sample
Female	16,854	55.8%
Male	13,322	44.2%

Table 4.3: Race Distribution

	Frequency	Percent of Sample
African American.	3,501	11.6%
American Indian	20	.01%

Asian	3,681	12.2%
Hispanic	2,173	7.2%
International	1,689	5.6%
Multiple	1,086	3.6%
Pacific Islander	14	.01%
Unknown	634	2.1%
White	17,411	57.7%

As shown in Tables 4.2 and 4.3, the institution where this study was conducted has a somewhat higher percentage of females than males. The percentage of the students who are white is approximately 58%.

Table 4.4 presents the distribution of educational levels for fathers. Table 4.5 present the same results for mothers, and Table 4.6 presents these data for siblings.

Table 4.4: Fathers' Educational Level

Level of Education	Frequency	Percent of Sample
Did not graduate high school	2,020	6.7%
High School Graduate	6,738	22.3%
Some College	5,041	16.7%
College Grad	9,279	30.7%
Graduate Degree	6,428	21.3%
Missing	670	2.2%

Table 4.5: Mothers' Educational Level

Level of Education	Frequency	Percent of Sample
Did not graduate high school	1,523	5.0%
High School Graduate	5,116	16.9%
Some College	5,358	17.8%
College Grad	10,843	35.9%
Graduate Degree	6,684	22.2%
Missing	651	2.2%

Table 4.6: Siblings' Educational Level

Level of Education	Frequency	Percent of Sample
Did not graduate high school	653	3.1%
High School Graduate	5,061	23.3%
Some College	1,651	7.6%
College Grad	7,376	34.1%
Graduate Degree	6,262	29.5%
Missing	584	2.7%

As shown in Tables 4.4, 4.5 and 4.6, mothers have slightly higher educational levels as compared to fathers, and siblings have higher educational levels compared to both fathers and mothers. As mentioned in Chapter 3, first generation is defined as having only a high school education. One issue in this definition is that for siblings' education there was a sixth option: "I do not have any college age

siblings". A total of 11,588 respondents chose this option, or 38.4%. Using the data presented in Table 4.6, the percentage of siblings without any college is 26.4%. To be consistent, the definition used for fathers' and mothers' education was also used for siblings. Using fathers', mother's, and siblings' education, a first-generation student is someone where none of the three have attended college. This also produces various combinations of the three. All of the possible combinations are presented in Table 4.7.

Table 4.7: All Possible Combinations for Fathers', Mothers, and Siblings' Education

Group	Frequency	Percent of Sample
No one has attended college	871	4.9%
Only father has attended college	228	1.3%
Only mother has attended college	514	2.9%
Only sibling has attended college	2,067	11.6%
Father and Mother have attended college but not sibling	1,066	5.9%
Father and sibling have attended but not mother	1,142	6.4%
Mother and Sibling have attended college but not father	2,044	11.5%
Father, mother, and sibling have attended college	9,915	55.6%

Descriptive based this seven-group analysis are presented in Table 4.8.

Table 4.8 High School GPA, SAT English, and SAT Math for All Possible Combinations for Fathers', Mothers, and Siblings' Education

Group	High School GPA	SAT English	SAT Math
No one has attended college	3.41	575.66	565.18
Only father has attended college	3.48	585.22	570.59
Only mother has attended college	3.53	578.43	568.56
Only sibling has attended college	3.57	589.44	573.23
Father and Mother have attended college but not sibling	3.58	590.13	582.31
Father and sibling have attended college but not mother	3.67	599.32	591.35
Mother and Sibling have attended college but not father	3.66	600.59	594.18
Father, mother, and sibling have attended college	3.69	623.32	615.15

As shown in Table 4.8, students with a father, mother, and sibling who have attended college have higher high school GPAs, SAT English and math scores compared to students who have fewer family members who attended college. There is also a linear increase in high school GPA as the number of family members who attended college increases.

II. Analyses Relevant to the Research Question

The primary research question for this study is: does having a sibling who attended college make a difference in the academic outcomes of a student? While answering this question will be the major focus of the analyses, Table 4.7 demonstrates that this question is embedded in a far more complex matrix of possible sources of assistance that a student can obtain from their family network. Consequently, all the analyses will be conducted with this complexity in mind. The academic outcomes that are used for the analyses are first semester GPA, first to second semester retention, first to second year retention, and four-year graduation. For each of these dependent variables there will be two analyses presented. The first will look only at sibling education regardless of the educational attainment of the mother and father. The second will combine all three as shown in Table 4.7.

A. First Semester GPA

The means and ANOVA results for first semester GPA for students whose sibling did or did not attend college are presented in Table 4.9.

Table 4.9: Means and ANOVA Results for First Semester GPA

	Mean GPA (Standard Deviation)	F	Sig.	Partial Eta Squared
Sibling Did not Attend College	2.98	183.219	.000	.010
Sibling Attended College	3.19			

As shown on Table 4.9, there is a significant difference in first semester GPA between students whose sibling did or did not attend college. The effect size, however, is small. The first semester GPAs for all the possible combinations of family support are presented in Table 4.10.

Table 4.10: First Semester GPA for all Combinations of Family Support

Group	First Semester GPA
No one has attended college	2.88
Only father has attended college	2.95
Only mother has attended college	2.96
Only sibling has attended college	3.09
Father and Mother have attended college but not sibling	3.08

Father and sibling have attended college but not mother	3.13
Mother and Sibling have attended college but not father	3.10
Father, mother, and sibling have attended college	3.25

The ANOVA conducted on the data in Table 4.10 was significant at the .001 level with a medium effect size ($F = 345.67$, $p = .000$, partial eta squared = .079). As shown in Table 4.9, as the number of members of a student's familial support increases, the student's first semester GPA increases.

B. First to Second Semester Retention

The mean percentage of students who were retained from fall to spring and ANOVA results are presented in table 4.11.

Table 4.11: Means and ANOVA Results for First to Second Semester Retention

	Mean % Retained	F	Sig.	Partial Eta Squared
Sibling Did not Attend College	89.15%	28.188	.001	.002
Sibling Attended College	95.38%			

As shown in Table 4.11, there is a significant difference in first to second semester retention between students whose sibling did or did not attend college. The effect size, again, is small.

Table 4.12 presents the mean percentage of first to second semester retention for all combinations of family education.

Table 4.12: First to Second Semester Retention for All Combinations of Family Support

Group	First to Second Semester Retention
No one has attended college	87.52%
Only father has attended college	91.13%
Only mother has attended college	92.68%
Only sibling has attended college	95.12%
Father and Mother have attended college but not sibling	96.33%
Father and sibling have attended college but not mother	95.69%
Mother and Sibling have attended college but not father	96.78%
Father, mother, and sibling have attended college	97.03%

The ANOVA for Table 4.12 was significant at the .001 level with a medium effect size ($F = 23.945$, $p = .001$, partial eta squared = .06). This result demonstrates that as the number of members of a student's familial support increases a student is more likely to be retained from fall to spring of their freshman year.

C. First to Second Year Retention

The mean percentage of students who were retained from the first to the second year and ANOVA results are presented in table 4.13.

Table 4.13: Means and ANOVA Results for First to Second Year Retention

	Mean % Retained	F	Sig.	Partial Eta Squared
Sibling Did not Attend College	86.15%	28.19	.000	.002
Sibling Attended College	90.38%			

As shown in Table 4.13, there is a significant difference in first to second year retention between students whose sibling did or did not attend college. The effect size, again, is small.

Table 4.14 presents the mean percentage of first to second year retention for all combinations of family education

Table 4.14: First to Second Year Retention for All Combinations of Family Support

Group	First to Second Year Retention
No one has attended college	82.6%
Only father has attended college	82.2%
Only mother has attended college	86.9%
Only sibling has attended college	87.3%
Father and Mother have attended college but not sibling	89.4%
Father and sibling have attended college but not mother	91.2%

Mother and Sibling have attended college but not father	91.5%
Father, mother, and sibling have attended college	92.3%

The ANOVA in Table 4.14 was significant at the .001 level with a medium effect size ($F = 11.928$, $p = .001$, partial eta squared = .06). This result demonstrates that as the number of members of a student's familial support increases a student is more likely to be retained from the first to the second year.

D. Four-Year Graduation Rate

The means and ANOVA results for four-year graduation for students whose sibling did or did not attend college are presented in Table 4.15.

Table 4.15: Means and ANOVA Results for First to Second Year Retention

	Mean % Graduated in Four- Years	F	Sig.	Partial Eta Squared
Sibling Did not Attend College	54.33%	70.319	.000	.009
Sibling Attended College	67.14%			

As shown in Table 4.15, there is a significant difference in four-year graduation between students whose sibling did or did not attend college. Table 4.16 presents the mean percentage for all combinations of family support for four-year graduation.

Table 4.16: Four-Year Graduation Rate for All Combinations of Family Support

Group	Four-Year Graduation
No one has attended college	48.79%
Only father has attended college	53.61%
Only mother has attended college	53.51%
Only sibling has attended college	59.09%
Father and Mother have attended college but not sibling	59.23%
Father and sibling have attended college but not mother	63.30%
Mother and Sibling have attended college but not father	60.84%
Father, mother, and sibling have attended college	70.66%

The ANOVA in Table 4.16 was significant at the .001 level with a small to medium effect size ($F = 22.00$, $p = .001$, partial eta squared = .019). This result demonstrates that as the number of members of a student's familial support increases a student is more likely to graduate in four years.

As mentioned in Chapter 3 the data set that was used for the analyses presented above to answer the major research questions

contained the complete set of responses to the New Student Questionnaire (NSQ). To extend and elaborate the results presented above, several of these questions were analyzed. To keep this as simple as possible, the presentation of these results was simplified in three ways. First, only results that were significant at the .001 level or beyond will be reported. Second, only the two most extreme groups used in the analyses for the major research questions (neither the father, nor mother nor sibling attended college- None; or all attended college - All Three) will be compared. Finally, since all the questions on the NSQ use some form of Likert scale, only the most extreme choice will be reported. Since these are exploratory, they will not be described in detail. Instead, the major findings will be briefly summarized.

Multiple Regressions

All four of the dependent variables were analyzed through multiple regression where father's, mother's and sibling's education were three of the predictors with high school GPA, SAT Math, SAT English, and family income as additional predictors. Ordinary least square regression was used for first semester GPA; binary logistic regressions were used for retention and four-year graduation. As would be expected from the sample size all the regressions were significant and in almost all cases each of the predictors was significant. Table 4.21 presents the rank order of magnitude for each predictor in the regression.

Table 4.17: Results of Multiple Regressions

Order of Predictor in Model	First Semester GPA	First to Second Semester Retention	First to Second Year Retention	Four-year Graduation
1	High School GPA	Family Income	Family Income	High School GPA
2	SAT English	High School GPA	High School GPA	Family Income
3	Family Income	SAT Math	Sibling's Education	Sibling's Education
4	Sibling's Education	Sibling's Education	SAT Math	SAT Math
5	Father's Education	SAT English	Father's Education	SAT English
6	SAT Math	Father's Education	SAT English	Father's Education
7	Mother's Education	Mother's Education	Mother's Education	Mother's Education

As shown in Table 4.17, high school GPA and family income were the best predictors of first to second semester retention, first to second year retention, and four-year graduation. High school GPA was also the best predictor of first semester GPA. Interestingly, sibling's education is always a stronger predictor of academic success than mother's education or father's education. The results of this analysis demonstrate that previous academic success in high school and higher socioeconomic status play seminal roles in determining academic success in college.

Questions Concerning Planned Activity While in College

The NSQ contains the question "What is the chance that you will do the following while you are at XXXX?". Responses to several of these planned activities are presented in Table 4.18.

Table 4.18: Planned Activities While in College

NSQ Question	Percentage of "None" Group Answering "Very Good Chance"	Percentage of "All Three Group" Answering "Very Good Chance"
Be a student leader	42.2%	27.5%
Work full time while attending college	26.9%	6.5%
Need more than 4 years to complete degree	16.0%	6.8%
Make close friends	80.7%	91.1%
Work with a professor on a research project	57.1%	45.4%
Receive encouragement from family	70.1%	86.2%

There are several things that are interesting about the results presented in Table 4.18. First, students who have nobody who attended college think they will be a student leader and that they will do research with a professor more than the "All Three" group. This sounds positive and aspirational, but also somewhat unrealistic. That could be taken to mean that a student who had a father, or mother, or sibling, or all three, has a more realistic expectation about what college is like. Second, students with all three think they will make

friends and that they will receive encouragement from their family more than the "None" group. The question about working full-time is consistent with the previous results as this seems to be related to SES. Also, the question about taking more than four years to graduate is also consistent with what was shown in some of the other analyses.

The Motivational Questions

The NSQ contains several questions asking the student to respond to various aspects of their self-perceptions. The responses to several of these are presented in Table 4.19.

Table 4.19: Responses to Motivational Questions

NSQ Question	Percentage of "None" Group Answering "Definitely Agree"	Percentage of "All Three Group" Answering "Definitely Agree"
Most of my teachers considered me one of the harder workers in their class.	48.8%	42.3%
I enjoy studying and reading about things on which I am working	48.6%	38.8%
I know how to manage my time.	36.4%	27.4%
My plans have frequently seemed so full of difficulties that I have had to give them up	5.7%	1.6%

The data presented in Table 4.19 at first appear contradictory to the results presented elsewhere in Chapter 4; however, these results give significant insight into the mindset of students entering higher education. The responses to the questions, "Most of my teachers considered me one of the harder workers in their class", "I enjoy studying and reading about things on which I am working", and "I know how to manage my time" were all higher in the "None" group compared to the "All Three Group." While impossible to confirm if these are accurate statements, they all speak to a positive perceptions toward statements that are indicative of students who go to college.

Questions Related to Academics

The NSQ contains a series of questions involving academics. Three of these are presented below with the question contained in the table title.

Table 4.20: Scholastically where did you rank in your high school graduating class.

NSQ Question	Percentage of "None" Group Answering "Top 10 Percent"	Percentage of "All Three Group" Answering "Top 10 Percent"
Percent in top 10% of graduating class	28.7%	23.2%

The data in table 4.20, again, are not possible to confirm but if accurate, demonstrate a commitment to academic success that is higher in the "None" group compared to the "All Three Group." This is perhaps due to respondents in the "None" group having less understanding of the academic rigors of higher education; therefore, these students were more inclined to focus on academic success in high school to be admitted to an institute of higher education.

Table 4.21: In general, how well do you feel that your high school prepared you to do college work?

NSQ Question	Percentage of "None" Group Answering "Very Well"	Percentage of "All Three Group" Answering "Very Well"
High School Preparation for College	22.8%	26.9%

The results of Table 4.21 presented above show that respondents in the "All Three Group" felt more strongly that their high school adequately prepared them for college level work. The results of this question can be interpreted in multiple ways. First, these data could be indicative of how well a student understands what "college level work" means. Respondents in the "All Three Group" would potentially better understand the rigors of higher education from their exposure to their sources of social capital. Respondents in the "None" group, not having the same understanding, may have been unable to answer the question. Second, the data could also be indicative of SES. As discussed previously, there is a positive relationship between

education levels of parents and SES. Consequently, respondents from the "All Three Group" are potentially coming from more advantaged areas and high schools and thus, are more confident in their preparation for college.

Ultimately, the data presented in the chapter above demonstrate some important findings. First, sibling's education is a better predictor of academic success than mother's education or father's education. Furthermore, there is a cumulative effect of social capital. As a student is exposed to more individuals who have attended college, they themselves are more likely to be successful. While this is true, students who have less sources of social capital seem to be aware of this. In their understanding they take steps to prepare themselves for college level as much as possible.

CHAPTER 5

Discussion

Extensive research has shown that first generation students do not perform as well in college as continuing generation students (Afeli et al., 2018; Almeida et al., 2019; Atherton, 2014; Chen & Carroll, 2005; Ives & Castillo-Montoya, 2020; Lohfink & Paulsen, 2005; Lombardi et al., 2012; Pascarella et al., 2004; Warburton et al., 2001). These markers of success include such variables as first semester GPA, retention beyond the first year, and a lower rate of four-year graduation. While there have been different definitions of what it means to be a first-generation student almost all the research has focused on parental education as the critical defining component. More recent research, however, has established the need to investigate the extent that others, outside of the parents, influence academic success of a first-generation college student. Despite this need, little research to fully understand this phenomenon has been completed. Therefore, the current study investigated whether siblings impact first-generation college students' success through building social capital. The findings of this study are a contribution to the scholarly and applied efforts to understand how social capital is built and the role that other members of a student's social network play in influencing success.

Chapter 5 will present a summary of those findings within the context of the current literature and outline how the results of this research can be put into practice. It also addresses limitations of

the research which was conducted and provides direction for future research.

Summary of Findings

The primary research question of the current study was: does having a sibling who attended college make a difference in the academic outcomes of a student? To address this primary research question three hypotheses were created and will be addressed below.

The first hypothesis was that first-generation college students with siblings who attended college will have greater academic success as compared to first-generation college students with no siblings who attended college. This hypothesis was supported by the analysis as students with siblings who attended college had a significantly higher GPA, first to second semester retention rate, first to second year retention rate, and four-year graduation rate.

These results are supported by the findings of Kim and colleagues (Kim et al., 2018) which suggested that first-generation college students who were the first in their families to attend college had a lower likelihood of academic success. While other studies have researched this impact of siblings on academic success, the primary body of evidence has focused on students' experience, perceptions, and motivation for pursuing higher education (Delgado, 2020; Goodman et al., 2015; Shields, n.d.).

The second hypothesis was that continuing-generation college students will have greater academic success as compared to first-

generation college students with no siblings who attended college. Again, the analysis supported this hypothesis. While this finding has been supported by previous studies (Kim et al., 2018), other research has called into question the definition of what constitutes "first-generation" status (Peralta & Klonowski, 2017). Since no consistent definition exists, analyzing the different combinations of family support created the clearest picture of how first-generation college students compare to continuing-generation college students.

The analysis again demonstrated that regardless of the combination of family support, students who identified as the first in their family to attend college had poorer outcomes (GPA, first to second semester retention rate, first to second year retention rate, and four-year graduation rate) than any combination of family support.

The third hypothesis was that first-generation college students with siblings who attended college and continuing-generation college students will be comparable with regards to academic success. This was indirectly supported by the data. Again, when the data are nuanced by breaking out all possible combinations of familial support, first-generation college students with a sibling who attended college had better academic success than those first-generation college students who did not have a sibling. When compared to students with only one parent who attended college but no sibling, first-generation college students with a sibling have similar first semester GPAs, retention rates, and four-year graduation rates. Interestingly, across all outcomes the most successful students have three sources of familial

support (mother, father, and sibling). This is a novel finding and has not been demonstrated at this level of detail in the current body of literature. While similar to findings in other studies (Kim et al., 2018), no study has looked at familial sources of support individually.

By breaking out the sources of familial support by individuals in a student's social network (mother, father, sibling, etc.) rather than by generation, the premise by which a student is identified as "first generation" is challenged. While the findings of this study support that continuing generation college students have better academic outcomes than first-generation college students do, the results of this analysis suggest that this may be more of a function of how much support a student has rather than who (mother, father, siblings) provides said support. This requires more discussion and may best be explained through the use of a theoretical model.

Overall, the primary findings of this study were that first-generation college students without a siblings who attended college had lower academic outcomes than first-generation college students who had a sibling who attended college or continuing-generation college students. Further analysis revealed that as the number of individuals who attended college increased so did academic outcomes.

One possible explanation for this is that individuals who have attended college help to build the social capital of the student in question. According to Bourdieu, the influence of the parent's college experience has created an environment where the student has

been able to glean some understanding of the rigors of college. While not specified, this could be an understanding of how to navigate the systems of higher education or the expectation of college-level courses. The findings of this dissertation support this, as students with parents who attended college have higher first semester GPAs than those students who had no one attend college.

The results also demonstrate that having a sibling is associated with an increase in academic success. Siblings play a role in creating an additional avenue for the transference of social capital. This demonstrates that as a student is exposed to their siblings who have lived experience in college, they themselves are more successful. This has already been demonstrated by much of the literature on first-generation college students (Kim et al., 2018). The findings align with those of Kim et. al. and in accordance with those findings, the results demonstrate that siblings can also play a role in the transition of social capital onto their siblings. While Kim et al. were able to show more first-generation college students with siblings had greater academic success than those first-generation college students that did not, the study did not seek to understand if the impact of a sibling was unique to their familial position or simply an additional source of social capital.

The additional analyses completed create a much more nuanced picture of how first-generation college students are influenced. By stratifying respondents by all possible combinations of fathers', mothers', and siblings' education, a different narrative emerges. For

this analysis, each family member identified by a respondent was considered as a source of social capital. For the purposes of this study, each person who was identified as having attended some college by a respondent would then be considered a source of social capital. The rationale for this is congruent with Bourdieu's initial description of how a person with a particular lived experience can increase the social capital of another. While the focus on parents' influence of a child is understandable, multiple sources could exist such as siblings. Based on the responses presented previously in Chapter 4, each respondent had a potential of three sources of social capital (mother, father, and sibling). Interestingly, as the number of sources of social capital increased, so did academic outcomes. This trend was seen in all outcomes (GPA, first to second year retention, and four-year graduation rate). This finding supports that social capital is cumulative. The results of the multiple regressions nuance this finding even more. As shown in those regressions, having a sibling that attended college was always more important than having either a mother or father with this experience. This makes sense in many ways and is consistent with the theory of social capital. If the issue is having someone to talk to about what college means and what to expect, then talking to someone with a more recent experience should be more important.

The Effect of Socio-Economic Status (SES)

While the development of social capital is a compelling explanation for the results of research on first-generation students

in general, and this study in particular, there is an issue that needs to be considered. While socio-economic status is a complex phenomenon with multiple components, almost all definitions of SES involve parental education. By definition, research on first-generation college students is also research on SES. The body of research investigating the impact of SES on student achievement parallels almost exactly the research on first-generation college students. The question could be asked therefore: is the research on first-generation college students simply research on SES?

The results presented in this study show that students whose mother, father and sibling attended college have the highest level of academic success. Clearly, families that can find the resources for all of its members to attend college have a higher level of SES. In the data set available for analysis for this study, there was one question on the NSQ that asks for family income. Since this is self-reported, no analysis on this variable was included in Chapter 4 since the variable is of questionable validity. However, each of the dependent variables reported in Chapter 4 were analyzed using self-reported family income as a covariate. In all the cases, the partial eta squared was significantly reduced. All of this is simply to say that research on first-generation college students should attempt to understand the impact of this variable in a nuanced and broadened context.

Limitations

It is also important to acknowledge the limitations of this study as they are critical in properly interpreting the results as well as improving academic supports for first-generation college students. The primary limitation is how sibling education is recorded in the New Student Questionnaire. The question, "What is the highest level of formal education completed by any of your college age (18 years of age or older) siblings?" has six possible answers. These include, "did not graduate from high school", "graduated from high school", "some college education, but did not graduate", "currently enrolled in college", "graduated from college", or "I do not have any college age siblings". The final option, "I do not have any college age siblings" is ambiguous and could be interpreted in different ways. Potentially, a respondent could have interpreted this question that a much older sibling who did experience college was no longer "college age". As defined in this research, that student would then not be included in this study.

In line with the current literature on first-generation college students for this study, I chose to operationally define first-generation as those college students where neither the mother nor the father attended college. This was done to eliminate the possible influence of a parent or parents who attended college but did not obtain a degree. This is a more conservative definition but helps eliminate the possibility of parents who did not complete their degree transferring their social capital to their children.

Additional limitations stem from the study design. By performing a secondary analysis of data, certain details are impossible to glean from the data. Of note is that it is impossible to understand how many siblings a respondent had. Similarly, respondents were not asked to identify other sources of potential social capital as this was not the intention of the survey. For example, having a somewhat older close friend who is attending college could also serve as a source of information about college and how to navigate within it.

Another limitation which stems from the study design is the way the sample was organized. Additional insight may have been gained by analyzing the data longitudinally by semesters. Performing each analysis by semester, a more nuanced understanding of data could have occurred. This is a consideration for future research.

Future Research

The findings of the current study have several implications for future research. As clearly demonstrated in this study, the influence of social capital is gleaned from sources outside of the mother and father. While the mother and father are important influences, the cumulative impact of these other sources of social capital need to be explored in more depth. While this study specially looked at siblings, it is feasible that members of the extended family or non-family members (neighbors, mentors, etc.) could also play a role in the transference of social capital.

Additionally, researchers should also consider reevaluating the definition of first-generation college student considering these

findings. While a true first-generation college student cannot build their social capital from the experiences of their parents, this study suggests that by compiling the lived experiences of siblings, a student who is defined as a first-generation college student could build the same amount of social capital as a non-first generation college student.

Furthermore, future researchers should consider analyzing data longitudinally, as mentioned above. This would better capture external factors which may influence student success. For example, the data in this study includes data collected by incoming students during the COVID-19 pandemic. The many ways that the pandemic influenced the data though, was lost by not analyzing each semester cohort separately.

Finally, future research on identifying the optimal number of sources of social capital would be particularly critical to the translation into practice. While this study has determined that the number of sources of social capital is critical in determining student success, it is not currently possible to determine that any combination of social capital sources is better than any other. Future research could continue to investigate different combinations of sources of social capital to determine how many sources and what combination of sources is optimal for academic success.

Translation into practice

As discussed above the findings of this research will be impactful in the higher education community as it could be the basis for intervention programs which could positively influence the success

of first-generation college students. First, the results of this study call into question the current definition of first-generation college students. Instead, with the guidance of more research, institutions should consider assessing the number and impact of different sources of social capital in surveys such as the New Student Questionnaire which was utilized for this study. With these data, institutions could seek intervention programs aimed at connecting students with mentors who could provide the additional relationships necessary to positively impact student success. Similar programs have been shown to be beneficial (Perna, n.d.1; Tomaske et al., 2016); however, most programs tend to focus on skill development rather than specifying mentorship.

Conclusion

Literature surrounding social capital and first-generation college students is primarily aimed at understanding how students are positively influenced to help all students succeed. As demonstrated above, as the number of sources of social capital increase so do outcomes. This is demonstrated in higher GPAs, better first to second year retention, and four-year graduation rates.

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