2015

CONNECTING THE DOTS: SOCIAL CAPITAL AND THE COLLEGE-GOING BELIEFS OF RURAL APPALACHIAN STUDENTS

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CONNECTING THE DOTS: SOCIAL CAPITAL AND THE COLLEGE-GOING BELIEFS OF RURAL APPALACHIAN STUDENTS

DISSERTATION

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Education at the University of Kentucky

By
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Lexington, Kentucky

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2015

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ABSTRACT OF DISSERTATION

CONNECTING THE DOTS: SOCIAL CAPITAL AND THE COLLEGE-GOING BELIEFS OF RURAL APPALACHIAN STUDENTS

First-generation students and students of lower socioeconomic status often prepare for postsecondary education without the benefit of information provided by their families, resulting in lower levels of college access (Lundberg, 2007). Few researchers have sought to understand how potential first-generation college students might go about obtaining the necessary information for a successful transition to college. The purpose of this dissertation was to determine to whom students talk about college and to explore the potential reciprocal relationship between resources for and information about college provided by others and students’ educational beliefs.

This dissertation consisted of two empirical studies. In the first study, the composition of students’ networks and differences in social capital were examined among middle and high school students from a rural Appalachian school district (N = 388). Students reported to whom they talked about college and answered questions about each person that they named. Junior and senior high school students spoke to fewer individuals about college than middle grades students. Senior high school students spoke to individuals in their networks more frequently than middle grades students. Boys spoke to fewer individuals about college than girls. Boys received fewer pieces of information about college compared to girls. Potential first-generation college students had fewer individuals in their network who had completed a college degree.

The purpose of the second study was to examine the relationship between students’ college information networks and students’ beliefs about college. Participants were 364 students in Grades 6-12 from a rural Appalachian school district. Information on students’ college information networks was collected to better understand the relationship among first-generation college students’ access to social capital, their college-going self-efficacy, and their educational aspirations. College-going self-efficacy and educational aspirations were both significant predictors of available social capital. Social capital was not a significant predictor of students’ educational beliefs. College cultural capital was a significant predictor of students’ social capital and educational beliefs. Results of this
dissertation are discussed relative to social cognitive theory and suggestions for educational interventions and future research are offered.

KEYWORDS: Rural Students, First-Generation College Students, Social Capital, College-Going Self-Efficacy, Educational Aspirations

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Chapter 1: Introduction

First-generation students (i.e., students who have not had a parent attend a four-year college) and students of lower socioeconomic status often face the prospect of a postsecondary education without the benefit of prior experience and information provided by family members who have attended college. This lack of information may lead to reduced levels of college enrollment for these students. Potential first-generation college students often belong to families that are also lower in socioeconomic status (Terenzini, Spring, Yaeger, Pascarella, & Nora, 1996). Students who are both first-generation college students and from families of lower socioeconomic status may face a combination of financial, informational, and cultural barriers that can make college-going particularly challenging. These barriers to college may be particularly salient for rural Appalachian students in eastern Kentucky, who have historically lower college attendance rates and higher levels of economic distress (Appalachian Regional Commission, 2013a, 2013b; Kentucky Council on Postsecondary Education, 2008). Rural Appalachian students with comparatively lower levels of education and socioeconomic status may lack access to important information and resources about college. As a result, these students may experience decreased confidence in their ability to go to college. In this dissertation, I will first explore the ways in which students in rural eastern Kentucky communities obtain information about college. I will then investigate the relationship between students’ college information networks and their college-going self-efficacy and educational aspirations.
Organization of the Dissertation

This dissertation is organized into several chapters. In the first chapter, I will introduce the key terms and setting that will be used in this dissertation. Next, I will describe the problem that I plan to address in this dissertation. The second chapter introduces the theoretical framework of the dissertation research, which comprises two empirical studies. The third chapter provides an overview of the first empirical study. The fourth chapter provides an overview of the second empirical study. The fifth chapter summarizes and discusses the findings of this dissertation.

Key Definitions and Setting

In this section, I will define the key terms that will be used throughout this paper and describe the setting of the dissertation studies.

First-generation college students. I have chosen to define a first-generation student as a student who does not have a parent who has attended a four-year college. This definition is consistent with that used in previous research relating to first-generation college students (e.g., Engle, Bermeo, & O’Brien, 2006; Warburton, Nuñez, & Carroll, 2001). Potential first-generation college students are high school students whose parents have not attended a four-year institution.

The assumption of traditional definitions of first-generation college students is that “parents” refers to biological parents. However, it may be that students are thinking of a stepparent or legal guardian when considering their potential first-generation status. Although I assessed potential first-generation status by asking students if either of their parents had attended a four-year college, I cannot know for certain if students were thinking of their biological parents when answering this question. This may be a
limitation of the study, but it also brings to light an important limitation of the current
definition of first-generation college students. Indeed, for students who have limited
contact with a biological parent, the role of a step-parent or legal guardian may be more
important when it comes to sharing information and experiences related to college-going.

In this dissertation, I make the distinction between parents who have attended an
associate (i.e., two-year) institution and a baccalaureate (i.e., four-year) institution.
Although parents who have obtained an associate’s degree or attended a community
college may have some knowledge of what it takes to get into college, the application and
transition process from high school to a two-year college is significantly different than
that from high school to a four-year institution. For example, the majority of two-year
institutions (i.e., community colleges) offer open admissions (National Center for
Education Statistics, 2008). This means that any student may apply and enroll, as long as
he or she has obtained a high school diploma or equivalent (i.e., GED). In addition,
community colleges are usually close to students’ homes, which allows them to live at
home while taking courses (Cohen & Brawer, 2003). Community colleges also tend to
enroll a larger percentage of non-traditional aged students (i.e., students over the age of
24) and the majority of students enroll in classes part-time (62% of community college
students were enrolled part-time in 2006; National Center for Education Statistics, 2008).
Four-year institutions, on the other hand, often require an admissions test (e.g., ACT or
SAT), minimum high school GPA, and an admissions essay or personal statement, and
often provide on-campus housing for their students. The differences in admissions
requirements and the school environment make applying to and transitioning to either a
two-year or four-year institution a distinct process. This dissertation focuses on potential
first-generation students whose parents have not ever attended a four-year college. I use the term *continuing-generation student* to refer to students who have at least one parent who has attended a four-year college.

**Rural Appalachia: A distinct community?** Defining an area as *rural* or *Appalachian* can be complicated, as there are many competing definitions of these terms. Definitions of *urban* and *rural* are often crafted using administrative (i.e., jurisdictional), land-use, or economic guidelines (Cromartie & Buckholz, 2008). A more commonly used definition provided by the United States Census (2010) describes *rural* as any area that is not considered to be an *urban area* (50,000 or more people) or an *urban cluster* (between 2,500 and 50,000 people). The USDA Economic Research Service (2013a) notes that rural areas contain population densities less than 500 people per square mile and locations with fewer than 2,500 people. The Office of Management and Budget (2013) classifies communities as Metropolitan and Micropolitan areas. A *metropolitan area* is classified as an area that has at least 50,000 or more individuals, whereas a *micropolitan area* consists of an urban cluster with at least 10,000 but less than 50,000 residents. Areas that do not meet either of these criteria are classified as “noncore” (USDA Economic Research Service, 2013a). Rural Urban Commuting Area codes (RUCA) are based on census tracts and range from 1 (*metropolitan*) to 10 (*rural*) based on levels of commuting to urbanized areas (USDA Economic Research Service, 2013b).

The USDA Economic Research Service (2013a) recommended that “the choice of a rural definition should be based on the purpose of the application.” I used RUCA codes to define the rurality of communities. This definition is appropriate for this dissertation because it takes into account both the size of the community and the relative distance to
larger urban areas. The RUCA code for the community from which the sample for this dissertation was drawn is 10 (rural).

The *Appalachian* region encompasses 13 states, stretching from Mississippi to New York. Twenty-five million people currently reside in the Appalachian region, which is approximately 42% rural (Appalachian Regional Commission, n.d.). The Appalachian Regional Commission (2010) separates the Appalachian region into five sub-regions (North, North Central, Central, South Central, and Southern Appalachia) based on topography, demographic, and economic factors.

Although the definition of Appalachia as a region is relatively straightforward, the definition of Appalachia as a culture is a matter of considerable debate. Billings (1999) noted, “the persistent belief in Appalachian distinctiveness thus results from a persistent way of writing about the mountain region rather than from the region’s actual past” (p. 12). The distinctiveness of Appalachian culture for researchers who endorse it as such is found in the religious values, attachment to place, and importance of family that are mentioned by its residents (Barcus & Brunn, 2009; Howley, 2006; Klein, 1995). Several researchers have stressed the importance of acknowledging the distinctiveness of place, particularly in rural communities (Singh & Dika, 2003; Swanson & Brown, 2003). However, these distinctions are often accompanied by negative stereotypes. Rural and Appalachian populations are often presented as less-educated and as less intelligent (Billings, 1999; Chenoweth & Galliher, 2004; Shelby, 1999). However, many researchers have found that rural students perform at least as well and at times better than urban or non-rural students on measures of academic achievement (Khattiri, Riley, &
Kane, 1997; Reeves, 2012). I use the term *Appalachian* in this dissertation to describe the regional setting of my population.

**Eastern Kentucky.** The state of Kentucky is located in the central Appalachian region. Central Appalachia is also arguably more isolated than other parts of Appalachia, with an average population per square mile of 64.4 individuals (Pollard & Jacobsen, 2013). Based on the RUCA classification system, 54% of Kentucky is classified as small towns, and 33% of all areas in Kentucky are identified as rural. Fifty-three counties in Kentucky are within the Appalachian region, with 1,143,841 people living in the area. In 2013, 24.8% of residents living in the Appalachian region of Kentucky were determined to be below the federal poverty level (Appalachian Regional Commission, 2013a). The percentage of individuals below the poverty level within Kentucky counties ranged from 16.1% to 42.1%. Sixty-seven percent of Appalachian counties in Kentucky are considered to be economically distressed (compared with 22% of the Appalachian region), meaning that they rank in the bottom 10% of counties in the nation in terms of average three-year unemployment rate, per capita market income, and poverty rate (Appalachian Regional Commission, 2013b).

More students in eastern Kentucky are completing their high school diploma than in years past (Haaga, 2004). Eastern Kentucky is most often defined as the region east of Fayette County, Kentucky. However, the exact boundary between so-called “eastern Kentucky” and the rest of the state is somewhat unclear. For example, the Robinson Scholars program, a scholarship program serving first-generation eastern Kentucky students, identifies eastern Kentucky as 29 counties east of Fayette county (Robinson Scholars Program, n.d.). The Eastern Kentucky Coal Field region, named for the natural
resources available in that area, consists of 31 counties located south and east of the Bluegrass (i.e., central) region of the state (National Digital Newspaper Program, n.d.). The Appalachian region of Kentucky is located in the Eastern Coal Field region of the state, although not all counties in this part of the state are considered Appalachian. In Appalachian Kentucky, the majority (95%) of individuals are White (Pollard & Jacobsen, 2013). The county from where the sample was drawn for this dissertation meets all three criteria for being classified as an eastern Kentucky county: (a) it is located east of Fayette county, (b) within the Robinson Scholars service area, and (c) is located in the Eastern Kentucky Coal Field Region.

**Educational attainment in eastern Kentucky.** As of the 2000 census, 17% percent of Kentucky adults aged 25 and over had a bachelor’s degree, compared to the U.S. national average of 24.4% (Kentucky Council on Postsecondary Education, 2008). In a more recent survey, it appeared that the majority (81%) of Appalachian Kentuckians over the age of 25 had received only a high school education or less (Pollard & Jacobsen, 2013). Many of the counties located in the extreme eastern portion of the state and in Appalachia appear at the bottom of the rankings list, with as few as 4.9% of adults in some counties having earned a bachelor’s degree (Kentucky Council on Postsecondary Education, 2008).

The in-state college enrollment rate (i.e., students who enroll in in-state postsecondary institutions) of Kentucky counties varies widely. Nearly 24% of graduating seniors from McCreary County, a rural Appalachian county where 31% of individuals live below the federal poverty level, enrolled in in-state postsecondary institutions. On the other hand, 69% of students in Robertson County, another rural
Appalachian county where 32% of individuals fall below the federal poverty level, enrolled in in-state postsecondary institutions (Kentucky Council on Postsecondary Education, 2008). Both counties are considered to be economically distressed. These wide variations could be attributed to a number of factors. For example, McCreary County lies on the state line between Kentucky and Tennessee, whereas Robertson County is located more towards the middle of the state. Students who live closer to the state line and further away from in-state institutions may be choosing to enroll in colleges outside of the state.

A profile of one eastern Kentucky county. The rural Appalachian county where participants were recruited for this dissertation covers nearly 209 square miles in eastern Kentucky and is estimated to have around 7,700 residents, 19% of whom are under the age of 18 (United States Census, 2013). The population is 95% White and 2.4% African American (United States Census, 2013). At the time of the last U.S. Census, 68.5% of county residents aged 25 or older had obtained a high school diploma or higher, compared with 81.7% of Kentucky residents overall. On the other hand, 6.3% of county residents aged 25 and older had obtained a four-year college, compared to 20.6% of residents statewide. About 11.2% of adult residents in this county had completed some college, but had not obtained a degree. Almost 32% of county residents are living below the federal poverty level, compared to 18% statewide (United States Census, 2013). This county is classified as a rural area by both the U.S. Census and USDA RUCA definitions and is considered to be an economically distressed county, with an average three-year unemployment rate of 12.2%. The county is ranked 3,076 out of 3,110 counties in the nation in terms of economic health (Appalachian Regional Commission, 2013b). I will
refer to this county as “Rural County” in order to maintain the confidentiality of participants in this investigation.

All students in Rural County schools are eligible for free breakfast and lunch that are provided by the school as part of National School Lunch Program (Rural County Schools, 2013a). According to the National School Lunch Program, students are eligible for free lunch if their family’s annual income is 130% or less of the poverty level (National School Lunch Program, 2012). In the 2012-2013 school year, 130% of the poverty level for a family of four equated to an annual income of $29,965 (National School Lunch Program, 2012). The fact that all Rural County students are eligible for free lunch indicates that most of the students enrolled in these schools are living in families considered to be in low socioeconomic status.

Rural County students are at a disadvantage for college readiness, with only 42.4% of high school students qualifying as college or career ready at the time of graduation (Rural County Schools, 2013b). College and career readiness guidelines are provided by the Kentucky Council on Postsecondary Education (n.d.) based upon the standards outlined in Senate Bill 1, which was signed by Governor Beshear in 2009. The Kentucky Council on Postsecondary Education (n.d.) defines college readiness as “the level of preparation a student needs to succeed in credit-bearing courses in college” (p. 1). A student is determined to be college-ready based upon his or her ACT, SAT, or placement test scores in reading, English, and mathematics (Kentucky Council on Postsecondary Education, n.d.). Career readiness is defined as “the level of preparation a high school graduate needs to proceed to the next step in a chosen career, whether that is postsecondary coursework, industry certification, or entry into the workforce” (Kentucky
Council on Postsecondary Education, n.d., p. 1). The 2013 strategic plan for Rural County Schools (2013b) indicated that the school system plans to implement a tracking system over the next four years to monitor students’ attainment of various college and career readiness benchmarks.

**Background and Statement of the Problem**

There are several contextual factors that have the potential to influence the college-going behaviors of rural Appalachian students. Historically low rates of college enrollment in this region, economic distress, and a rural setting present financial, educational, and informational barriers to rural students who may be considering postsecondary education. The setting for this dissertation provides the opportunity to explore how rural Appalachian students obtain information about college in the face of these barriers.

**Potential barriers to college.** Many researchers have investigated the barriers that both rural and potential first-generation college students may face in pursuing a college degree. Sander (2006) found that rural students had acquired the least amount of schooling, had higher percentages of dropouts, and had lower levels of college degree attainment, compared to suburban and urban students. Other researchers have noted that rural students tend to be lower in socioeconomic status, attend schools with fewer financial resources, and have lower levels of cultural capital (e.g., educational resources) compared to students enrolled in non-rural schools (Roscigno & Crowley, 2001).

Rural students have also been described as having lower educational aspirations than non-rural students (Howley, 2006). Initially, many suggested that differences in aspiration and achievement could be attributed to differences in intelligence and aptitude,
a result of stereotypes held about the innate intelligence of rural and Appalachian people (Billings, 1999; Klein, 1995). However, researchers have since shown that the differences between rural and non-rural students are often the result of contextual factors such as socioeconomic status (Reeves, 2012; Roscigno & Crowley, 2001). The barriers that often arise with low socioeconomic status, such as lower income and lower levels of parental education, tend to have a greater influence on rural students than on suburban students due to higher concentrations of poverty and economic distress in rural regions (Reeves, 2012; Roscigno & Crowley, 2001).

Personal barriers, such as not seeing the value of a college degree, may factor into students’ postsecondary decisions. For rural students, obtaining a job and joining the workforce may seem like a more logical step than going to college (Burnell, 2003). On the other hand, students may not understand the potential economic ramifications of not obtaining a college degree (Bloom, 2007). Rural Appalachian students could choose not to enroll in college for either of these reasons.

The distance from home to college, career possibilities, or lack of information about financial aid and college admissions procedures might also play a role in students’ decisions about postsecondary education. Family and community factors can each influence decisions about education and occupations for rural students (Howley, 2006; Howley, Harmon, & Leopold, 1996). For example, rural adolescents’ educational aspirations may be influenced by the availability of jobs near family that require a college degree (Howley, 2006). Proximity to family and job availability within students’ home communities may influence rural students more than students from suburban or urban communities (Howley, 2006).
Socioeconomic factors and family beliefs about college and community can influence students’ educational decisions in a variety of ways. In particular, the aspirations that families may have for their child, in conjunction with that child’s desire to remain close to family, may ultimately shape the postsecondary pathways that the child envisions for himself or herself.

Schools also play a role in expanding or limiting postsecondary options for students. The academic rigor of high school curricula is associated with postsecondary GPA, the amount of remedial coursework that students have to complete, and students’ persistence and attainment in college (Conley, 2005; Warburton et al., 2001). The influence of a rigorous high school curriculum has the potential to disproportionately affect potential first-generation students, who have been shown to have less access to rigorous coursework, to score lower on college entrance exams, and to feel underprepared for college (Choy, 2001; Reid & Moore, 2008; Warburton et al., 2001). Completing a rigorous high school curriculum has been shown to diminish the academic gap between first-generation and continuing-generation students (Warburton et al., 2001). If rural schools have the same ability to offer a rigorous curriculum, then gaps in educational attainment may have more to do with access to timely information and advising (see Reeves, 2012). Additional information and resources about college may increase the odds that rural potential first-generation college students will enroll and be successful in college.

Stanton-Salazar (1997) noted that “institutional agents” (i.e., the gatekeepers of information and resources, p. 6) have the power to perpetuate class differences in postsecondary access or provide the opportunity those with less power to gain status.
Institutional agents within the field of education may be prematurely closing the door for some students by encouraging them into lower academic tracks. The meritocratic approach of mainstream education sends the message that students are in academic ruts of their own making (Stanton-Salazar, 1997). In other words, students who are not prepared for college might be receiving a message that they are unprepared because of their own lack of initiative and performance. This message can convey to students that they might not be college material and dissuade them from pursuing postsecondary education, even if they are academically prepared.

Having access to the right information and resources can prove crucial when it comes to increasing college attendance. Lack of information may cause students to make choices that will make pursuing a postsecondary degree more difficult (e.g., not taking college preparatory courses or submitting timely paperwork). Information obtained in a timely manner by potential first-generation college students can help them to keep their educational options open. The resources are available; students who are “in the know” are able to access them and use them to their advantage. The problem is that many potential first-generation and low socioeconomic status students are not accessing these same resources (Klasik, 2012; McDonough, 1997). Students of low socioeconomic status often maintain high educational expectations for themselves despite the fact that they may have failed to complete key tasks necessary to attend college, such as taking the SAT (Avery & Kane, 2004). Barriers such as lack of information about registration procedures, transportation to the testing site, or lack of testing materials may have prevented some students from taking the SAT (Avery & Kane, 2004). A lack of information (i.e., “college knowledge”) may be responsible for the missing connection
between one’s educational aspirations and completion of the steps necessary to go to college.

**Obtaining college knowledge.** Students who ultimately enroll in a four-year college have had significantly more financial and informational resources available to them than students who choose to enroll in a community college or who choose not to enroll at all (Engberg & Allen, 2011). Students who attend a four-year college also seem to have benefitted from more exposure to experiences and information obtained from family members and school officials as they progressed through middle and high school (Engberg & Allen, 2011). This combination of access to information and resourceful individuals increases the odds that students will complete all of the required steps for a successful transition from high school to college.

Potential first-generation college students often lack help from their parents, do not enroll in college preparatory coursework, and choose colleges based on proximity to home instead of considering whether the institution is a good fit for them (Reid & Moore, 2008). Low socioeconomic status students often encounter similar problems. Bloom (2008) found that high school students who were lower in socioeconomic status often had trouble conceiving what their college life would look like. Unlike students who benefit from the stories and experiences of family members, students whose parents have not gone to college may not have the benefit of others’ experience to help them imagine what college might be like.

This lack of information can have deleterious effects on the educational outcomes of students:
Every student who wants to attend college must complete the lengthy and laborious college application process. This process requires students to clear a number of successive hurdles—taking standardized tests, writing application essays, applying for financial aid, etc.—each with its own separate cost calculations. The failure to complete any one of these steps limits students’ ability to enroll in many colleges. Thus, at each step students must recalculate and reaffirm their human capital decision. (Klasik, 2012, p. 510)

Students make decisions about college based on a variety of factors, including perceptions of their abilities and availability of information and support from others (Perez & McDonough, 2008). Students will likely assess their own skills and resources at some point and determine what they are going to do (Massé, Perez, & Posselt, 2010). At each stage of the college choice process, a student has the potential to unintentionally limit her postsecondary options. Making these important decisions without all of the facts can lead students to limit their educational plans. The lack of information available to potential first-generation college students as a consequence of their status may also limit their choices or ultimately prohibit them from attending college. In a report on increasing college access for Latino/a students, the PALMS project (2006) highlighted an important problem: "students who will be first in their families to enroll in college often lack a social network that provides them with access to the resources, information, and experiences that make postsecondary participation possible" (p. 10). Families of rural or potential first-generation college students may lack knowledge on the “rules of the game” that would ordinarily help their child and address some of the barriers that stand between that child and obtaining a college degree (Lundberg, 2007).
Having the opportunity to connect to other individuals who possess information about college is one way to remedy the lack of information available from family members. Lower socioeconomic status students will often rely on school resources to help fill the gaps in information that their families are unable to fulfill (Cabrera & La Nasa, 2000). However, some students may not know what or whom to ask about the college search process (Klasik, 2012; McDonough, 1997). In addition, students who lack information from their families also tend to get a later start on the college search process (Klasik, 2012; McDonough, 1997). Starting the college search process later can limit students’ options, particularly if they realize that they are lacking coursework or test scores required to get into the college of their choice.

Hossler, Schmit, and Vesper (1999) noted that “students’ information gathering and information processing is a social activity and is embedded in, and perhaps limited by, interactions with family, friends and school” (p. 153). This hints at the possible limitations that could be encountered by students in smaller, densely connected communities, such as those found in rural Appalachia. On average, rural students are exposed to fewer adults who are college graduates and have access to fewer jobs that require college degrees than students from more populated areas (Smith, Beaulieu, & Seraphine, 1995). If potential first-generation college students are only exposed to occupations that are available in their immediate community, do not have access to adults who are knowledgeable about the college process, and do not receive proper advising that makes them eligible to enroll in college, they will likely view their postsecondary options as limited. This can lower students’ aspirations and enrollment in college despite students’ academic capability (Pascarella, Pierson, Wolniak, & Terenzini, 2004).
Summary. Cabrera and La Nasa (2000) described college choice as a result of a student’s academic ability, amount and quality of parental encouragement and involvement, the student’s educational and occupational aspirations in middle school, the amount of information available, and the ability to meet the minimum college qualification requirements. Each of these factors is influenced in one way or another by environmental factors rooted in a student’s family, school, or community. Potential first-generation students and students who come from communities where obtaining a college degree is not the norm face special challenges in accessing the information and resources necessary to successfully enroll in a four-year college. Parents of prospective first-generation college students often have high expectations for their children but are not always able to provide access to the types of information and resources that students need to prepare for college (Pascarella et al., 2004; Purswell, Yzedijian, & Toews, 2008; Venezia, Kirst, & Antonio, 2003). As a result, schools are often left to provide this information.

A review of the literature on college-going suggests that students benefit from being connected to a network of individuals who can help them prepare for college. Although the importance of family, friends, and school staff has been studied relative to educational aspirations (e.g., Andres et al., 2007; Byun, Meece et al., 2012; Cherng et al., 2012), no research has investigated how students obtain college information through the social ties that they have to others. In addition, the importance of these ties relative to the level of confidence a student feels about his or her ability to go to college has not been previously investigated. This dissertation will examine how rural Appalachian students
obtain information about college and how the nature of students’ social ties with others ultimately influence their beliefs about college-going and educational aspirations.
Chapter 2: Theoretical Framework

Social cognitive theory (Bandura, 1986, 1997) and capital theory (Bourdieu, 1986) are used in combination to frame this dissertation research. I will begin this chapter by explaining each theory as it pertains to this dissertation and conclude with a synthesis and application of the two theories.

Social Cognitive Theory

Social cognitive theory describes the dynamic reciprocal interaction among an individual’s environmental context, personal aspirations and beliefs, and behaviors (Bandura, 1986, 1997; see Figure 1). Personal, behavioral, and environmental factors each have the potential to be mutually influential on the other, but the relative weight and influence of these factors might vary greatly based on the context in which they are occurring (Bandura, 1997).

Figure 1. Model of the relationship between social capital and personal beliefs within social cognitive theory.
Environmental factors can influence students’ educational aspirations (personal beliefs) and achievement (behavioral outcomes). Factors such as the availability of information and resources and the messages that students receive from parents, teachers, and peers about college can influence how students feel about their academic and personal potential and can in turn shape their postsecondary choices and educational outcomes. Conversely, students’ beliefs about their ability to attend college (personal factor) may compel them to seek out information and resources (behavioral outcomes) that will ultimately help them attain their goals.

*Self-efficacy* is conceptualized within social cognitive theory as the beliefs individuals hold about their ability to complete a given task (Bandura, 1997). People with lower levels of self-efficacy often suffer from lower levels of motivation and resilience (Bandura, 1997). Individuals with higher levels of self-efficacy are more resilient in the face of adversity.

*College-going self-efficacy* has been defined as “people’s belief in their ability to be successful in college-related activities” (Gibbons, 2005, p. 12). Students who are not yet in college form beliefs about their capabilities to qualify for, attend, and persist in college, all of which may influence their college-relevant behaviors and intentions.

Bandura (1997) hypothesized that individuals form their self-efficacy beliefs by interpreting information from four primary sources. *Enactive experiences* are comprised of one’s previous successes or failures at a given task. Such experiences include the student’s direct experience (or lack of experience) in accessing information about college (i.e., college cultural capital). One’s social capital, or the information and resources available to a student through social ties, includes one’s exposure to *vicarious models*
(e.g., seeing others apply to and attend college) and social persuasions (e.g., messages students receive from others about college). The emotions (i.e., physiological and affective states) experienced as a result of available cultural or social capital (e.g., stress or excitement) can also inform students’ college-going capability beliefs.

As both producers and products of their environment, people are influenced by their environment and have the capability to exercise influence over it (Bandura, 2001). When people exert influence over their beliefs, environment, or outcomes, they are enacting agency. This assertion assumes that individuals are active participants in shaping their destinies. Bandura (2001) conceptualized three types of agency: personal, proxy, and collective. Personal agency refers to the ability that individuals have to work towards their goals. Proxy agency occurs when individuals seek out others who have access to resources, experience, or influence that will help them attain their desired goal. Collective agency is exercised by a group of individuals who work toward a common goal (Bandura, 2001). All three types of agency are applicable to this study. Students who wish to attend college may exercise their personal agency to reach out to individuals with information or resources that will help them attend college. Those people in turn may enact proxy agency on behalf of the student, but personal agency must still be exercised. Bandura (1997) acknowledged the important role that individual agency plays in the selection of social networks and similar mechanisms of support: “By selecting and creating environmental supports for what they want to become, [people] contribute to the direction that their lives take…the environmental supports for valued life paths, therefore, are created both individually and in concert with others” (p. 2). Therefore, students are in
some way responsible for seeking out the sources of information that will lead them to their desired postsecondary outcome.

Individuals with lower levels of self-efficacy are less likely to seize opportunities that present themselves and to mitigate the barriers that they encounter along the way (Bandura, 1997). For example, students who do not feel confident in their abilities to go to college may not reach out to others for information or take advantage of fewer to acquire experience that will help them get into college. Similarly, students who do not envision themselves as going to college may not seek out sources of information about college.

Proxy agency may be particularly important in the case of potential first-generation college students. Bandura (2001) asserted that “many of the things [people] seek are achievable only through socially interdependent effort. Hence they have to work in coordination with others to secure what they cannot accomplish on their own” (p. 13). Potential first-generation college students who may not have access to proxy agency through family members can seek it from other community members. Individuals who act as proxies give student access to social capital, or information and resources that are available to individuals as a result of their ties to others (Coleman, 1990). These ties have the potential to provide access, power, influence, and resources to a student who might not otherwise have access to such capital.

Collective agency may also play a role. If a group of individuals (e.g., a school district or community members) wishes to increase college readiness and attendance in the community, this goal may compel them to pool their resources and information to share with students. Conversely, collective agency may work against lower status groups
by reinforcing views and social structures that maintain class divisions (Bandura, 2001). Bourdieu (1996) conceptualized this reinforcement of social structures as *habitus*, which refers to the maintenance of social roles and structures through selective availability of capital and resources. If the surrounding community wishes to maintain the current rate of college attendance and access, then resources will likely only be available to those students who show the most promise towards a college education, or those students who already have access to the cultural capital associated with college attendance. I will next explore the concept of social and cultural capital in more detail as they relate to students’ educational aspirations and college-going beliefs.

**Capital Theory**

The secondary theoretical framework for this study centers on the concept of capital, which is conceptualized by Bourdieu (1986) as the accumulated goods or advantages that individuals have as a result of their prior experience and social status. Capital in the most basic economic sense refers to something of value that can be used to gain an advantage or obtain some benefit (Bourdieu, 1986). Individuals make decisions that will shape their academic and occupational futures based on the capital that they have accumulated (Bourdieu, 1996). Potential first-generation students and those with lower socioeconomic status are at a disadvantage because they are more likely to have a limited amount of capital available to inform their choices. Individuals who are lacking in one area of capital will likely also have capital deficits in other areas as well (Tierney & Venegas, 2006). Within capital theory are three types of capital that are relevant to this study: economic, cultural, and social capital.
**Economic capital.** Economic capital is defined by Bourdieu (1986) as capital that is “immediately and directly convertible into money” (p. 243). This type of capital consists of the financial resources available to an individual. Socioeconomic status often represents economic capital but also may reflect the type of cultural and social capital to which students have access. For example, a student whose family is lower in socioeconomic status may not be able to afford to send that student to summer enrichment camps at a nearby college. As a result, this student may (a) have fewer opportunities to visit a college campus, (b) meet college professors, and (c) be less academically prepared for college.

**Cultural capital.** Cultural capital refers to the material goods and experiences that accord the student some benefit in the broader culture (Bourdieu & Passeron, 1990). Cultural capital often includes exposure to music, education, and other enrichment activities. This type of capital results from the benefits of one’s own experience, although cultural capital can be transmitted to students through other individuals (e.g., parents).

Cultural capital and community context influence habitus. According to Bourdieu (1996), habitus is used in order to maintain the status quo. In other words, an individual’s circumstances are thought to dictate the opportunities and resources available to him. Education is a type of cultural capital. When students attain a Bachelor’s degree, they are able to access additional capital (e.g., higher status jobs and better pay). As a result, members of students’ networks benefit from their experiences (Swail, 2000). An important purveyor of cultural capital is the community school system. Bourdieu (1996) and others (e.g., Roscigno & Ainsworth-Darnell, 1999) have noted that schools often
operate based on the norms and needs of the dominant class. In schools that serve students who possess varying levels of acquired capital (e.g., socioeconomic status and parents’ educational attainment), school resources for the college preparation and search process may be geared more towards those whose parents have already attended college. This can leave potential first-generation college students with the task of filling in the gaps of information about how to get to college. These gaps in access to information about college persist in rural communities as well. Families of higher socioeconomic status or students with the “right” family name may receive preference over those who are lower in socioeconomic status or have lower standing within the community (Duncan, 1996, 2001). Schools that participate in these types of activities are active participants in the reproduction of class structure within their communities.

But does this college information gap exist in schools where first-generation status or low socioeconomic status is the norm? In socioeconomically homogenous schools, the social structures are likely closer to equal and there may be less of a class distinction among students. In circumstances such as those found within Rural County schools, where 100% of the students receive free lunch, schools will likely be better equipped to deal with the needs of students who are lacking social capital than school systems that are more diverse in terms of socioeconomic status. More homogeneous school systems may distribute resources and information more equally among all students.

Academic excellence may be related to the availability of cultural capital from families (e.g., parents’ educational attainment, exposure to books, arts, and culture; Bourdieu, 1996). Indeed, researchers have indicated the positive effects that cultural
capital in the home can have on educational attainment (e.g., Teachman, 1987). Parents who have access to tutors and academic enrichment activities will likely have children who consequently excel in school compared to those who do not. *College cultural capital*, or the experiences that provide a student some benefit or advantage related to applying to and enrolling in a four-year college or university, is important for all college-bound students. College cultural capital may be particularly beneficial when provided to potential first-generation college students for whom such capital is often not available within the family.

Individuals acquire economic capital and cultural capital through their experiences and the resources afforded to them by their environment (i.e., family context, school). The amount of capital available to students may influence their educational aspirations. Student who have had access to the college preparatory curriculum, have visited college campuses, and know the ins and outs of applying for college and financial aid are at an advantage over students who do not possess such information, even if those students are academic equals. In the absence of acquired cultural capital, students must actively seek out others who can provide them with needed information. The process of seeking out information and resources through relationships with others is the acquisition of social capital.

**Social capital.** *Social capital* is another important indicator of college enrollment. Social capital is defined as resources available through social ties and social structure that can be used by an individual (Lin, 2001). Social capital can take many forms, including obligations and expectations, acquisition of information, transfer of
norms and rules, influence or authority, social organization, and formal or intentional organization (Coleman, 1990).

Exposure to information via social interactions (i.e., social capital) may increase the chances that a student will complete all of the steps required for a successful transition from high school to college.

Social and cultural capital are closely intertwined. Social capital can be thought of as information or benefits that are provided to the student as a result of the relationship, whereas cultural capital results from a student’s family or background. Social capital provides a means by which individuals can benefit from the economic and cultural capital of others.

Social capital can be used to define obligations to others, to acquire information, or to transfer and reinforce social norms (Coleman, 1990). An important assumption of social capital is that no one acts in isolation; individuals’ actions are influenced by the people and resources that they come into contact with. Social capital results in two possible outcomes for the individual: instrumental action (obtaining new resources) or expressive action (maintaining resources already in possession; Lin, 1999). Obtaining social capital for instrumental action is one way that potential first-generation college students can compensate for a lack of available economic and cultural capital. Instrumental actions can result in economic, political, or social returns for informants (i.e., the people who provide information and resources, Lin, 1999).

Capital theory assumes that relationships between individuals are reciprocal; both parties will mutually benefit from an exchange of capital (Lin, 1999). At first glance, the relationship between a potential first-generation college student and her informant could
seem a bit one-sided. It is unlikely that potential first-generation college students will provide their informants with economic or political returns, as they do not possess the capital to do so. Lin noted that when immediate reciprocity is not possible, the individual has a social debt to the other person, which will serve to bolster that person’s reputation within the network, resulting in a social return.

Social networks provide one means for transmission of social capital (Singh & Dika, 2003). The possession of social capital itself can be conceived of as either embedded resources or network locations (e.g., the position or status of an individual within the network; Lin, 1999). Lin asserted that network locations are not “true” social capital but are often related to the types of embedded resources available as a function of the relationship. For example, a college admissions officer within a student’s network will likely have access to information about college (i.e., embedded resources) that another member of the network who has not attended college would not. However, a family member who has not attended college, but who interacts with the majority of other members of the student’s network may influence the type of information that student acquires via his or her network location.

Network location and embedded resources each provide a different picture of available social capital; therefore, Lin (1999) recommended using both network locations (i.e., structural social capital) and embedded resources (i.e., informational social capital) in studies examining social capital. *Structural social capital* conceptualizes social capital as a result of the network structure, such as the number of individuals in the network or the connections within the network. For example, a student who talks to 10 individuals about college may have access to more information about college than a student who
talks to 2 individuals. *Informational social capital* refers to information obtained within the network. For example, if the 10 individuals the student talks to have not attended college, then the informational social capital available within the network may not be as plentiful as it would be for a student who talks to two individuals who have attended college. Bartkus and Davis (2009) noted that examining and understanding social capital in both of these forms is important when trying to determine its influence. The example above makes clear that neither the structure of the network nor the information contained within the network provides a complete picture of the social capital available within a network; both types of social capital must be examined.

Lin (2001) envisioned social networks as pyramid-like structures, where those who are higher in status have a better view of the network and more access to resources. Those with the most information and highest status level within the social network have a better lay of the land and a better sense of how all of the pieces of the information puzzle fit together.

Previous research has shown that the occupation and status of social contacts positively influence occupational attainment (Lin, 2001). Parents’ occupational and/or educational status is also associated with students’ educational aspirations (e.g., Kim & Nuñez, 2013; Kim & Schneider, 2005). When parents are unable to provide the needed information about college, other adults in the community may be able to provide support to potential first-generation college students on behalf of the family to help students attain their goals.

To understand the nature of social capital, one must also understand the methods by which social capital is obtained. Social networks provide the mechanisms for
individuals to exchange capital between each other. Individuals within an organization tend to affiliate with individuals of similar characteristics (Lin, 2001). This is a concept known as homophily. However, in order to gain status, one must seek out heterophilous (i.e., more diverse) networks of individuals with access to more information and resources. Strategic ties to individuals who are higher in status have the potential to provide valuable information and capital (Lin, 2001). This opposes conceptions of other researchers who have contended that social capital is best acquired through densely connected networks (Bourdieu, 1996; Coleman, 1990). Dense networks would not benefit most potential first-generation college students, however. Weaker, less connected ties may create the opportunity for individuals to receive additional social capital. (Lin, 2001).

Structural holes refer to a lack of connection between two groups (Burt, 2004). Within a personal network, the ego (i.e., the student) can communicate between groups, transfer ideas and best practices, and synthesize information that is shared by both groups (Burt, 2004). For example, a student could serve as a bridge between the college information network that he has established at school and his family network, which is less informed about the college application process.

Dense networks where everyone possesses a limited level of educational experience or knowledge would only perpetuate the lack of information and resources that are currently available to many potential first-generation college students. For rural students who are lower in socioeconomic status or who are potential first-generation college students, having diverse networks with individuals of higher status and who possess more “college knowledge” is particularly important. Information networks of
more loosely connected individuals (i.e., networks that have structural holes; see Figure 2) will likely be more beneficial to students living in closely knit communities because they serve to expand rather than limit the students’ access to information about college.

Figure 2. Example of a densely connected network versus a network with several structural holes. Structural holes are indicated by a lack of connection between two points.

Different flows of social capital yield different configurations of information networks. According to Burt (2000), social capital can be acquired by individuals in three ways. Closed networks (i.e., networks lacking structural holes) will provide the least opportunity for social capital, because they provide no links to anyone beyond those of similar class and status. Entrepreneurial networks (i.e., networks that are large with many structural holes) provide many contacts but lack connectivity between individuals, which can make it difficult for an individual to take advantage of all of the information at his or her disposal. Hierarchical networks are the most ideal because they allow individuals to borrow social capital (Burt, 2000). Network hierarchy refers to a key individual (or individuals) within a network who wield great influence. This influence is
made possible through the ties that these individuals have to others within a network. This key individual has the potential to influence the whole network in terms of the type of information or resources provided to a student. It could be that one key individual helped a potential first-generation college student get connected with the other sources of information within his network. By doing so, this key individual has allowed the student to borrow his social capital. By virtue of knowing the key information source (i.e., a proxy agent), the student is then permitted access to the other information sources that then become a part of his information network.

Homophilous (i.e., similar) networks are the easiest for individuals to acquire. Individuals must exercise personal agency to seek out more heterophilous (i.e., diversified) networks (Lin, 2001). This may be particularly important for potential first-generation college students whose immediate family members are unable to provide information about college. However, researchers have found that potential first-generation students are often not inclined to take an active role in seeking out additional information (Horn, Nuñez, & Bobbitt, 2000; Stephan, 2013). Lin (2001) indicated that individuals must exercise agency to diversify their network; a certain amount of personal agency might be necessary to tap into available proxy or collective agency. It may also be that those in possession of information and experiences relating to college can exercise agency in making the connection with potential first-generation college students. Those in positions of influence (e.g., guidance counselors, school officials, or college representatives) may recognize that a student needs additional information about college and may help that student get connected to other individuals who can help.
Characteristics of Rural Social Networks

Certain characteristics of rural communities might influence the structure of rural students’ information networks. Byun, Meece, and Irvin (2011) found that parents of rural students were more likely to communicate with and know the parents of their child’s friends. Rural families may also have higher numbers of siblings and lower levels of geographic mobility compared to suburban families (Smith et al., 1995). One might conclude based on these observations that the information networks of rural students might be highly connected (i.e., everyone in their network knows everyone else) and unchanging over time. As noted above, however, tightly connected networks may not be most beneficial for students who wish to attain higher levels of education than those previously attained by their families (Lin, 2001). Densely connected networks are thought to exercise constraint on the individual in terms of reinforcing certain ideas and norms. For example, if there is a high level of agreement among individuals in the network regarding the importance of college and those individuals know and talk to each other, then those individuals could exert their influence collectively on the student. On the other hand, ties to individuals of higher social status (such as those who have obtained college degrees) can expose the student to new standards and norms. Similarly, access to social capital provided by others may provide some students with the advantage of accessing a new information network via one or two key individuals. In her investigation of the information networks of college mentors, Ahn (2010) found that students would experience differentiated benefits based on how well connected their college mentors were. Levine and Nidiffer (1996) also found that key mentors of low SES students would
often help connect students to individuals of higher status and with more knowledge to help them obtain admission to an elite university.

Rural Appalachian communities and community members can help students to access social capital by providing students with information and support needed to obtain a postsecondary degree. Students who ultimately attend college as a result of this support obtain the cultural capital needed to provide social capital to future generations. Habitus in the form of the collective educational experiences that are available to rural Appalachian students via their network could ultimately influence the postsecondary path that students choose to take. Exploring the flow of social capital via network structure will provide valuable insight into how students obtain information about college and the relationship between network norms and network similarity (or dissimilarity) and students’ educational beliefs.

**Synthesis of Theoretical Framework**

Capital theory highlights the importance of several environmental factors, including the resources that students have and the interactions they have with other individuals. Deficiencies in cultural and social capital may contribute to differences in educational outcomes and college attendance in rural populations (McGrath, Swisher, Elder, & Conger, 2001; Smith et al., 1995). Rural students have also been described as lacking in cultural capital compared to urban students (Roscigno, Tomaskovic-Devey, & Crowley, 2006). Increasing social capital among students might help to offset some of the barriers experienced by students of lower socioeconomic status (Sandefur, Meier, & Campbell, 2006). These findings provide compelling reasons why researchers should
pay more attention to the role of social and cultural capital in shaping the academic aspirations of rural youth.

Economic, cultural, and social capital help to explain the ways in which environmental factors influence students’ self-beliefs about postsecondary attainment. Experiences afforded students as a result of their status and the connections that they are able to make with others who are knowledgeable about the college application process help to shape the postsecondary future that students envision for themselves. In turn, students’ beliefs about going to college help to shape the educational decisions that students will make, contributing to the type of college education (if any) that they will end up pursuing.

Social cognitive theory provides the overarching framework for the proposed study. Capital theory is employed as a secondary framework that explains how contextual factors might contribute to personal beliefs about college attendance (see Figure 1). Extensions of social cognitive theory, such as social cognitive career theory (SCCT, Lent, Brown, & Hackett, 2000), emphasize the influence of one’s immediate environment and social contacts on one’s career-related goals and actions. From a social cognitive perspective, students’ beliefs about their personal capabilities to attend or persist in college and their aspirations to attend college also inform how students reach out to others for information about college. In other words, students are active participants who can create social environments to reach their goals. The reciprocal relationship between environmental factors (e.g., presence of social and cultural capital) and personal factors (e.g., students’ self-beliefs and aspirations about pursuing postsecondary education) frame the central question guiding this study: What is the
nature of the relationship between students’ college information networks and their
college-going self-efficacy and educational aspirations?

Two empirical studies examined these questions using egocentric network
techniques. The first study examined the nature and composition of students’ college
information networks, and explored whether available social capital differed as a function
of grade level, gender, potential first-generation college student status, or as a result of an
interaction between these factors. The second study examined whether a reciprocal
relationship existed between social capital and students’ educational beliefs.
Chapter 3: Study 1

Exploring Rural Appalachian Students’ College Information Networks

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Summary

Previous research has established that students who obtain less information about college may have lower educational aspirations and have less of a chance for college success compared to other students. This lack of information can be even more problematic for first-generation college students and rural students, who may have fewer individuals to consult with about college. For students who may have less access to information and resources as a result of their family’s education level or socioeconomic status, it may be beneficial to access information about college from individuals outside of their immediate family. The purpose of this study was to examine to whom rural Appalachian students talk about college, and whether differences in social capital (i.e., information and resources acquired as a result of social connections) exist as a function of grade level, gender, potential first-generation college student status, or as a result of an interaction among these factors. Using egocentric (i.e., personal) network analysis techniques, students in Grades 6-12 (N = 388) were asked to name up to 10 individuals with whom they have had important conversations about college. Six social capital variables (network degree, constraint, hierarchy, percentage of a student’s network that had obtained a Bachelor’s degree or higher, total available information about college, and frequency of conversations about college) were calculated based on students’ responses to questions about each individual that they named. Maximum Likelihood regressions were run to determine if differences in available social capital existed as a function of grade level, gender, potential first-generation college student status, or as a result of an interaction among these factors. Results revealed that students primarily spoke to family members about college. Senior high students spoke to fewer individuals about college more frequently than did middle grades students. Boys spoke to fewer individuals than did girls, and received less information about college. Potential first-generation college students had fewer individuals in their network that had completed a college degree than did continuing generation college students, but did not differ on other aspects of available social capital. Implications for researchers and practitioners are discussed.
Exploring Rural Appalachian Students’ College Information Networks

First-generation students (i.e., students whose parents have not attended a four-year college) and students of lower socioeconomic status often prepare for postsecondary education without the benefit of information about the college provided by their families (Lundberg, 2007). Lower college attendance rates and higher levels of economic distress, such as those found within the rural Appalachian region of eastern Kentucky, can compound the number of barriers faced by potential first-generation college students (Appalachian Regional Commission, 2013). Lack of knowledge about how to successfully navigate the college application, admission, and transition process creates a barrier to college enrollment that is noted consistently throughout the literature (e.g., Engberg & Allen, 2011; Lundberg, 2007; McDonough, 1997). Access to capital (i.e., information and resources) is likely to play an important role in shaping the college-going beliefs of students who may be at the most risk for not going to college (i.e., first generation, lower socioeconomic status, and rural students; Byun, Meece, Irvin, & Hutchins, 2012).

Students who lack social capital and other forms of capital are missing information and resources that could be beneficial to them as they consider the next steps in their education. The influence of family, friends, and school staff on students’ educational beliefs has been explored in previous research (e.g., Andres, Adamuti-Trache, Yoon, Pidgeon, & Thomsen, 2007; Byun et al., 2012; Cherng, Calarco, & Kao, 2012) However, researchers have not used egocentric (i.e., personal) network analysis techniques to examine how students obtain college information. This study will use
social cognitive theory (Bandura 1986, 1997) and the concept of social capital (Bourdieu, 1986; Lin, 2001) to explore rural students’ personal networks related to college.

**Theoretical Framework**

Social cognitive theory explains human functioning in terms of a triadic, reciprocal relationship between personal (i.e., self-beliefs), behavioral (i.e., educational outcomes), and environmental (i.e., contextual variables) factors that have the potential to influence each other (Bandura 1986, 1997). Personal beliefs about college, academic outcomes (e.g., GPA and test scores), and environmental influences (e.g., messages received from others, and school setting) can play a role in determining students’ educational paths. This study will focus primarily on identifying the environmental factors that may influence students’ beliefs about college. Specifically, the study will focus on the concept of social capital, or the resources or advantages afforded to an individual as a result of his or her connections to others (Lin, 2001).

Capital theory encompasses economic, social, and cultural capital (Bourdieu, 1986). Economic capital is typically conceptualized as socioeconomic status. Cultural capital consists of the accumulated resources and experiences that individuals have as a result of direct experience or their family’s accumulated capital. Social capital is particularly important for potential first-generation college students and students of lower socioeconomic status who may not have as much access to economic and cultural capital from family members (Engberg & Allen, 2011; Roscigno & Crowley, 2001). The connections that students make with others and the information that they are able to access as a result of these connections might ultimately determine the beliefs students hold and, consequently, the educational choices that students make.
Sources of Social Capital

Social capital can come from a variety of sources, including family members, community members, and schools. Social capital from family members, such as parental support and encouragement, has been shown to influence the educational aspirations and achievement of both rural and potential first-generation college students (Byun et al., 2012; Reeves, 2012). Parental involvement in schools (e.g., contact with schools regarding academic matters) can also influence college enrollment (Perna & Titus, 2005). Parental expectations and discussions about school have been shown to positively influence academic achievement among Appalachian students (Dyk & Wilson, 1999).

Social capital from other sources may be particularly important for rural students whose parents may not monitor schoolwork or academic progress as closely as suburban or urban parents (Smith, Beaulieu, & Seraphine, 1995) and for potential first-generation college students, whose parents can only offer limited information about college (Perez & McDonough, 2008). In the absence of family support, communities can often step in and offer social capital through formal and informal mentors and community services. Appalachian communities are often described as close-knit and familial, with low levels of outmigration among families (Howley, Harmon, & Leopold, 1996; Smith et al., 1995). As a result, individuals in Appalachian communities have often known each other for many years. This can foster a form of fictive kinship (i.e., the family that individuals make for themselves) where the community acts as additional family figures in the lives of children. Some researchers have observed that rural communities have strong ties to the school and a more personal investment in the educational and achievement of their children (Khattri, Riley, & Kane, 1997; Wilkinson, 1995).
Another important source of students’ social capital comes from schools. Schools play an important role in providing access to information for those students whose immediate networks do not contain important information about college (Roderick, Coca, & Nagaoka, 2011). Students who are able to access social capital resources through their schools (e.g., college coaches) and connect to their friends’ parents are more likely to enroll in college (Engberg & Allen, 2011; Perna & Titus, 2005; Plank & Jordan, 2001).

A college-going culture, where the norm is that everyone is expected to go (or at least to qualify to go) to college, is an important form of social capital that increases academic achievement and college enrollment through the transmission of social norms (Fletcher, 2011; Roderick et al., 2011). Teachers and school staff can influence students’ educational aspirations and college-going behaviors (Byun et al., 2012; Martinez & Cervera, 2012; Reid & Moore, 2008). However, schools can also limit students’ educational possibilities by placing students into academic tracks (e.g., college preparatory or vocational) which might limit access to college preparation materials and services (Heck, Price, & Thomas, 2004; Lieber, 2009; Liou, Antrop-Gonzalez, & Cooper, 2009; Smith-Maddox, 1999).

Diverse information networks have the potential to influence students’ educational beliefs and behaviors by providing them with access to more information and resources. Granovetter (1973) posited that weaker ties (i.e., social ties that are not as closely connected to other individuals in a person’s network) provide access to important information and influence that would not be available if the network was completely connected. Having access to information outside of the family unit through ties to friends’ parents or other adults is one example of the advantages of weak ties. The
connectedness of students’ networks may be an important indicator of the total amount and diversity of information about college available to rural and potential first-generation college students.

Students may benefit from access to information about college from a diverse set of individuals. Potential first-generation college students from rural areas who reach out to adults outside of their family can access information and resources that are not typically available within their immediate family (Singh & Dika, 2003). Information available on social media websites (e.g., Facebook) may also raise potential first-generation college students’ educational beliefs (Wohn, Ellison, Khan, Fewins-Bliss, & Gray, 2013).

Peers can also diversify available social capital within a student’s network. Students may be more likely to attend a four-year college if they have a friend who plans to attend college or if they go to a school where college-going is the norm (Choy, Horn, Nuñez, & Chen, 2000; Engberg & Allen, 2011; Hallinan & Williams, 1990; Kim, 2012; Kim & Nuñez, 2013; Perna & Titus, 2005). The information available as a result of peers’ cultural capital has also been shown to be a significant predictor of degree attainment (Cherng et al., 2012). Each of these examples lends support to Granovetter’s (1973) hypothesis that weaker ties may in fact provide more beneficial resources to individuals. Weaker ties may be of particular benefit to potential first-generation college students, who may be able to access additional information about college as a result of ties with college-educated individuals outside of their family.

As the above evidence shows, social capital plays a role in how students develop their educational beliefs. However, there are several limitations to previous research with
respect to how and with whom social capital has been measured and analyzed. I will
discuss each of these limitations in turn.

**Measurement limitations.** Measures of social capital that have been used in
previous research have often been proxy measures obtained from secondary datasets such
as the National Educational Longitudinal Study (e.g., NELS:1988, National Center for
Educational Statistics, n.d.-a) and the Educational Longitudinal Study (ELS:2002,
National Center for Educational Statistics, n.d.-b). These proxy measures have primarily
reported social capital available from parents and schools. For example, social capital
from parents has been assessed using parents’ reports of involvement with school
activities, students’ reports of the frequency and nature of their discussions with their
parents about academic issues (e.g., Buttaro, Battle, & Pastrana, 2010; Engberg & Allen,
2011; Plank & Jordan, 2001), family composition (e.g., family size; traditional or non-
traditional family structure), or parents’ socioeconomic status or education information
(Kim & Schneider, 2005; Klasik, 2012; Qian & Blair, 1999; Smith-Maddox, 1999).

Proxy measures of social capital available from schools have included teacher
expectations, the proportion of students eligible for free lunch, school size, the number of
college representatives that visit the high school, and school curriculum (e.g., Byun et al.,

Neither the NELS:1988 nor the ELS:2002 was designed to measure social
capital, even though many researchers have adapted their measures as proxies for social
capital (Dika & Singh, 2002). For example, most measures of parental involvement
capture general information about student-parent interactions about school matters but are
not focused on college information or college preparatory activities. Nor do most
measures of social capital utilized in these studies capture the flow of information between students and other individuals. Questions on the NELS ask students if they talk to teachers, parents, or other adults about a variety of academic issues but do not allow students to report the frequency of these conversations or the value of the information that they receive from these individuals. These measures also fail to capture how students interpret these social interactions. Moreover, if students’ perceptions do not match up with those of their parents, then measures from a parent survey may not provide an accurate representation of those students’ networks. From a social cognitive perspective, the social network gains its influence by activating the personal belief system of the student. Therefore, it makes sense to obtain information directly from the student.

Measures used more recently have done this. The ELS:2002 permits students to list up to three of their closest friends and then answer questions about each person named. Although this measure has the potential to be used in network analysis research, it does not allow researchers to investigate the specific types of social capital available from friends and their parents. Without knowing whether these contacts are providing information about college to students, it is difficult to draw any conclusions regarding the influence of those contacts on students’ educational beliefs. Furthermore, by only asking students about their closest contacts, researchers are missing out on weaker ties, which may be an important source of college information, particularly for potential first-generation college students (Granovetter, 1973). By asking students to list only their peers, researchers do not obtain information about other sources of information and support. Including peer networks and excluding others, such as families, can provide an
incomplete or biased picture a child’s social network (Cairns & Cairns, 1994). Utilizing a measure that allows students to report all potential sources of information (e.g., parents, peers, and other adults) regardless of the strength of their relationship will likely provide a more accurate picture of whom students talk to about college.

**Social network analysis limitations.** Few researchers have used social network techniques to investigate social capital available to students. An even smaller number of researchers have directly examined students’ information networks using these techniques (Engberg & Allen, 2002; Klasik, 2012; Moschetti, & Hudley, 2008; Wohn et al., 2013). This literature search revealed only one study that has utilized social network analysis to examine the relationship between students’ social ties and their educational aspirations (i.e., Singh & Dika, 2003). The exploratory study of rural students’ networks by Singh and Dika was an important first step in using network analysis methodology to explore the phenomena. However, this study has some important limitations. The authors did not account for the nature of each interaction listed by students, meaning that the interactions listed by students may not have been related to school. In addition, Singh and Dika only allowed students to report adults who were important in their lives. Not allowing students to report other key sources of information, such as peers, leaves out an important potential source of social capital that can influence postsecondary beliefs and choices.

**Sampling limitations.** Differences in educational aspirations, persistence, and attainment “begin at a young age, are cumulative, and result from many forces” (Walpole, 2007, p. 2). Students begin to form their beliefs about going to college in middle school (Eccles et al., 1993; Massé, Perez, & Posselt, 2010). Therefore,
interventions designed to affect educational aspirations and college enrollment should begin as early as possible (McKillip, Rawls, & Barry, 2012; Sommerfield & Bowen, 2013). Examining the role of social capital among middle school students could enable researchers to understand how the flow of social capital could lead to earlier and more effective educational interventions.

**Significance and Purpose of the Study**

The use of proxy measures of social capital has left researchers with an incomplete picture of students’ social networks. Although some researchers have begun to utilize social network methodology with rural students (e.g., Singh & Dika, 2003), no study has examined the college information networks of rural students. Moreover, researchers have not yet examined the flow of social capital among younger adolescents (i.e., middle school-aged students) who stand to benefit the most from increased access to social capital (Eccles et al., 1993). A better understanding of how social capital flows through students’ college information networks could make an important contribution to social capital research (Burt, 2000).

The purpose of the study is (1) to explore how rural Appalachian students obtain information about college, and (2) to examine whether students’ college information networks differ by grade level, by gender, or by potential first-generation status. Through the use of social network analysis techniques geared specifically towards capturing the college information networks of rural Appalachian students, this study has the potential to make two important contributions to the literature. First, the study will expand on prior work by examining the college-related information networks of middle school and high school students. Second, the study will utilize egocentric network analysis
techniques to provide a clearer picture of how rural students obtain information about college.

This study will address three research questions:

1. Whom do rural Appalachian students talk to about college?
2. What is the structure of their information networks?
3. Does the availability of social capital differ as a function of students’ grade level, gender, potential first-generation status, or as a result of an interaction among these factors?

The first two research questions examined whom rural Appalachian students talk to about college. Using egocentric (i.e., personal) network analysis techniques, the structure of students’ college information networks was explored in terms of:

a. number of individuals in the network (network degree);
b. connectedness of the network (network constraint and network hierarchy);
c. gender composition of the network (i.e., percentage of girls/women students’ networks);
d. percentage of individuals in students’ networks who have obtained a Bachelor’s degree or higher and diversity of level of education within a student’s network;
e. types of individuals in students’ college information network (percentage of network represented by peers, family, community members, school staff, and college liaisons);
f. amount of time students have known members of their college information networks;
g. total amount of information about college available in the network;

h. frequency of conversations about college that occur within students’ networks; and

i. students’ perceptions of how much support they receive from individuals in their network for their educational plans and students’ perceived importance of information received from individuals in their network about college.

The third research question examined whether available social capital differs as a function of grade level, gender, potential first-generation status, or a combination of these demographic characteristics. This is the first study of its kind to examine college information networks; therefore, these analyses are considered exploratory and no hypotheses are offered.

Method

Participants. Participants were 388 middle (n = 188) and high school students (n = 200) in Grades 6-12 from a rural Appalachian community in eastern Kentucky. The sample consisted of 97% White students, 1% African American students, 1% Hispanic students, and 1% classified as another race or ethnicity. Fifty-six percent of the sample was girls. All students in this school district receive free breakfast and lunch, which indicates that most students in the county are living at 130% of the poverty level (equating to an annual income level of $29,965 for a family of four; National School Lunch Program, 2012). About 7% of adult residents in this community aged 25 years or older have obtained a four-year college degree. Fifty-nine percent of students in the study identified themselves as potential first-generation college students (i.e., students whose parents have not attended a four-year college). The study was approved by the
Institutional Review Board as part of a larger study investing motivation and achievement in rural Appalachia (see Appendix A).

**Procedure.** A meeting was held in March 2013 with the superintendent and school administrators from Rural County to talk about a multi-year study entitled *Motivation and Achievement in Rural Appalachia* (MARA). The MARA project consists of a total of seven waves of data collection, beginning in April 2013 and continuing with three waves of data collection during the next two academic school years (2013-2014 and 2014-2015). I obtained permission to conduct my dissertation research as part of the MARA study at the initial meeting with the school administrators. A letter was sent home to parents to inform them of the study and provide them with the opportunity to withdraw their children from the study (see Appendix B). Students whose parents did not opt them out of the study were invited to participate at each wave of the study by completing an assent form. The complete survey was developed online using Qualtrics, a web-based survey development software program. Recruitment of participants began in Spring 2013 with the first wave of data collection and has continued at each wave of the study (October, January, and April of each school year).

A pilot administration of the college information network measure was administered during Wave 1 of the study (April 2013). Based on initial results from this pilot administration, modifications were made to the network measures prior to the next administration in Wave 2 (October 2013). The data for this study were collected during Wave 4 (April 2014) of the MARA project. At each wave, students completed a computerized survey. Students completed items designed to measure their college
information networks, available social capital, and potential first-generation college student status.

**Measures.**

**Name generator and name interpreters.** Egocentric network techniques were used in this study to better analyze the structure of college information networks. Egocentric networks consist of an individual (i.e., ego) and the people to whom that individual talks (i.e., alters; see Figure 3).

![Egocentric Network Diagram]

*Figure 3.* Visual example of an egocentric network. The ego is located in the center of the network and is surrounded by alters (i.e., those named by the ego as members of the network).

The name generator instructions were:

In the spaces provided below, list any people with whom you have had important or influential conversations about college. These people could be family members, friends, classmates, other people at school (such as teachers or guidance
counselors) or other adults. You do not need to list full names. First names and last initials are fine, so long as you know who they are.

Next, students were given a set of name interpreters for each alter they listed. Name interpreters consist of a series of questions about each alter to gather information about the characteristics of each alter and the nature of the student’s relationship with the person. A full listing of all name interpreters used in this study appears in Appendix C.

**Network variables.** Participants’ responses to the name generator and name interpreter were used to calculate several college information network variables that provided a measure of information available within students’ networks. All social capital variables were calculated using E-net (Borgatti, 2006) and SPSS. A listing of all college information network variables with definitions appears in Table 1.

**Network degree.** Network degree was calculated by determining the total number of alters reported by each student. This variable provides the total number of individuals in a student’s college information network. The value of this variable can range from 1 to 10 individuals within each student’s network.

**Network constraint and hierarchy.** Network constraint and hierarchy are each measures of the connectedness of a student’s information network. These are based on students’ responses to the question “Do [alter 1] and [alter 2] know each other?” for each potential alter pairing in their network. *Network constraint* is a measure of how many individuals in the student’s network know each other. Higher values indicate that more individuals in the student’s network know each other (i.e., a higher level of network constraint). *Network hierarchy* measures the influence of key individuals in the network
Table 1

*Description of College Information Network Variables*

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Variable Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Degree</td>
<td>Number of individuals named in each student’s college information network.</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Network Constraint</td>
<td>Connectedness of the network. Higher values equal higher levels of constraint.</td>
<td>0 - 1.13</td>
</tr>
<tr>
<td>Network Hierarchy</td>
<td>Importance of one or more key individuals within the network. Higher values equal higher levels of network hierarchy.</td>
<td>0 - 0.21</td>
</tr>
<tr>
<td>Percentage of Girls in Network</td>
<td>Percentage of girls within the student’s information network.</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Percentage of Network with Bachelor’s or higher</td>
<td>Percentage of individuals within the student’s information network who possess a Bachelor’s degree or higher.</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Diversity of Network Education Level</td>
<td>Standard deviation of alters’ education level. Higher values equal more diversity in terms of educational level within the student’s network.</td>
<td>0 – 2.83</td>
</tr>
<tr>
<td>Role Composition of Network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of Peers in Network</td>
<td>Percentage of the student’s network that is made up of peers.</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Percentage of Family in Network</td>
<td>Percentage of the student’s network that is made up of family members.</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Percentage of School Staff in Network</td>
<td>Percentage of the student’s network that is made up of school staff.</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Percentage of Community Members in Network</td>
<td>Percentage of the student’s network that is made up of members of the community.</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Percentage of College Liaisons in Network</td>
<td>Percentage of the student’s network that are college liaisons (e.g., college admissions officer or staff from a university).</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Average Years Students Have Known Alters</td>
<td>The mean number of years that students have known the individuals in their information networks.</td>
<td>0.25 – 18.5</td>
</tr>
<tr>
<td>Available Information About College</td>
<td>The sum of all of the college-related topics that the student indicated he/she talks about with each individual in his/her network.</td>
<td>1 - 109</td>
</tr>
<tr>
<td>Frequency of Conversations About College</td>
<td>The median value of how often students talk to individuals in their network about college.</td>
<td>never – several times/day</td>
</tr>
<tr>
<td>Perceived Support for Educational Plans</td>
<td>The average level of support that network members have for the student’s educational plans as perceived by the student.</td>
<td>1 - 6</td>
</tr>
<tr>
<td>Perceived Importance of Information Received about College</td>
<td>The average level of importance of the information that students receive about college from individuals in their network as perceived by the student.</td>
<td>1 - 6</td>
</tr>
</tbody>
</table>
by describing the nature of constraint on the ego. Higher values of network hierarchy indicate that a student has a key individual (or individuals) through whom the majority of information about college flows. This affords the key individual(s) the opportunity to exert more influence over the student than other alters in the network.

*Gender composition.* Gender composition of the network was examined using the percentage of women and girls in the student’s network.

*Levels of education.* *Percentage of the network with a Bachelor’s degree or higher* was based on students’ responses to the item, “Has [alter’s name] completed a college degree?” Students were given the option to select *no, 2-year degree, 4-year degree, Master’s degree, Doctoral degree or other professional degree, or I’m not sure.* Alters whom students thought had completed at least a four-year degree were coded as having a Bachelor’s degree or higher. If students stated that they are “not sure” if a person has completed a bachelor’s degree, then that person was treated as if he or she has not completed a four-year degree. Those who have obtained a Bachelor’s degree or higher are the group of interest in this case; therefore, individuals for whom the student was unsure of educational status were grouped with those who have not yet obtained a Bachelor’s degree. *Diversity of network education level* was determined by the standard deviation of the average education level within each student’s network. A higher standard deviation indicates greater variation of education level within students’ information networks.

*Role composition of networks.* Students were asked to select what type of role best describes their relationship to each alter from a total of 20 possible options as part of the name interpreter (see Appendix C). Each of the 20 options was grouped into one of
five categories: peers, family, school, community, or college liaison, or “other.” These categories were developed as a result of a pilot administration of the instrument in April 2013 and correspond to key sources of social capital identified in the literature. An alter’s role was classified as peer if the student indicated that the alter is a classmate, friend or acquaintance, or boyfriend/girlfriend. Alters were classified as family if the student reported them as a parent, grandparent, step-parent, adoptive parent, foster parent, legal guardian, brother or sister (including step- and half-siblings), or other family member (e.g., aunts, uncles, or cousins). If a student reported that an alter is a guidance counselor, teacher, school staff, principal, superintendent, or other school administrator, then the alter’s role was classified as school staff. Alters who are reported as family friends, sports coaches, church members, or church family were classified as community members. Lastly, college liaisons included those alters whom students indicated are college students, college admissions officers or other college staff, staff from summer enrichment programs (e.g., Governor’s Scholars Program or summer camp at a university), or a college coach or representative from a college preparatory program such as GEAR UP, Upward Bound, or Robinson Scholars.

Students who selected “other” were given the opportunity to enter in their own description of their relationship to the alter. Responses of students who select “other” were examined to determine if their responses fit into any of the five categories listed above and were recoded accordingly. No additional categories were identified. Role composition of each student’s network was calculated as the percentage of the network that is represented by each type of relationship (i.e., peers, family, school, community, and college liaison).
Average years students have known alters. Students were asked to report how many months and years that they have known each alter in their network. From this information a variable was calculated to report the number of years (with months included as the appropriate fraction of a year) that students have known each person in their network.

Available information about college. Students were asked to report what college-related topics they discussed with each alter by selecting among 16 options. One option (I don’t talk to this person about college) was included as a selection but was not included in the calculation of total information available in the network. An “other” option allowed students to report additional topics that were not listed. The total amount of information available within the network was calculated as a sum of the topics discussed with each alter. For example, if a student talks with one alter about five topics and another alter about two topics, then the total amount of information available in that student’s network is seven. A sum score is preferable in this case due to the fact that students may discuss similar topics (e.g., financial aid) with multiple alters, but the type of information received from each alter may be different. For example, a student may go to one alter for information about filling out the Free Application for Federal Student Aid (FAFSA) and to another for information on how to apply for scholarships.

Frequency of conversations about college. Students were asked to report how frequently they spoke with each alter about college. Students were given 10 options to choose from, ranging from never to several times a day. Because this is an ordinal variable, the median value of students’ responses for alters in their network was calculated.
Perceived support for educational plans. Alters were rated by the student in terms of the level of perceived support that they provided for students’ educational plans. Students were able to select any number ranging from 1 (not at all supportive) to 6 (extremely supportive) to indicate the level of support from each alter. A mean rating of perceived support from alters in the student’s network was then calculated.

Perceived importance of information received about college. The perceived importance of information received by students from members of their college information networks was calculated by averaging students’ responses on a scale from 1 (not at all important to me) to 6 (extremely important to me) for each alter to the following question: “How important is the information about college that you obtain from [alter’s name]?”

Potential first-generation status. Students were asked to identify whether or not they are potential first-generation college students by indicating whether either of their parents has attended a four-year college or university. Students had the option to select yes, no, or not sure. Students who respond “no” to this question were classified as potential first-generation college students. Potential first-generation status was coded dichotomously as 0 (continuing-generation or not sure) and 1 (potential first-generation college student). Continuing-generation and students who were unsure were grouped together because potential first-generation college students are the group of interest in this study.

Available social capital. Available social capital was assessed with six network variables. A combination of variables measuring structural social capital (i.e., social capital available as a function of network structure) and informational social capital (i.e.,
social capital available as a function of the resources available within the network) was chosen based on the recommendations by social capital researchers to examine both types of social capital (Bartkus & Davis, 2009; Lin 1999). Three measures of structural social capital (network degree, network hierarchy, and network constraint) and three measures of informational social capital (percentage of the network with a Bachelor’s degree or higher, available information about college, frequency of conversations about college) were used as dependent variables in this study.

Demographic information. Grade level and gender information was obtained from the official school district rosters. Grade level was separated into three categories; middle grades (Grades 6-8), junior high (Grades 9-10) and senior high (Grades 11-12). Gender was coded as 0 (girl) and 1 (boy).

Analyses: Research Questions 1 and 2. The first two research questions asked to whom rural Appalachian students talked to about college and explored the structure of students’ college information networks. To answer these research questions, basic descriptive statistics were calculated for the full sample, by grade level, by gender, and by potential first-generation status for each of the network variables described above.

Analyses: Research Question 3. The third research question explores whether available social capital within college information networks differs as a function of students’ grade level, gender, potential first-generation status or as a result of an interaction of these demographic characteristics. A factorial 3 x 2 x 2 Multivariate Analysis of Variance (MANOVA) was planned to answer this question.

Prior to running the MANOVA, the assumptions for univariate and multivariate normality and homogeneity of covariance and variance were examined to make sure that
each assumption was tenable. Univariate and multivariate normality for each
demographic group of interest (i.e., each grade level, boys, girls, and potential first-
generation status) were examined using the normtest and Mardia SPSS macros developed
by deCarlo (1997). Univariate normality was examined using the skewness and kurtosis
statistics for each social capital variable in each demographic group (i.e., grade level,
gender, and potential first-generation college student status). Based on the criteria set
forth by West, Finch, and Curran (1995; i.e., skewness > |2| and kurtosis > |7|), all social
capital variables were significantly skewed. Box’s $M$ test revealed that the homogeneity
of covariance assumption was not tenable, $M(231) = 519.12, p < .001$. The D’Agostino
and Pearson $K$-squared omnibus test revealed that all social capital variables violated
assumptions of multivariate normality for all groups, $p < .05$. The data were also
examined for multivariate outliers. Mahalanobis $D^2$ statistics for each group revealed
multivariate outliers for each demographic group; however, removal of outliers did not
significantly improve multivariate normality.

Because the normality and homogeneity of variances assumptions were not
tenable, regressions with robust standard errors were conducted using maximum
likelihood estimation in Mplus 6.0 (Muthén & Muthén, 1998-2010). This analysis plan
allowed the examination of group differences in each social capital variable of interest
while controlling for variability present as a result of other group membership (e.g.,
differences in social capital as a function of grade level while controlling for gender and
potential first-generation college student status). This approach was limited in that it did
not allow all dependent variables to be examined within one model. Therefore, three
regression models were fit to each of the six social capital variables to examine group
differences. Separate multiple linear regression (MLR) models were used to investigate
the relationship between grade level, gender, potential first-generation college student
status, and their interactions on six dependent outcome variables: degree, constraint,
hierarchy, percent of network with a Bachelor’s degree or higher, sum of available
information about college, and frequency of conversations about college. Model 1
included only simple effects, and consisted of two dummy-coded grade level variables
(Junior High and Senior High, with Middle Grades as the reference group), gender, and
potential first-generation college student status. In Model 2, the simple effects were
included along with each possible two-way interaction (Grade level x Gender, Grade
level x Potential first-generation college student status, and Gender x Potential first-
generation college student status). Model 3 included simple effects, two-way
interactions, and the three-way interaction (Grade level x Gender x Potential first-
generation college student status). Model fit was examined using AIC, BIC, and Satorra-
Bentler chi-square difference tests (Satorra & Bentler, 1999), which compared the more
complex models (i.e., Models 2 and 3) with the simple effects model (Model 1). Satorra-
Bentler chi-square difference tests were used in lieu of a traditional chi-square difference
test because they are more robust to data that do not meet the assumptions of normality
(Bryant & Satorra, 2012). Due to multiple comparisons, an adjusted alpha level of .01
was used to avoid Type I error while also guarding against Type II error (Murphy, Byors,
& Wolach, 2014).

Treatment of missing data. Missing Value Analysis was conducted in SPSS 21
to determine if treatment of missing data was necessary. Results revealed that missing
data were present in six cases and comprised less than one percent of all data; therefore
listwise deletion was used (McKnight, McKnight, Sidani, & Figueredo, 2007). This resulted in a final sample size of 387 for all analyses except for the regression model predicting the total amount of information present in students’ network, which had a total of six individuals removed from analysis ($N = 382$).

Results

Structure of college information networks. The first research question posed in this study explored to whom do rural Appalachian students talk about college. To answer this question, descriptive statistics were calculated for the full sample, by grade level, gender, and potential first-generation college student status for a number of descriptive variables as well as six measures of social capital. Table 2 provides descriptive statistics for each of the network variables for the full sample and by grade level. Table 3 provides the same information by gender, and Table 4 provides descriptive statistics for potential first-generation college students and continuing-generation college students. I will first describe students’ networks in terms of available social capital.

Available social capital. Six measures of social capital were calculated: network degree (i.e., number of individuals in students’ networks), constraint (i.e., connectedness of the network), hierarchy (potential for individuals in the network to be influential on others), the percentage of individuals in the network that had completed a Bachelor’s degree or higher, the sum of information about college available in the network, and the median frequency of conversations about college.

Measures of structural social capital included network degree, constraint, and hierarchy. On average, students’ networks consisted of four individuals, though network size ranged from one to ten persons. Middle grades students and girls talked to about five
Table 2

**Descriptive Statistics for College Information Networks by Grade Level**

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>(N = 388)</em></td>
<td>Middle Grades</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>(n = 188)</em></td>
</tr>
<tr>
<td><strong>M (SD)</strong></td>
<td><strong>M (SD)</strong></td>
<td><strong>M (SD)</strong></td>
</tr>
<tr>
<td><strong>Structural Social Capital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Degree</td>
<td>4.17 (2.38)</td>
<td>4.73 (2.55)</td>
</tr>
<tr>
<td>Network Constraint</td>
<td>0.69 (0.31)</td>
<td>0.67 (0.28)</td>
</tr>
<tr>
<td>Network Hierarchy</td>
<td>0.01 (0.02)</td>
<td>0.01 (0.02)</td>
</tr>
<tr>
<td><strong>Informational Social Capital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Network with Bachelor’s or higher</td>
<td>19.17 (28.36)</td>
<td>16.11 (25.07)</td>
</tr>
<tr>
<td>Sum of Available Information About College</td>
<td>21.93 (18.46)</td>
<td>22.01 (19.52)</td>
</tr>
<tr>
<td>Frequency of Conversations About College</td>
<td>4.12 (2.32)</td>
<td>3.58 (2.41)</td>
</tr>
<tr>
<td><strong>Network Composition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Girls in Network</td>
<td>55.32 (25.55)</td>
<td>57.08 (22.00)</td>
</tr>
<tr>
<td>Diversity of Network Education Level</td>
<td>0.52 (0.63)</td>
<td>0.50 (0.64)</td>
</tr>
<tr>
<td>Percent of Peers in Network</td>
<td>9.08 (17.93)</td>
<td>7.51 (14.28)</td>
</tr>
<tr>
<td>Percent of Family in Network</td>
<td>69.27 (30.52)</td>
<td>76.96 (24.38)</td>
</tr>
<tr>
<td>Percent of School Staff in Network</td>
<td>14.66 (25.58)</td>
<td>8.79 (17.32)</td>
</tr>
<tr>
<td>Percent of Community Members in Network</td>
<td>4.82 (13.14)</td>
<td>5.33 (12.25)</td>
</tr>
<tr>
<td>Percent of College Liaisons in Network</td>
<td>2.17 (9.85)</td>
<td>1.42 (6.48)</td>
</tr>
<tr>
<td>Average Years Student has Known Member</td>
<td>11.20 (3.54)</td>
<td>10.78 (2.44)</td>
</tr>
<tr>
<td>Support for Educational Plans</td>
<td>5.20 (0.99)</td>
<td>5.12 (1.05)</td>
</tr>
<tr>
<td>Importance of Information Received About College</td>
<td>4.73 (1.11)</td>
<td>4.81 (1.12)</td>
</tr>
</tbody>
</table>

*Note. Middle Grades = Grades 6-8; Junior High = Grades 9-10; Senior High = Grades 11-12. Frequency of conversations about college was computed as a median value.*
Table 3

Descriptive Statistics for College Information Networks by Gender

<table>
<thead>
<tr>
<th></th>
<th>Full Sample (N = 388)</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Girls (n = 218)</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Structural Social Capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Degree</td>
<td>4.17 (2.38)</td>
<td>4.63 (2.48)</td>
</tr>
<tr>
<td>Network Constraint</td>
<td>0.69 (0.31)</td>
<td>0.66 (0.28)</td>
</tr>
<tr>
<td>Network Hierarchy</td>
<td>0.01 (0.02)</td>
<td>0.01 (0.02)</td>
</tr>
<tr>
<td>Informational Social Capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Network with Bachelor’s or higher</td>
<td>19.17 (28.36)</td>
<td>18.51 (26.69)</td>
</tr>
<tr>
<td>Sum of Available Information About College</td>
<td>21.93 (18.46)</td>
<td>27.04 (20.15)</td>
</tr>
<tr>
<td>Frequency of Conversations About College</td>
<td>4.12 (2.32)</td>
<td>4.30 (2.22)</td>
</tr>
<tr>
<td>Network Composition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Girls in Network</td>
<td>55.32 (25.55)</td>
<td>62.77 (22.85)</td>
</tr>
<tr>
<td>Diversity of Network Education Level</td>
<td>0.52 (0.63)</td>
<td>0.55 (0.64)</td>
</tr>
<tr>
<td>Percent of Peers in Network</td>
<td>9.08 (17.93)</td>
<td>12.08 (19.18)</td>
</tr>
<tr>
<td>Percent of Family in Network</td>
<td>69.27 (30.52)</td>
<td>65.13 (28.58)</td>
</tr>
<tr>
<td>Percent of School Staff in Network</td>
<td>14.66 (25.58)</td>
<td>14.57 (22.86)</td>
</tr>
<tr>
<td>Percent of Community Members in Network</td>
<td>4.82 (13.14)</td>
<td>5.37 (12.45)</td>
</tr>
<tr>
<td>Percent of College Liaisons in Network</td>
<td>2.17 (9.85)</td>
<td>2.86 (11.69)</td>
</tr>
<tr>
<td>Average Years Known</td>
<td>11.20 (3.54)</td>
<td>10.81 (3.33)</td>
</tr>
<tr>
<td>Support for Educational Plans</td>
<td>5.20 (0.99)</td>
<td>5.30 (0.90)</td>
</tr>
<tr>
<td>Importance of Information Received About College</td>
<td>4.73 (1.11)</td>
<td>4.89 (0.96)</td>
</tr>
</tbody>
</table>

Note. Frequency of conversations about college was computed as a median value.
<table>
<thead>
<tr>
<th></th>
<th>Full Sample (N = 388)</th>
<th>Potential First Generation College Student</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>Yes (n = 230)</td>
<td>No/Not Sure (n = 157)</td>
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<tr>
<td><strong>Structural Social Capital</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Network Degree</td>
<td>4.17 (2.38)</td>
<td>4.14 (2.48)</td>
<td>4.21 (2.23)</td>
</tr>
<tr>
<td>Network Constraint</td>
<td>0.69 (0.31)</td>
<td>0.69 (0.32)</td>
<td>0.71 (0.29)</td>
</tr>
<tr>
<td>Network Hierarchy</td>
<td>0.01 (0.02)</td>
<td>0.01 (0.03)</td>
<td>0.01 (0.02)</td>
</tr>
<tr>
<td><strong>Informational Social Capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Network with Bachelor’s or higher</td>
<td>19.17 (28.36)</td>
<td>12.43 (22.34)</td>
<td>29.18 (33.06)</td>
</tr>
<tr>
<td>Sum of Available Information about College</td>
<td>21.93 (18.46)</td>
<td>22.51 (19.24)</td>
<td>21.15 (17.31)</td>
</tr>
<tr>
<td>Frequency of Conversations about College</td>
<td>4.12 (2.32)</td>
<td>4.19 (2.29)</td>
<td>4.03 (2.36)</td>
</tr>
<tr>
<td><strong>Network Composition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Girls in Network</td>
<td>55.32 (25.55)</td>
<td>55.24 (26.22)</td>
<td>55.36 (24.69)</td>
</tr>
<tr>
<td>Diversity of Network Education Level</td>
<td>0.52 (0.63)</td>
<td>0.43 (0.59)</td>
<td>0.66 (0.67)</td>
</tr>
<tr>
<td>Percent of Peers in Network</td>
<td>9.08 (17.93)</td>
<td>9.51 (18.16)</td>
<td>8.51 (17.67)</td>
</tr>
<tr>
<td>Percent of Family in Network</td>
<td>69.27 (30.52)</td>
<td>66.52 (31.70)</td>
<td>73.12 (28.33)</td>
</tr>
<tr>
<td>Percent of School Staff in Network</td>
<td>14.66 (25.58)</td>
<td>16.10 (27.56)</td>
<td>12.66 (22.36)</td>
</tr>
<tr>
<td>Percent of Community Members in Network</td>
<td>4.82 (13.14)</td>
<td>5.29 (14.36)</td>
<td>4.16 (11.18)</td>
</tr>
<tr>
<td>Percent of College Liaisons in Network</td>
<td>2.17 (9.85)</td>
<td>2.59 (10.97)</td>
<td>1.56 (7.97)</td>
</tr>
<tr>
<td>Average Years Known</td>
<td>11.20 (3.54)</td>
<td>11.09 (3.76)</td>
<td>11.32 (3.18)</td>
</tr>
<tr>
<td>Support for Educational Plans</td>
<td>5.20 (0.99)</td>
<td>5.22 (1.01)</td>
<td>5.16 (0.96)</td>
</tr>
<tr>
<td>Importance of Information Received About College</td>
<td>4.73 (1.11)</td>
<td>4.73 (1.11)</td>
<td>4.74 (1.13)</td>
</tr>
</tbody>
</table>

*Note. Potential first-generation status information was not available for one student. Frequency of conversations about college was computed as a median value.*
persons on average about college. The average level of network constraint for the sample was 0.69, indicating a moderate level of connectedness among individuals in students’ networks. Network hierarchy was low (0.01). In other words, no one individual was exerting influence over and above other individuals in a student’s network.

Informational social capital was measured with the percent of students’ networks who had obtained a Bachelor’s degree or higher, the sum of available information about college, and the median frequency of conversations about college.

About 19% of individuals in students’ networks had completed a Bachelor’s degree or higher; however, there was considerable variation across the sample. Students in senior high indicated that 25% of individuals in their network had attained at least a Bachelor’s degree. Junior high and middle grades students reported that 19% and 16% of individuals in their network had attained this level of education, respectively. Potential first-generation college students reported that only 12% of individuals in their networks had completed a Bachelor’s degree or higher compared to 29% reported by continuing-generation students.

On average, students reported that they received 22 pieces of information about college from individuals in their network. Boys reported receiving 15 pieces of information about college; girls reported receiving 27 pieces of information. Students in the full sample reported talking to individuals in their network about college once a month. Middle grades students reported talking to individuals in their network less often (i.e., several times a year), whereas senior high students reported talking to individuals about college 2-3 times a month.
In sum, rural Appalachian students’ college information networks were small to moderate in size and individuals in students’ networks knew one another. Few individuals in students’ networks had obtained a Bachelor’s degree, but students were talking to these individuals about a variety of topics related to college-going about once a month. Together, these findings provide an initial picture of the types of social capital available in rural Appalachian students’ information networks. I will next describe my findings with regard to the composition of students’ information networks.

Network composition. On average, individuals in students’ networks were 55% women. Boys reported that 48% of the individuals that they spoke to about college were women. Family comprised the majority of students’ networks for the full sample (69%; see Figure 4). This was also the case for each grade level, gender, and potential first-generation college student status. However, there was some variation in the percentage of family members contained in students’ networks. For example, senior high students reported that 56% of their network was family members in contrast to the percentage of family represented in junior high and middle grades students’ networks (68% and 77%, respectively). Boys reported that 75% of individuals their network were family compared to girls, who reported that family comprised 65% of their networks. Continuing generation students reported that 73% of their network was family, whereas family comprised 67% of individuals in potential first-generation college students’ networks.
In addition to investigating the types of individuals that students talked to about college, I also examined several other measures that further describe the nature of students’ information networks. The diversity of education levels achieved by members of students’ information networks was relatively low, .52 for the full sample. This means that there was little differentiation in the educational attainment of individuals in students’ networks. On average, students had known individuals in their network for 11 years. This number did not vary much by grade level, gender, or potential first-generation status.

The average level of support for students’ educational plans and students’ perceived importance of information about college that they received from network members was also examined. Students weighted the relative level of support for their educational plans at 5.20 on a scale of 1 to 6. On average, students weighted the importance of information about college received from individuals in their network at 4.73 on a scale of 1 to 6.

The results describing the composition of students’ information networks related to college reveal that family members comprise the majority of students’ networks, and

Figure 4. Composition of students’ information networks.

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The results describing the composition of students’ information networks related to college reveal that family members comprise the majority of students’ networks, and
that students have known the individuals in their networks for the majority of their lives. Students perceived that individuals in their network supported their educational plans and that the information received from individuals in their network about college was relatively important.

**Differences in available social capital.** I next used statistical tests to examine whether statistically significant differences exist in social capital available to students of different grade level, gender, or potential first-generation college student status. I first examined how the variables were interrelated.

**Relationship between social capital variables.** A correlation matrix of all demographic and social capital variables is presented in Table 5. Gender was related to network degree, constraint, and the sum of available information about college. Boys had fewer individuals in their network, $r = -0.22, p < .001$, and their networks were more connected compared to girls’ networks, $r = 0.14, p = .007$. Boys’ networks also contained fewer pieces of information compared to girls’ networks, $r = -0.32, p < .001$.

There was a negative relationship between grade level and network degree, $r = -0.24, p < .001$, and a positive relationship with grade level and the frequency of conversations about college, $r = 0.27, p < .001$. This meant that students in higher grade levels had fewer individuals in their network, but spoke to those individuals more frequently than students in lower grade levels.

Potential first-generation college student status was negatively correlated with the percentage of students’ networks who had obtained a Bachelor’s degree or higher, $r = -0.29, p < .001$. There were fewer individuals in potential first-generation college students’
Table 5

*Correlations of Demographic and Social Capital Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Grade level</td>
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<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. First-generation college student</td>
<td>-.00</td>
<td>.20**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Degree</td>
<td>-.22**</td>
<td>-.24**</td>
<td>-.01</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
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<td>5. Constraint</td>
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<td>.01</td>
<td>-.04</td>
<td>-.37**</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>6. Hierarchy</td>
<td>-.06</td>
<td>-.03</td>
<td>.02</td>
<td>.29**</td>
<td>-.19**</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Percent of network with bachelor’s or higher</td>
<td>.03</td>
<td>.13</td>
<td>-.29**</td>
<td>-.11</td>
<td>-.11</td>
<td>-.00</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>8. Sum of available information about college</td>
<td>-.32**</td>
<td>-.01</td>
<td>.04</td>
<td>.58**</td>
<td>-.23**</td>
<td>.14*</td>
<td>.07</td>
<td>---</td>
</tr>
<tr>
<td>9. Frequency of conversations about college</td>
<td>-.09</td>
<td>.27**</td>
<td>.03</td>
<td>-.14*</td>
<td>.02</td>
<td>-.05</td>
<td>.13</td>
<td>.13</td>
</tr>
</tbody>
</table>

*Note. N = 382. Six cases were excluded from analysis due to missing data. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-generation college student variable, continuing generation students were coded as 0 and first-generation students were coded as 1. *p < .01. **p < .001.*
networks who had obtained a Bachelor’s degree or higher compared to continuing
generation students.

Network degree (i.e., the number of individuals in students’ networks) was
significantly correlated with network constraint, network hierarchy, available information
about college, and frequency of conversations about college. As the number of
individuals in students’ networks increased, individuals in students’ networks were less
connected to one another, $r = -.37, p < .001$ and there was more potential for one key
individual in the network to wield influence over others in the network, $r = .29, p < .001$.
Students who had more individuals in their network also had more information about
college available to them, $r = .58, p < .001$, but talked to individuals in their network less
frequently, $r = -.14, p = .006$.

Network constraint was negatively correlated with network hierarchy, $r = -.19, p
< .001$; networks where individuals were well connected to one another did not provide
an opportunity for one or two individuals to wield influence over the entire network (i.e.,
a hierarchical network). Network constraint was also negatively related to available
information about college $r = -.23, p < .001$, meaning that networks where individuals
knew each other contained less information about college.

Network hierarchy was positively correlated with available information about
college, $r = .14, p = .006$. If a student’s network had one particular individual who had
the potential to influence others in the student’s network, then that network contained
more information about college

**Differences in structural social capital.** After examining the correlations
between the social capital and demographic variables, I regressed each social capital
variable on grade level, gender, and potential first-generation college student status along with two-way and three-way interactions. Separate regressions were run to examine whether each source of structural social capital (i.e., network degree, constraint, or hierarchy) differed as a function of grade level, gender, or potential first-generation college student status, or as a result of an interaction among these factors. Tables 6-8 present the results of three maximum likelihood regressions on each measure of structural social capital.

Differences in network degree. The results of the regression models examining group differences in network degree (i.e., number of individuals in a student’s college information network) are presented in Table 6. An examination of the AIC statistics indicated that Model 1 (simple effects only) was the best fit. Satorra-Bentler scaled chi-square difference tests comparing Model 1 with Models 2 and 3 yielded nonsignificant results, $p > .01$, indicating that all models fit the data equally well. No two-or three-way interactions in Model 2 or Model 3 were found to be significant; therefore, the most parsimonious model (i.e., Model 1) was interpreted. Model 1 explained 11% of the variance in network degree, indicating that there were significant differences among students with respect to the number of individuals within their college information networks, $p < .001$. Controlling for all other variables, junior high students had significantly fewer individuals in their network compared to middle grades students, $B = -0.94$, $p < .01$, as did students in senior high, $B = -1.36$, $p < .001$. Students in middle grades naming five individuals on average, compared to junior high students, who spoke to four individuals and senior high students who spoke to three individuals on average.
Table 6

*Multiple Linear Regression Analyses Predicting Network Degree*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>Model 3 B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>5.13**</td>
<td>5.13**</td>
<td>5.16**</td>
</tr>
<tr>
<td>Junior High (JH)</td>
<td>-0.94*</td>
<td>-1.29</td>
<td>-1.29</td>
</tr>
<tr>
<td>Senior High (SH)</td>
<td>-1.36**</td>
<td>-1.51**</td>
<td>-1.66**</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>-1.10**</td>
<td>-1.01</td>
<td>-1.08</td>
</tr>
<tr>
<td>First-Generation College Student (FGCS)</td>
<td>0.18</td>
<td>0.31</td>
<td>0.25</td>
</tr>
<tr>
<td>JH*G</td>
<td>0.41</td>
<td></td>
<td>0.44</td>
</tr>
<tr>
<td>JH*FGCS</td>
<td>0.22</td>
<td></td>
<td>0.26</td>
</tr>
<tr>
<td>SH*G</td>
<td>0.23</td>
<td></td>
<td>0.58</td>
</tr>
<tr>
<td>SH*FGCS</td>
<td>0.07</td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>G*FGCS</td>
<td>-0.42</td>
<td></td>
<td>-0.28</td>
</tr>
<tr>
<td>JH<em>G</em>FGCS</td>
<td></td>
<td></td>
<td>-0.08</td>
</tr>
<tr>
<td>SH<em>G</em>FGCS</td>
<td></td>
<td></td>
<td>-0.54</td>
</tr>
<tr>
<td>AIC</td>
<td>1,736.19</td>
<td>1,744.96</td>
<td>1,748.76</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.11**</td>
<td>.11**</td>
<td>.11**</td>
</tr>
</tbody>
</table>

*Note. N = 387. Unstandardized beta values are reported. Junior high and senior high are dummy-coded variables related to grade level, with Middle Grades as the reference group. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation College Student variable, continuing generation students were coded as 0 and first-generation students were coded as 1. *p < .01. **p < .001.*

Boys also had significantly fewer individuals in their network compared to girls, $B = -1.10$, $p < .001$, controlling for all other variables. Boys reported speaking to four individuals about college; girls reported speaking to 5 individuals about college on average.

* Differences in network constraint and hierarchy. * I next examined whether group differences existed in terms of network constraint, or the overall connectedness of individuals in students’ networks (see Table 7). None of the models significantly predicted network constraint, indicating that regardless of their grade level, gender or potential first-generation college student status, members of students’ college information networks were similarly connected. The models predicting network hierarchy were also found to be nonsignificant, indicating that the influence of one individual over students’
Table 7

Multiple Linear Regression Analyses Predicting Network Constraint

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>Model 3 B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.65**</td>
<td>0.66**</td>
<td>0.66**</td>
</tr>
<tr>
<td>Junior High (JH)</td>
<td>0.09</td>
<td>0.11</td>
<td>0.10</td>
</tr>
<tr>
<td>Senior High (SH)</td>
<td>0.00</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>0.08</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>First-Generation College Student (FGCS)</td>
<td>-0.03</td>
<td>-0.03</td>
<td>-0.03</td>
</tr>
<tr>
<td>JH*G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JH*FGCS</td>
<td>-0.04</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td>SH*G</td>
<td>-0.01</td>
<td>-0.04</td>
<td></td>
</tr>
<tr>
<td>SH*FGCS</td>
<td>-0.01</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td>G*FGCS</td>
<td>0.03</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td>JH<em>G</em>FGCS</td>
<td></td>
<td></td>
<td>-0.03</td>
</tr>
<tr>
<td>SH<em>G</em>FGCS</td>
<td></td>
<td>-0.04</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>178.57</td>
<td>188.01</td>
<td>191.88</td>
</tr>
</tbody>
</table>

**Note. N = 387. Unstandardized beta values are reported. Junior high and senior high are dummy-coded variables related to grade level, with Middle Grades as the reference group. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation College Student variable, continuing generation students were coded as 0 and first-generation students were coded as 1. *p < .01. **p < .001.

Table 8

Multiple Linear Regression Analyses Predicting Network Hierarchy

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>Model 3 B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.01**</td>
<td>0.01**</td>
<td>0.01**</td>
</tr>
<tr>
<td>Junior High (JH)</td>
<td>-0.00</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Senior High (SH)</td>
<td>-0.00</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.00</td>
</tr>
<tr>
<td>First-Generation College Student (FGCS)</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.00</td>
</tr>
<tr>
<td>JH*G</td>
<td>-0.00</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td>JH*FGCS</td>
<td>0.00</td>
<td>-0.00</td>
<td></td>
</tr>
<tr>
<td>SH*G</td>
<td>-0.00</td>
<td>-0.00</td>
<td></td>
</tr>
<tr>
<td>SH*FGCS</td>
<td>0.01</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>G*FGCS</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>JH<em>G</em>FGCS</td>
<td></td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>SH<em>G</em>FGCS</td>
<td></td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>-1,789.41</td>
<td>-1,783.23</td>
<td>-1,780.61</td>
</tr>
</tbody>
</table>

**Note. N = 387. Unstandardized beta values are reported. Junior high and senior high are dummy-coded variables related to grade level, with Middle Grades as the reference group. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation College Student variable, continuing generation students were coded as 0 and first-generation students were coded as 1. *p < .01. **p < .001.
information networks did not differ as a function of grade level, gender or potential first-generation college student status (see Table 8).

**Differences in informational social capital.** I next explored whether differences in informational social capital existed by grade level, gender, or potential first-generation college student status. The results of the regression analyses examining information social capital are presented in Tables 9-11.

**Differences in percentage of individuals in students’ networks with a Bachelor’s degree or higher.** I first examined whether group differences existed with respect to the percentage of individuals in students’ networks who had obtained a Bachelor’s degree or higher (see Table 9). Satorra-Bentler scaled chi-square difference tests comparing Model 1 with Models 2 and 3 yielded nonsignificant results, $p > .01$, indicating that all models fit the data equally well. AIC statistics indicated that Model 1 best fit the data relative to the other models under consideration. In addition, no two-or three-way interactions in Model 2 or Model 3 were found to be significant; therefore I proceeded to interpret Model 1.

Model 1 explained 12% of the variance in the percentage of individuals in a student’s network who had obtained at least a Bachelor’s degree, $p < .001$, and indicated that this percentage differed as a function of students’ grade level and potential first-generation college student status. Senior higher students reported having 13.62% more people with college degrees in their network than did students in the middle grades, holding all other variables constant, $B = 13.62, p < .001$. Potential first-generation college students reported 19% fewer college-degree recipients in their networks than did continuing-generation students, holding all other variables constant, $B = 19.02, p < .001$. 
Table 9

*Multiple Linear Regression Analyses Predicting Percent of Network with a Bachelor’s Degree or Higher*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 $B$</th>
<th>Model 2 $B$</th>
<th>Model 3 $B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>24.57**</td>
<td>21.99**</td>
<td>20.52**</td>
</tr>
<tr>
<td>Junior High (JH)</td>
<td>6.41</td>
<td>15.08</td>
<td>23.04</td>
</tr>
<tr>
<td>Senior High (SH)</td>
<td>13.62**</td>
<td>20.87*</td>
<td>21.46</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>1.90</td>
<td>2.39</td>
<td>6.00</td>
</tr>
<tr>
<td>First-Generation College Student (FGCS)</td>
<td>-19.02**</td>
<td>-15.02**</td>
<td>-11.78*</td>
</tr>
<tr>
<td>JH*G</td>
<td>-5.06</td>
<td>-20.59</td>
<td></td>
</tr>
<tr>
<td>JH*FGCS</td>
<td>-10.56</td>
<td>-22.87</td>
<td></td>
</tr>
<tr>
<td>SH*G</td>
<td>-2.27</td>
<td>-3.81</td>
<td></td>
</tr>
<tr>
<td>SH*FGCS</td>
<td>-10.21</td>
<td>-12.25</td>
<td></td>
</tr>
<tr>
<td>G*FGCS</td>
<td>1.69</td>
<td>-5.55</td>
<td></td>
</tr>
<tr>
<td>JH<em>G</em>FGCS</td>
<td></td>
<td>24.97</td>
<td></td>
</tr>
<tr>
<td>SH<em>G</em>FGCS</td>
<td></td>
<td>4.32</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>3,648.36</td>
<td>3,654.38</td>
<td>3,654.96</td>
</tr>
</tbody>
</table>

$^R^2$ .12** .13** .14**

Note. $N = 387$. Unstandardized beta values are reported. Junior high and senior high are dummy-coded variables related to grade level, with Middle Grades as the reference group. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation College Student variable, continuing generation students were coded as 0 and first-generation students were coded as 1.

* $p < .01$. ** $p < .001$.

*Differences in sum of available information about college.* Next I proceeded to examine the regression models predicting available information about college (see Table 10). Satorra-Bentler scaled chi-square difference tests comparing Model 1 with Models 2 and 3 yielded nonsignificant results ($p > .01$), indicating that all Models fit the data equally well. AIC statistics indicated that Model 1 best fit the data. No two-or three-way interactions in Model 2 or Model 3 were found to be significant; therefore, the most parsimonious model (i.e., Model 1) was interpreted. Model 1 was significant and accounted for 11% of the variance in the sum of available information about college in students’ networks. The sum of available information about college differed as a function of gender with boys reporting that they received less information about college than girls, holding all other variables constant, $B = -11.97, p < .001$. 

75
Table 10

Multiple Linear Regression Analyses Predicting Sum of Available Information About College

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>Model 3 B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>26.51**</td>
<td>26.05**</td>
<td>26.59**</td>
</tr>
<tr>
<td>Junior High (JH)</td>
<td>0.38</td>
<td>1.12</td>
<td>-1.06</td>
</tr>
<tr>
<td>Senior High (SH)</td>
<td>-1.28</td>
<td>-1.82</td>
<td>-2.72</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>-11.97**</td>
<td>-13.32**</td>
<td>-14.67**</td>
</tr>
<tr>
<td>First-Generation College Student (FGCS)</td>
<td>1.48</td>
<td>4.80</td>
<td>3.62</td>
</tr>
<tr>
<td>JH*G</td>
<td>-4.91</td>
<td>-1.45</td>
<td></td>
</tr>
<tr>
<td>SH*G</td>
<td>5.79</td>
<td>7.96</td>
<td></td>
</tr>
<tr>
<td>SH*FGCS</td>
<td>-3.41</td>
<td>-1.75</td>
<td></td>
</tr>
<tr>
<td>G*FGCS</td>
<td>-2.50</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>JH<em>G</em>FGCS</td>
<td>4.57</td>
<td>8.92</td>
<td></td>
</tr>
<tr>
<td>SH<em>G</em>FGCS</td>
<td>-4.91</td>
<td>-1.45</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>3,280.96</td>
<td>3,287.39</td>
<td>3,290.73</td>
</tr>
<tr>
<td>R²</td>
<td>.11**</td>
<td>.11**</td>
<td>.11**</td>
</tr>
</tbody>
</table>

Note. N = 382. Unstandardized beta values are reported. Junior high and senior high are dummy-coded variables related to grade level, with Middle Grades as the reference group. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation Status variable, continuing generation students were coded as 0 and first-generation students were coded as 1.

*Differences in frequency of conversations about college. The final model predicting informational social capital examined group differences in the frequency of conversations about college (see Table 11). Satorra-Bentler scaled chi-square difference tests comparing Model 1 with Models 2 and 3 yielded nonsignificant results, p > .01, indicating that all Models fit the data equally well. AIC statistics indicated that Model 1 best fit the data. No two-or three-way interactions in Model 2 or Model 3 were found to be significant; therefore Model 1 was interpreted.

Model 1 was found to be significant and accounted for 8% of the variance in the frequency of conversations about college, p = .002. Holding all other variables constant, the frequency of conversations about college differed significantly as a function of being in senior high, B = 1.56, p < .001, meaning that students in senior high grades talked to
individuals about college significantly more frequently than did students in middle grades.

Table 11

*Multiple Linear Regression Analyses Predicting Median Frequency of Conversations About College*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 B</th>
<th>Model 2 B</th>
<th>Model 3 B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>3.78**</td>
<td>3.77**</td>
<td>3.75**</td>
</tr>
<tr>
<td>Junior High (JH)</td>
<td>0.59</td>
<td>0.57</td>
<td>0.79</td>
</tr>
<tr>
<td>Senior High (SH)</td>
<td>1.56**</td>
<td>0.81</td>
<td>0.72</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>-0.36</td>
<td>-0.10</td>
<td>-0.05</td>
</tr>
<tr>
<td>First-Generation College Student (FGCS)</td>
<td>-0.09</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>JH*G</td>
<td>0.09</td>
<td>-0.31</td>
<td></td>
</tr>
<tr>
<td>JH*FGCS</td>
<td>-0.03</td>
<td>-0.35</td>
<td></td>
</tr>
<tr>
<td>SH*G</td>
<td>0.37</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>SH*FGCS</td>
<td>0.86</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>G*FGCS</td>
<td>-0.61</td>
<td>-0.70</td>
<td></td>
</tr>
<tr>
<td>JH<em>G</em>FGCS</td>
<td>0.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH<em>G</em>FGCS</td>
<td>-0.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>1,727.31</td>
<td>1,732.94</td>
<td>1,736.46</td>
</tr>
</tbody>
</table>

*R²* | .08* | .09* | .09* |

*Note. N = 387. Unstandardized beta values are reported. Junior high and senior high are dummy-coded variables related to grade level, with Middle Grades as the reference group. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation Status variable, continuing generation students were coded as 0 and first-generation students were coded as 1. *p < .01. **p < .001.*

**Discussion**

The purpose of this study was to examine rural Appalachian students’ college information networks and whether the availability of social capital within those networks differs as a function of grade level, gender, or first-generation status. The results from this study contribute to the literature in a number of ways. The social network methodology employed in this study provides an important first step in identifying the social capital available to rural Appalachian students that may inform their postsecondary decisions. The descriptions of students’ information networks in terms of structural and demographic characteristics should prove useful to school administrators, counselors, and
other individuals who work with rural adolescents. In addition, this study explores the information networks of early adolescents (i.e., middle school students), a typically understudied but important population.

The descriptive results provided as part of this study will help researchers begin to explore how middle and high school students obtain information about college. Future research should further explore these findings by comparing the college information networks of rural students to those of other populations and settings (e.g., urban and suburban students). Comparisons of these results to studies involving potential first-generation college students and rural students from varied racial and ethnic backgrounds would clarify how other demographic characteristics might influence available social capital. Further research in this area could reveal how environmental factors might contribute to how (and what) students learn about college.

Several important findings emerged in this study with regard to the composition and structure of students’ college information networks. I also found significant differences in available social capital by grade level, gender, and potential first-generation college student status. I conclude this paper by discussing these findings in greater detail.

**The role of family.** Family members comprised the majority of students’ networks (69%), followed by school staff, peers, community members and college liaisons. This pattern was consistent across grade level, gender, and potential first-generation college student status; however there were some descriptive differences in the proportions across groups. For example, girls’ networks contained 65% family members compared to boys, who reported that family members made up 75% of their networks on
average. Potential first-generation college students reported their networks were made up of 66% family members. Continuing generation college students reported that family members comprised 73% of their networks on average (see Figure 5).

The low levels of Bachelor’s degree attainment in Rural County (7% of adults aged 25 and older, United States Census, 2013) and the low percentage of individuals in students’ networks who had completed at least a Bachelor’s degree (19%) paired with the high percentage of family members that make up students’ networks indicates that

Figure 5. Percentages of family members in students’ networks. Percentages are reported for full sample, by gender, and by potential first-generation status.

students have the potential to interact with more college-educated adults as a result of contacts outside of their family, such as school staff and members of the community.

Previous researchers have noted the importance of community and school personnel in the educational outcomes of students (Byun et al., 2012, Engberg & Allen, 2011; Fletcher, 2011; Perna & Titus, 2005; Plank & Jordan, 2001; Reid & Moore, 2008; Roderick et al., 2011). Educators and school personnel who take an active role in
obtaining and staying current with information about college readiness and admission can serve as advocates and resources for students, particularly in rural settings where information about the college application and transition process might be scarce outside of school.

Researchers will be able to better target interventions and resources for those who are providing the most information to students through a better understanding of where information about college is coming from. Whole network analysis (i.e., social network analysis), where individuals list their interactions with all individuals in a particular setting (e.g., at school or church), is one method that could be used to identify key individuals who are providing information to students. Such information could help school districts and community organizations interested in increasing college readiness and attendance by identifying those individuals who have the potential to influence the largest proportion of students.

**Increasing college knowledge.** As noted above, about 19% of individuals in students’ networks had completed at least a Bachelor’s degree, indicating that most individuals in the student’s network did not have firsthand knowledge of what it takes to successfully complete a four-year degree. This finding indicates that the individuals whom students talk to about college may need additional support. Outreach programs from schools and community organizations aimed at delivering information about college in a variety of ways (e.g., community meetings, workshops, social media, newsletters) can help those individuals who have not completed a four-year degree provide accurate and timely information to students.
Potential first-generation college students had significantly lower percentages of individuals in their network who had obtained a Bachelor’s degree or higher compared to continuing-generation students. However, they reported similar levels of available information in their networks as continuing-generation students. Understanding where potential first-generation college students go for information may also be helpful in designing interventions. Furthermore, if first-generation college students are typically relying on only one or two individuals for help, it may be that they need access to additional individuals with more college knowledge. College mentoring programs and more accessible guidance counseling are two possible interventions that may help to increase access to information about college. The results presented here suggest that interventions designed to increase college literacy among students and their families have the potential to influence levels of college attendance and successful matriculation into a four-year university.

First-generation college students would benefit from the knowledge and experience of individuals who have attended a four-year college, but often lack the network of information that sets them up for postsecondary success (PALMS project, 2006; Pascarella, Pierson, Wolniak, & Terenzini, 2004). In the case of the present study, it seems that the networks of potential first-generation college students and continuing-generation college students are not different on basic facets of network structure and information. In addition, students perceived high levels of support for educational plans from individuals in their networks. They also perceived the information provided by individuals in their networks as important. These findings are consistent with those of Dyk and Wilson (1999) who reported that Appalachian parents in particular provide
support and encouragement for education. However, the lower levels of education present in potential first-generation college students’ networks suggest that the quality of information present may be different than that which is available in continuing-generation students’ networks. This question was not explored in this dissertation, but will be important for researchers to explore.

The fact that potential first-generation college students reported that significantly fewer individuals in their network had obtained a four-year college degree compared to continuing-generation college students is not surprising when compared with previous findings in the literature. However, when paired with the descriptive statistics on the types of individuals potential first-generation college students named in their networks, it is clear that additional research is needed to better understand the relationship between the individuals that make up students’ college information networks and the quality of information available about college.

For example, potential first-generation college students reported descriptively lower percentages of family members and higher percentages of school staff, community members, peers, and college liaisons compared to continuing-generation students. Based on these findings, one might assume that potential first-generation college students are coming into contact with college-educated individuals as a result of ties outside of their family. But despite the fact that potential first-generation college students are speaking to more individuals outside of their family about college, they are not talking to many individuals who have direct experience with completing a four-year degree. This finding may further support the need for outreach programs that can target a variety of individuals.
On the other hand, the low percentage of four-year degree attainment found within potential first-generation college students’ networks may also be a function of the coding procedure followed in this study. It is also important to note that senior high school students reported significantly higher percentages of individuals in their networks who have obtained a Bachelor’s degree or higher compared to middle grades students. This finding may be related to the higher percentages of school staff and college liaisons in older students’ networks. However, this could also indicate that older students knowing more about postsecondary education than younger students and are therefore more likely to accurately report the education level of the individuals in their networks.

Recall that students were asked to indicate the level of education completed for each person that they named in their network. These responses were then coded into “Bachelor’s degree or higher” or “less than Bachelor’s degree.” Individuals for whom students were unsure about their educational level were coded into the “less than Bachelor’s” category. It may be that first-generation college students are not as familiar with what it means to complete a four-year degree or what careers are associated with having completed a college education. Another possibility is that potential first-generation college students are not discussing education levels with individuals in their network. Further investigation into this measure will help to determine whether this question should be modified to better ascertain network members’ education level.

The challenges of a close-knit community. Differences in network constraint and network hierarchy were not explained by grade level, gender, or potential first-generation status. Yet network theories such as structural holes (Burt, 2004) and the strength of weak ties (Granovetter, 1973) tout the importance of network constraint and
hierarchy in obtaining resources and advantages. Burt’s theory of structural holes suggests that a lack of connection between two groups is advantageous for individuals who want to access diverse information and resources. Similarly, Granovetter’s hypothesis regarding the strength of weak ties argues that connections to individuals who are not well connected to others in students’ networks may be able to introduce additional information (i.e., social capital) to them.

Based on the theories offered by Burt and Granovetter, one can conclude that students who are interested in going to college should be connected to a key individual or individuals with connections to others who can provide information about college. For example, suppose a high school guidance counselor is able to put students and their families in touch with admissions counselors, financial aid advisors, and tutors, all of whom could provide important information about college (see Figure 6). The network represented in this example is one with a high level of network hierarchy.

![Figure 6. Example of a network with a high level of hierarchy.](image-url)
The guidance counselor is well-connected to others, but each of the other individuals in the student’s information network are not connected to one another. A network such as this one would benefit potential first-generation college students, as it would allow them to access a diverse network of individuals and information via a close relationship with well-connected individuals.

However, the results of this study suggest that rural Appalachian students talk about college to a relatively small group of individuals who all know each other but who collectively have little direct experience with completing a four-year degree. These findings are consistent with the observations of previous researchers that rural communities are often closely knit and invested in their children (e.g., Howley et al., 1995; Smith et al., 1995; Templeton, Bush, Lash, Robinson, & Gale, 2008). In addition, levels of network hierarchy were low across the sample. In other words, no one individual in students’ networks is in position to wield great influence over the network and the student. It is also interesting to note that there was a significant positive relationship between network hierarchy and available information about college, and a significant negative relationship between network constraint and the sum of available information about college. In other words, networks where one individual has the potential to wield influence over others in the network will contain more information about college, and networks that are more connected actually contain less information about college.

These findings indicate that the current structure of college information networks within this sample may be problematic, particularly for first-generation college students who often do not have access to college-relevant social capital from their immediate
family. It will be important to identify key individuals and sources of information within the community and connect potential first-generation college students with those resources. An important next step in this line of research will be to identify who in students’ networks (e.g., family members, peers, school staff, community members) tend to provide the most information to students. School districts interested in increasing college readiness should identify or cultivate such well-connected individuals and to help students to develop relationships with them. In addition, other explanatory variables should be investigated in order to better identify the contextual factors that might influence these two structural social capital variables. It may be that the makeup of students’ networks (i.e., the percentage of family members, peers, school staff, community members, or college liaisons) explains differences in these two variables. Educational beliefs may also play a role in network makeup. Students who want to go to college may take advantage of these structural holes more than students who do not wish to pursue a four-year degree.

Earlier interventions for college readiness. Overall, students’ information networks were smaller for senior high school students than for junior high and middle grades students. This finding was surprising. I hypothesized that students in upper grades who are approaching decisions about their postsecondary paths would have larger information networks than students in lower grades who are often overlooked when it comes to college preparation (Eccles et al., 1993; Eccles, Vida & Barber, 2004). It may be that as students age, their educational options begin to narrow. As a result, they may also reduce the number of individuals to whom they talk about college based on the range of options they perceive to be available to them (Massé et al., 2010). Eccles et al. (1993)
suggested that schools begin college preparation interventions with students before they reach high school. By increasing the amount of college information available to students in the middle grades, educators may be able to increase college literacy and readiness in time for students to make informed decisions about their postsecondary plans.

Senior high students also spoke to individuals in their network more frequently than did middle grades students. This could be because as students determine the individuals who provide the most relevant information and reduce the number of individuals that they speak to about college, they seek out information from those individuals more frequently. Moreover, the relative proximity of college to senior high students compared to middle grades students makes it more likely that college preparatory conversations are happening more frequently as the time to apply for college approaches.

**Gender differences in available social capital.** Boys spoke to significantly fewer individuals about college than did girls. Boys also had fewer pieces of information about college in their networks compared to girls. Exploring the reasons why differences in available social capital exist by gender was not within the scope of this study. However, there are some explanations in the literature as to why differences in social capital may exist.

Researchers have reported that female students in rural areas have higher educational aspirations and occupational expectations than do male students (Byun et al., 2012; Dyk & Wilson, 1999). Others have noted that academic achievement among Appalachian boys may be considered unmasculine and that they are more focused on obtaining information about careers that will allow them to support their families (Morris,
It may be that the differences in network degree and information about college found in this study are the result of girls’ higher educational aspirations and college-going intentions. On the other hand, it may be that girls are receiving more information about college but the messages that they are receiving are discouraging them from attending a four-year institution. This would support previous research that has revealed that traditional gender roles are upheld in Appalachian communities (i.e., girls should be more concerned with family matters than with pursuing further education; Wilson, Peterson & Wilson, 1993; Sohn, 2003).

It is also possible that the differences in social capital found in this study are the result of gender differences in socialization. Girls may have a tendency to be more sociable and develop closer relationships than boys (Maccoby, 2002). For example, some researchers have found that girls are more socially integrated at their schools and report more individuals in their support networks than boys (Colarossi, 2001; Urberg, Değirmencioğlu, Tolson, & Halliday-Scher, 1995).

Further investigation into the specific types of information and messages transmitted within these information networks is needed to better understand how social capital might influence boys and girls differently. Qualitative interviews with boys and girls with high and low levels of available social capital might yield additional information on the quality and type of information available in a given community.
Chapter 4: Study 2

Connecting the Dots: Social Capital and the College-Going Beliefs of Rural Appalachian Students

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Summary

Social cognitive theory describes the dynamic interaction of personal, behavioral, and environmental factors (Bandura, 1986). Environmental factors such as socioeconomic status, cultural capital, and educational attainment each have the potential to influence students’ beliefs about their ability to pursue a postsecondary degree. Social capital (i.e., the information and resources available to individuals as a result of their social connections) is another environmental factor that has the potential to influence students’ beliefs about college-going. Conversely, students’ beliefs about going to college may motivate them to seek out additional information about college. The purpose of this study was to examine the relationship between students’ college information networks and students’ beliefs about college. Participants were 364 students in Grades 6-12 from a rural Appalachian school district. Information on students’ college information networks was collected to better understand the relationship among first-generation college students’ access to social capital, their college-going self-efficacy, and their educational aspirations. College-going self-efficacy and educational aspirations were both significant predictors of available social capital. Social capital was not a significant predictor of students’ educational beliefs. College cultural capital was a significant predictor of students’ social capital and educational beliefs. These results support the importance of students’ beliefs and personal experiences to students’ decisions about how much information to collect about college. Practical and theoretical implications of these findings are discussed.
Connecting the Dots: Social Capital and the College-Going Beliefs of Rural Appalachian Students

High school students who wish to attend college must complete a series of tasks and meet many academic benchmarks to ensure a successful transition. Many students whose parents have attended college are afforded the privilege of prior “college knowledge” from their parents. This type of support from families often does not exist for first-generation college students (Lundberg, 2007). As a result, these students may need to tap into other sources of information. Students may obtain information about college through their own efforts (i.e., personal agency), through interactions with others (i.e., proxy agency), or as a result of collective efforts by the community to increase access to information about college (i.e., collective agency). Social cognitive theory and capital theory provide a framework for understanding how and why students utilize various forms of agency to obtain social capital (i.e., resources and information obtained from others). Social capital theory may also explain the relationship between acquired social capital and students’ beliefs about going to college (i.e., college-going self-efficacy and educational aspirations). The purpose of this study is to examine the relationship between social capital and students’ college-going beliefs. I next present each of these theories and the relevant literature in greater detail.

Theoretical Framework and Literature Review

Social cognitive theory. According to social cognitive theory, behavioral, environmental, and personal factors mutually influence each other through a process of triadic reciprocality (Bandura, 1986, 1997). For example, personal beliefs such as confidence in one’s ability to attend college (i.e., college-going self-efficacy) have the
potential to influence behavioral outcomes such as taking the ACT, enrolling in college-
preparatory coursework, or visiting the high school guidance counselor to obtain
information about college. Environmental factors, such as the school context, students’
socioeconomic status, or even the peers with whom students spend time have the
potential to influence personal beliefs about college as well as the behaviors that students
engage in relating to the college preparation and search process. Personal beliefs and the
student’s environment are also interrelated. For example, students who possess a higher
level of college-going self-efficacy may choose to seek out additional information and
resources about college. As a result, these students may have access to more individuals
who have college knowledge. This study will examine two types of personal beliefs
about college: college-going self-efficacy and educational aspirations.

*Self-efficacy* refers to the beliefs that an individual has about his or her ability to
complete a given task (Bandura, 1997). College students’ self-efficacy for completing
tasks related to college success has been linked to college satisfaction, academic
performance, and persistence in college (DeWitz & Walsh, 2002; Gore, Leuwerke, &
Turley, 2006; Solberg et al., 1998). *College-going self-efficacy* refers to the belief that
pre-college students have in their capabilities to complete tasks related to attending and
persisting in college. Both college self-efficacy and college-going self-efficacy are
concerned with students’ confidence in their ability to complete tasks related to college
persistence; of interest in this study, however, are the beliefs middle and high school
students hold about their own efficacy to make it to college in the first place.

Researchers who have examined college-going self-efficacy have found that
potential first-generation college students have a lower sense of efficacy for college-
going than do continuing-generation students (Gibbons, 2005). This may explain why potential first-generation college students enroll in college at lower rates than continuing-generation college students (Chen & Carroll, 2005).

Bandura (1997) hypothesized that self-efficacy is informed by four sources: enactive experience, social persuasion, vicarious experience, and physiological and affective states. Each of these sources has the potential to influence whether students think that they can go to college. An enactive experience, such as obtaining a certain ACT score, might raise students’ self-efficacy. Conversely, negative messages from others about one’s ability to attend college might lower a student’s confidence about going to college. Vicarious experiences are provided through an individual’s exposure to social models (e.g., parents, teachers, siblings, or peers) whose experience can positively or negatively influence students’ self-efficacy. Exposure to models outside of the family who have attended college may play an important role in raising the college-going beliefs of potential first-generation college students. Physiological and affective states refer to emotional or physical responses that students may have to particular situations. For example, a student who is stressed about applying to college may have lower self-efficacy for attending college than a student who feels excited about the application process. Collectively, these four sources of self-efficacy encompass a host of personal experiences and environmental influences that may inform how confident a student feels about going to college.

*Educational aspirations* are defined in this study as how far students intend to persist in their education. Educational aspirations are partly informed by a variety of environmental factors, including family structure, parents’ education level, parental
involvement, cultural capital, perceptions of educational barriers, teachers’ expectations, and rurality (e.g., Byun, Meece, Irvin, & Hutchins, 2012; Howley, 2006; Smith-Maddox, 1999; Teachman, 1987; Wettersten et al., 2005). The environmental factors that influence educational aspirations (such as those named above) can disproportionately affect rural and potential first-generation college students (Perez & McDonough, 2008; Roscigno & Crowley, 2001; Smith, Beaulieu, & Seraphine, 1995). In places that have lower levels of educational attainment and higher levels of economic distress (e.g., rural communities), social connections that can help students to overcome economic, educational, and situational barriers may be particularly important.

Self-efficacy and aspirations are beliefs that can influence students’ educational outcomes (Bandura, 1997). However, there are some important differences between them that should be noted. Self-efficacy reflects a degree of confidence or certainty that individuals have in their capabilities. Aspirations are more closely related to future intentions. In the present study, college-going self-efficacy will measure students’ beliefs about their capabilities in the area of college attendance and persistence, and educational aspirations will measure students’ expected educational attainment in the future.

**Capital theory.** Capital theory comprises several types of capital (e.g., economic, cultural and social capital) that give individuals the potential to exert power and influence over themselves and others (Bourdieu, 1986).

*Economic capital* is defined as the economic resources available to individuals as a function of their social standing. Economic capital is often conceptualized as socioeconomic status, which can include measures of parents’ education level, occupational status, and income (Sirin, 2005). Socioeconomic status is often an indicator
of the amount of capital available to students (Buttarro, Battle & Pastrana, 2010). Students with lower economic capital have aspired to attend or have attended college in lower numbers than students with more economic capital at their disposal (Castleman & Page, 2013; Plank & Jordan, 2001).

Objective measures of socioeconomic status have been shown to be an important predictor of educational aspirations and college enrollment. However, they may not be the best assessment of the influence of economic factors on individuals. The report of the American Psychological Association Task Force on Socioeconomic Status stated that the risk factors associated with poverty and lower socioeconomic status are experienced in different ways by different individuals (Saegert et al., 2006). Although some researchers have found that student self-reports of socioeconomic status produce less reliable predictions of academic achievement (Sirin, 2005), it seems that, in some cases, perceptions of one’s social standing might be more valuable than an objective measure of socioeconomic status. For instance, in circumstances of widespread poverty where traditional measures of socioeconomic status such as free and reduced-price lunch status provide little differentiating information, a subjective measure of social status might be more appropriate.

From a social cognitive theoretical perspective, one’s perceived socioeconomic status may be more important than an objective measure of one’s status. This is because individuals process the messages and information that they receive from others and their environment when assessing their own life circumstance. Social cognitive theory emphasizes how personal factors such as self-perceptions, social status, and capability can influence one’s behavior. Perceived socioeconomic status interacts with other
personal beliefs to determine how individuals will face the challenges ahead (Bandura, 1997). It therefore stands to reason that perceived socioeconomic status and self-efficacy can jointly influence college-going. How students choose to react in the face of college attendance barriers may ultimately determine whether they will obtain the information and resources to better equip them for the transition to college.

*Cultural capital* is another type of capital that has the potential to influence educational beliefs. Cultural capital refers to the experiences, resources, or information afforded to individuals as a result of their standing in society. Traditional measures of cultural capital have included attendance at cultural events, number of books in the home, access to media, and discussions with family members regarding political and social events. These types of cultural capital have been linked to both educational and occupational aspirations and college enrollment (Engberg & Allen, 2011; Engberg & Wolniak, 2010; Tramonte & Willms, 2010). However, some researchers have argued that such traditional measures of cultural capital are dated and inaccurate indicators of social class (Kingston, 2001). They contend instead that traditional measures of cultural capital do not accurately capture the advantages that are afforded to certain individuals over others. A measure of capital focused on assessing one’s engagement in activities that have been linked to successful transitions to college may more accurately capture the college-preparatory advantages acquired by students.

The third type of capital that may influence students’ educational beliefs is *social capital.* Social capital is defined as the information and resources available to individuals as a result of their social ties. Social capital is a crucial source of information that may help students (e.g., potential first-generation college students and rural students) who face
deficits in economic and cultural capital overcome educational barriers and raise their confidence about their abilities. The potential for social capital to influence educational beliefs and outcomes has been well established (see Ali & Saunders, 2006; Conley, 2005; Engberg & Allen, 2011; McDonough, 1997; and Torres & Solberg, 2001, for examples). However, additional research is needed to better understand this relationship and the direction of influence between social capital and educational beliefs, particularly among rural students.

There are several methodological limitations in prior studies that have examined the social capital of students. The majority of studies that have examined social capital have used proxy measures taken from national datasets (e.g., NELS, ELS). These studies were designed to follow students longitudinally, but not specifically designed to measure social capital. However, researchers have used measures from these studies as a proxy for students’ social capital. For example, parental involvement in schools has been used as a proxy for social capital; however, this measure does not focus specifically on college information or college preparatory activities. Questions on the NELS ask students if they talk to teachers, parents, or other adults about a variety of academic issues but fail to capture how students interpret these social interactions. These datasets were not designed to measure social capital related to educational aspirations or college-going; they do not allow students to list whom they talk to about college or provide additional information on the nature of their interactions with teachers, parents, or other adults (Dika & Singh, 2002). According to social cognitive theory, the social network gains its influence by activating the personal belief system of the student. Obtaining information directly from
the student is the best way to accurately assess the relationship between students’ social networks and their educational beliefs.

This literature review revealed only one study that has examined the availability of social capital among rural students using social network techniques (Singh & Dika, 2003). In this study, rural students were asked to name up to 10 adults important to them. The network information obtained in this study was then used to examine the relationship between students’ social networks and their educational aspirations. The egocentric network methodology employed by Singh and Dika (2003) could be improved by allowing students to name individuals of all ages and to include more information on the nature of students’ interactions with others regarding college plans. A study examining the social capital specific to information that students receive about college is needed.

Each of these types of capital—economic, cultural, and social—has the potential to influence students’ beliefs about going to college. For example, the economic capital gained from one’s higher socioeconomic status can offer a student the opportunity to attend academic enrichment camps, enroll in ACT preparation courses, or travel to visit college campuses. If students cannot afford to engage in such opportunities due to their family’s socioeconomic status, then they may find themselves at a disadvantage. The cultural capital that a student possesses as a result of having a parent who has attended college can influence the student’s beliefs vicariously. Students’ participation in college preparatory activities can also influence their beliefs by providing them with potential sources of information. Students who are able to benefit from the experience and information conveyed through interactions with others (i.e., social capital) will also likely experience a boost in their college-going self-efficacy. On the other hand, the beliefs
students hold may lead them to proactively seek social ties that would help them reach their goals. Students’ beliefs can also provide the impetus to seek out social capital.

The reciprocal nature of students’ beliefs and environmental influences offers the central thesis of this study and is supported by the triadic reciprocal relationship described in social cognitive theory (Bandura, 1997). As noted above, economic and cultural capital have the potential to influence and be influenced by students’ beliefs. However, this study will focus primarily on the possibility of a reciprocal relationship between students’ social capital and their educational beliefs. I chose to focus on the relationship between social capital and educational beliefs because I believe that social capital is the most dynamic of the three types of capital. In other words, social capital has the most potential to be influenced and to change. Economic capital and cultural capital can certainly change, but as noted above access to these types of capital are often the result of education level or social standing. Given their established importance to educational outcomes, economic and cultural capital will be included in the study to account for students’ access to capital as a result of prior opportunity or privilege. I next review empirical findings that point to the reciprocal nature of the relationship between social capital and students’ beliefs about attending college (i.e., college-going self-efficacy and educational aspirations).

The reciprocal relationship between social capital and students’ college-going beliefs. Social cognitive theory describes the triadic, reciprocal relationship between personal factors, environmental factors, and behavioral factors. Social capital, economic capital, and cultural capital can serve as environmental factors that play a key role in students’ educational beliefs and academic outcomes. Students’ beliefs about their
personal capabilities to attend or persist in college and their aspirations to attend college also likely inform how students reach out to others for information about college. In other words, students are active participants who can create social environments that will help them reach their goals. Failing to acknowledge the reciprocality of the relationship between environmental and personal beliefs places the explanatory power solely in the environment or solely in the individual (Bandura, 1997). Individuals’ interpretations of their environment allows for differentiated responses and, therefore, differentiated outcomes. The reciprocal relationship between college-going beliefs and social capital is illustrated in Figure 7.

![Figure 7](image.png)

**Figure 7.** Hypothesized reciprocal relationship between social capital and educational beliefs based on social cognitive theory.

Social capital has the potential to influence educational beliefs. Researchers have observed that deficiencies in cultural (e.g., parental educational attainment) and social capital may contribute to differences in educational outcomes and college attendance in rural populations (Smith et al., 1995). A lack of information about college can severely limit the postsecondary options of potential first-generation college students. Even when students have been given proper guidance through the college application process, a lack of information regarding the crucial final steps, such as applying for financial aid, can significantly alter students’ educational trajectory.
Social capital from several sources have been linked to educational beliefs. The level of support and educational involvement from parents may affect students’ educational aspirations and college self-efficacy (Ali & Saunders, 2006; Torres & Solberg, 2001). Students’ educational beliefs and decisions may also be influenced by key individuals within the school (e.g., teachers and guidance counselors, Conley, 2005; Engberg & Allen, 2011; McDonough, 1997). Peers provide another potential source of social capital, as the academic performance and educational intentions of one’s friends and classmates can influence a student’s decision to pursue postsecondary education (Engberg & Allen, 2011; Irwin, 2008). Peers’ educational decisions can serve as a vicarious experience that can raise or lower students’ educational beliefs.

For students who are not able to benefit from direct college-preparatory experiences, social capital may provide a conduit through which the cultural capital of others can be transmitted. The examples above show a clear connection between social capital and the educational aspirations and decisions of students. However, further investigation is needed to understand how social capital informs educational beliefs.

The reciprocal relationship between environmental and personal factors described in social cognitive theory lends support to the hypothesis that students’ beliefs about going to college influence their acquired social capital, just as students’ acquired social capital influences their educational beliefs. However, researchers have not yet tested this reciprocal relationship.

**Significance and Purpose of the Study**

Students’ beliefs about how far they will go in school are likely formed earlier than high school and are informed by the interactions that they have with family
members, community members, school staff, and peers. These self-beliefs will in turn inform the actions students take that will either expand or limit their postsecondary options. Both college-going self-efficacy and educational aspirations have been studied with different populations of high school students (e.g., potential first-generation college students, Latino students, low socioeconomic status students). However, few studies have investigated these beliefs among rural Appalachian students. In addition, few have examined these variables with populations younger than high school students. Investigation of the college-relevant beliefs of middle school students is needed, as it is often during this developmental period that students first begin to form their beliefs about and intentions to attend college (Eccles et al., 1993; Massé, Perez, & Posselt, 2010).

Additional research is needed to better understand the nature of the relationship between social capital and students’ educational beliefs. Flaws in the measurement of college-going self-efficacy and forms of capital in previous research call for better and more specific measures of capital related to college-going beliefs. This study will attempt to address these limitations by employing new measures of social and cultural capital and by modifying existing measures of college-going self-efficacy and socioeconomic status.

The purpose of this study is to explore the nature of the relationship between social capital and students’ educational beliefs, taking into account other forms of capital (e.g., economic and cultural capital) and student demographic factors (e.g., gender and potential first-generation student status). This study will address the following research question: What is the nature of the relationship between rural Appalachian students’ educational beliefs (i.e., educational aspirations and college-going self-efficacy) and
social capital when controlling for gender, perceived socioeconomic status, potential-first generation college student status, and cultural capital?

**Method**

**Participants.** Participants were 364 middle school (n = 172) and high school students (n = 192) in Grades 6-12 from a rural Appalachian community in eastern Kentucky. The ethnic makeup of the sample was 96% White, 2% African American, 1% Hispanic, and 1% other race or ethnicity. The gender breakdown for this sample was 55% girls and 45% boys. About 7% of adult residents in this community aged 25 years or older have obtained a four-year college degree. All students in this school district receive free breakfast and lunch, which indicates that most students in the county are living at 130% of the poverty level (equating to an annual income level of $29,965 for a family of four; National School Lunch Program, 2012). Sixty percent (60%) of students in this sample identified themselves as potential first-generation college students (i.e., students whose parents have not attended a four-year college). This study has been approved by the Institutional Review Board as part of the Motivation and Achievement in Rural Appalachia (MARA) project, a larger study investigating motivation and achievement in rural Appalachia (see Appendix A). Recruitment of participants began in Spring 2013 and has continued at each wave of the study.

**Procedure.** A meeting was held in March 2013 with the superintendent and school administrators from Rural County to talk about a multi-year study entitled *Motivation and Achievement in Rural Appalachia* (MARA). The MARA project consists of a total of seven waves of data collection, beginning in April 2013 and continuing with three waves of data collection during the next two academic school years (2013-2014 and
I obtained permission to conduct my dissertation research as part of the MARA study at the initial meeting with the school administrators. A letter was sent home to parents to inform them of the study and provide them with the opportunity to withdraw their children from the study (see Appendix B). Students whose parents did not opt them out of the study were invited to participate at each wave of the study by completing an assent form. The complete survey was developed online using Qualtrics, a web-based survey development software program. Recruitment of participants began in Spring 2013 with the first wave of data collection and has continued at each wave of the study (October, January, and April of each school year).

A pilot administration of the college information network measure was administered in April 2013. Analysis of results led to modifications of the network measures prior to the next administration of the survey in October 2013. The data for this study were collected during October 2013 and April 2014 of the MARA project. At each wave, students completed a computerized survey. Relevant to this study were questions concerning students’ college information networks, available social capital, college-going self-efficacy, educational aspirations, college cultural capital, perceived socioeconomic status, and potential first-generation college student status.

**Measures.**

**Name generator and name interpreters.** Egocentric network techniques were used in this study to better understand the availability of social capital within students’ college information networks. Egocentric networks consist of an individual (i.e., ego) and the people to whom that individual talks (i.e., alters). Students were provided with the following name generator instructions:
In the spaces provided below, list any people with whom you have had important or influential conversations about college. These people could be family members, friends, classmates, other people at school (such as teachers or guidance counselors) or other adults. You do not need to list full names. First names and last initials are fine, so long as you know who they are.

Next, students were given a set of name interpreters for each alter they listed. Name interpreters consist of a series of questions about each alter to gather information about characteristics of each alter and the nature of the student’s relationship with the person. A list of all name interpreters used in this study appears in Appendix C.

**Available social capital.** Six measures were used to assess social capital. Three of the measures (i.e., network degree, network hierarchy, network constraint) reflect structural capital, which refers to network characteristics (Borgatti, Jones, & Everett, 1998; Burt, 2000). The other three measures (i.e., percentage of the network with a Bachelor’s degree or higher, available information about college, frequency of conversations about college) assess informational social capital, or the information and resources available to a student. These six measures of social capital were used to measure the total amount of social capital available within each student’s network. All six measures of social capital were collected during Time 1 (October 2013) and Time 2 (April 2014). Each measure is described in more detail below.

**Network degree.** Network degree was calculated by determining the total number of alters reported by each student. This variable reflects the sum of individuals in a student’s college information network (range 1 to 10).
Network constraint and hierarchy. Network constraint and hierarchy measure the connectedness of a student’s information network. These values were calculated in E-net (Borgatti, 2006) based on students’ responses to the question “Do (alter 1) and (alter 2) know each other?” for each potential alter pairing in their network. Network constraint is a measure of how many individuals in the student’s network know each other. Higher values indicate that more individuals in that student’s network know each other (i.e., a higher level of network constraint). Network hierarchy measures the nature of constraint on the ego by indicating whether one or two individuals in the network are wielding greater influence. This is determined by examining whether an alter (or alters) has ties to all other alters in the network. Higher values of network hierarchy indicate that a student has a key individual (or individuals) through whom the majority of information about college flows. This means that key individual(s) have the opportunity to exert more influence over the student than other alters in the network. Figure 8 provides an example of such a network.

Figure 8. Example of network hierarchy. In this example, the alter at the bottom of the figure (circled in red) is connected to all other alters in the network. As a result, this alter has the potential to communicate and share information with everyone in the network and therefore has more potential to influence the network compared to other alters in the network.
**Percentage of the network with a Bachelor’s degree or higher.** This measure is based on students’ response to the item, “Has [alter] completed a college degree?” Students were given the option to select no, 2-year degree, 4-year degree, Master’s degree, Doctoral degree or other professional degree, or I’m not sure. Alters who students thought had completed at least a four-year degree were coded as having a Bachelor’s degree or higher. If students stated that they were “not sure” if a person has completed a bachelor’s degree, then that alter was coded as if he or she has not completed a four-year degree.

**Available information about college.** Students were asked to report what college-related topics they discussed with each alter who they named in their network. Students were given 16 options to choose from which included an “other” category where students could report a topic(s) that was not listed as an option. The amount of information available within the network was calculated as the sum of topics discussed with alters (e.g., if two topics were discussed with Alter 1 and three with Alter 2, the available information score would be five). Students who selected the option “I don’t talk to this person about college” received a score of zero for that alter. A sum score was chosen instead of calculating a mean score to account for the possibility that students may discuss similar topics (e.g., how to apply for college) in different ways with multiple alters. For example, a student may go to one alter for information about how to fill out online college applications and another for information on how to craft a college admissions essay. Both have are types of information received that are related to how to apply for college.
Frequency of conversations about college. Students were asked to report how frequently they spoke with each alter about college. Students were given 10 options to choose from ranging from never to several times a day. Because this is an ordinal variable, the median frequency of students’ conversations with alters was reported.

College-going self-efficacy. College-going self-efficacy was measured using items from the College-Going Self-Efficacy Scale developed by Gibbons (2005) and the College Self-Efficacy Inventory (Solberg et al., 1998). The initial scale consisted of 37 items, which were administered at two time points: Time 1 (October 2013) and Time 2 (April 2014). An exploratory factor analysis on the scale measured at Time 1 indicated that a two-factor structure was the best fit. Eleven items were removed due to cross-loading or loading on a conceptually inconsistent factor, resulting in a 26-item scale consisting of two subscales (Attendance, 9 items; and Persistence, 17 items; Costello & Osborne, 2005).

The revised 26-item scale was then fit to two Multidimensional Item Response Theory (IRT) models: the graded response model (Samejima, 1969) and the generalized partial credit model (Muraki, 1992). The graded response model was determined to be the best fit. Option response functions were examined for each item, and the bottom two categories were collapsed into one category, yielding a five-response category scale. The five-response category scale was then fit to a graded response model, and item level local dependency statistics were examined. Eight items were flagged due to local dependency statistics that were above |10| (Cai, du Toit, & Thissen, 2011). Items were removed, and analyses were re-run to determine whether item-level statistics drastically changed. No
significant changes in item-level statistics were found. Therefore, these eight items were retained.

Differential Item Function (DIF) was examined for each factor (i.e., Attendance and Persistence) to determine whether students responded to items differently as a function of grade level, of gender, or of potential first-generation college student status (defined later in this section). All items related to college persistence differed as a function of grade level (i.e., middle school students responded to these items differently than did high school students). Therefore, the Persistence factor (17 items; e.g., “How confident are you that you can get A’s and B’s in college?”) was removed prior to final scoring and analysis, resulting in a 9-item scale.

The revised College-Going Self-Efficacy Scale (CGSES-R) consisted of 9 items relating to college attendance (e.g., “How confident are you that you can find a way to pay for college?”). The CGSES-R was subjected to a confirmatory factor analysis to determine if a one-factor solution was a good fit. The sample for the CFA was drawn from participants who completed the CGSES-R at Time 2 \( N = 429 \). CFA was conducted in MPLUS 6.0 using a robust weighted least squares estimator (WLSMV). The results indicated that a one-factor solution was a good fit, \( \chi^2 (27) = 223.122, p < .001; \) RMSEA = .130, \( p < .001 \); CFI = .978. The final 9-item scale had marginal reliability\(^1\) values of .90 (Time 1) and .91 (Time 2). A list of the final items including factor loadings is presented in Table 12. An IRT score estimate was calculated for each respondent using the graded response model.

\(^1\) Marginal reliability is provided by IRT analyses in lieu of Cronbach’s alpha. Marginal reliability statistics are used to assess internal consistency.
Table 12  
*Factor Loadings of the Revised College-Going Self-Efficacy Scale*

<table>
<thead>
<tr>
<th>Item number and description</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>How confident are you that you can complete the following tasks?</td>
<td></td>
</tr>
<tr>
<td>1. Find a way to pay for college</td>
<td>.760**</td>
</tr>
<tr>
<td>2. Get accepted to a college.</td>
<td>.866**</td>
</tr>
<tr>
<td>3. Have emotional/moral support from family for going to college.</td>
<td>.713**</td>
</tr>
<tr>
<td>4. Choose a good college.</td>
<td>.857**</td>
</tr>
<tr>
<td>5. Get a scholarship or grant for college.</td>
<td>.838**</td>
</tr>
<tr>
<td>6. Make an educational plan that will prepare you for college (For example: plan out what courses and tasks you need to complete to be prepared for college).</td>
<td>.902**</td>
</tr>
<tr>
<td>7. Make your family proud with your choices after high school.</td>
<td>.822**</td>
</tr>
<tr>
<td>8. Pay for college even if members of your family cannot help you.</td>
<td>.755**</td>
</tr>
<tr>
<td>9. Choose the high school classes needed to get into a good college.</td>
<td>.839**</td>
</tr>
</tbody>
</table>

Note. Confirmatory factor analysis conducted on responses collected at Time 2 (Spring 2014; \( N = 429 \)). Recoded response scale ranged from 1 (*not at all confident*) to 5 (*completely confident*).  
**\( p < .001 \)

**Educational aspirations.** The single item used to assess educational aspirations in this study was adapted from an item used in the NELS:88 (National Center for Educational Statistics, n.d-a). Students were asked to report the highest degree that they plan to obtain. Options ranged from, “*I do not plan to graduate high school,*” to “*doctoral degree or other professional degree,*” in increasing levels of educational attainment (See Appendix D). Students could also respond that they were not sure how far they will go in school. Responses of “not sure” were recoded as “*High school diploma or equivalent (i.e., GED).*” This was done because it was not possible to determine whether these students will continue on to college within the timeframe of this study. This item was administered at Time 1 (October 2013) and Time 2 (April 2014).

**College cultural capital.** College cultural capital was measured using an 8-item scale developed by the researcher in accordance with Bourdieu’s (1996) conception of embodied cultural capital (i.e., capital that is either acquired by the student or inherited as a result of their circumstance) and based on previous literature (e.g., Avery & Kane,
2004; Klasik, 2012; see Appendix E). Students were asked whether they had undertaken a list of activities related to the college search, application, and transition process (e.g., taking college entrance exams, visiting a college campus, having parents with a college education). Students responded to each item with a yes or no. Students were given a score of 1 for each “yes” response. Item scores were then summed together to create a score of available college cultural capital. This scale was administered at Time 2 (April 2014).

**Perceived socioeconomic status.** Perceived socioeconomic status was measured with three items. Two items were modified from the MacArthur Scale of Subjective Status-Youth Version (Goodman et al., 2001). This measure was initially developed and validated with adults (see Adler, Epel, Castellazo, & Ickovics, 2000). The first item asked students to reply to the following prompt:

Think of this scale as representing how American Society is set up. At 10 are the people who are the best off - those who have the most money, the most education, and the most respected jobs. At 1 are the people who are the worst off, who have the least money, least education, and the least respected jobs or no job. Now think about your family. Where would your family fall on the scale below? The closer you are to 10 on this scale, the closer you are to the people at the very top. The lower you are, the closer you are to the people at the very bottom.

Students were presented with a sliding scale from 1 to 10 in increments of 1. They were able to move the slider to reflect their perception of where their family stands in comparison to others in the United States. The second item asked students to use the same sliding scale to rate their family in comparison to others in their community:
Now think of this scale as representing where your family is compared to other families in Your County. At 10 are the people who are the best off - those who have the most money, the most education, and the most respected jobs. At 1 are the people who are the worst off, who have the least money, least education, and the least respected jobs or no job. Now think about your family. Where would your family fall on the scale below? The closer you are to 10 on this scale, the closer you are to the people at the very top. The lower you are, the closer you are to the people at the very bottom.

The third item of socioeconomic status measured students’ perceptions of their parents’ occupational status. Students were asked to list the occupation of their mother and father, or their primary female or male guardian. Student responses were coded into occupational categories and given prestige scores based on an updated version of Nakao and Treas’ socioeconomic index (Frederick, 2010). This score is based upon 2002 occupational data and is the most recent version of socioeconomic index information available. Higher prestige scores reflect higher levels of socioeconomic status. All three items measuring perceived socioeconomic status were administered during the April 2014 wave of data collection (Time 2).

The correlation among all socioeconomic status items was examined to determine whether a composite score measuring social status could be created based on the guidelines recommended by Field (2009; i.e., $r \geq .30, p < .05$). Significant correlations existed among all three variables. However, the correlation between each perceived social status item and the occupational prestige score was less than .30 (see Table 13). Due to the high level of correlation between the two perceived social status measures, I
determined that only one was necessary to include in subsequent analyses. I therefore retained the perceived social status measure that asked students to compare their family to all other families in American society. I chose to retain this item because I thought that students’ comparisons of their social standing to others outside of their community might be more easily interpreted. The item measuring occupational prestige was also included in each model as a separate measure.

Table 13

Correlations Among Social Status Items

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perceived Social Status Relative to American Society</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>2. Perceived Social Status Relative to Community</td>
<td>.61**</td>
<td>---</td>
</tr>
<tr>
<td>3. Occupational Prestige</td>
<td>.15*</td>
<td>.24**</td>
</tr>
</tbody>
</table>

*Note. N = 339  
* p < .01. ** p < .001

Potential first-generation student status. Students were asked to indicate whether either of their parents has attended a four-year college or university. Students had the option to respond yes, no, or not sure. Students who responded “no” to this question were classified as potential first-generation college students. Students who responded “yes” were classified as continuing-generation college students. Students who responded “not sure” were also classified as continuing-generation college students to avoid erroneously classifying students as potential first-generation college students. This measure was administered in April 2014.

Gender. Gender information was obtained from the official school district rosters. Gender was coded as 0 (girl) and 1 (boy).

Grade level. Grade level was obtained from the school district and used to examine the psychometric properties of the College-Going Self-Efficacy Scale. Grade
level was used to create a dichotomous variable, where students in Grades 6-8 were classified as Middle Grades, and students in Grades 9-12 were classified as High School.

**Analyses.** A structural equation model (SEM) was initially planned to explore the reciprocal relationship between available social capital, college-going self-efficacy, and educational aspirations. However, I was unsuccessful in getting either a full or reduced model to successfully converge. Modifications were made to the model and command files to remove exogenous variables and increase the number of iterations, but neither of these modifications resulted in successful model convergence. Lack of convergence may have been due to the reciprocal nature of the model. Reciprocal models can cause problems with model identification (Hayduk, 1987). In addition, the data did not meet the assumptions of multivariate or univariate normality. The D’Agostino and Pearson $K$-squared omnibus test revealed that all social capital variables violated assumptions of multivariate normality for all groups, $p < .05$. The data were also examined for multivariate outliers. Mahalanobis $D^2$ statistics for each group revealed multivariate outliers for each demographic group; however, removal of outliers did not significantly improve multivariate normality. Univariate normality was examined using the skewness and kurtosis statistics for each social capital variable in each demographic group (i.e., grade level, gender, and potential first-generation college student status). Based on the criteria set forth by West, Finch, and Curran (1995; i.e., skewness $> |2|$ and kurtosis $> |7|$), all social capital variables were significantly skewed. Box’s $M$ test revealed that the homogeneity of covariance assumption was not tenable, $p < .001$.

I consequently chose to analyze the data using Maximum Likelihood Regression in Mplus, which is robust to data that do not meet the assumptions of normality (Muthén
Muthén, 1998-2010). A cross-lagged design was used such that educational beliefs measured at Time 2 were regressed on social capital measured collected at Time 1 and social capital measures collected at Time 2 were regressed on educational beliefs measured at Time 1. This yielded eight separate regression models. In each of the eight models, I controlled for college cultural capital, perceived social status, occupational prestige, gender, and potential first-generation college student status. College cultural capital (i.e., a measure of college-preparatory activities or advantages afforded to students) was included as a control based on previous findings regarding the relationship between cultural capital and academic achievement (Bourdieu, 1996; Teachman, 1987). Perceived social status and occupational prestige were included as controls in the model based on the relationship between socioeconomic status and educational attainment that has been established in the literature (Byun et al., 2012; Sandefur et al., 2006). Gender was included as a statistical control based on the suggestion by some researchers that there may be gender-based disparities in college preparation and attendance in rural communities (Byun et al., 2012; Dyk & Wilson, 1999). Potential first-generation status (i.e., whether a student would be the first in their family to attend a four-year college) was included as a control to account for the differences in social capital and the barriers faced by first-generation college students (Choy, 2001; Reid & Moore, 2008; Warburton, Nuñez, & Carroll, 2001). Parsing out the variance in social capital and educational beliefs accounted for by these variables permitted me to explore the unique contributions of social capital to educational beliefs and the contribution of educational beliefs to social capital.
Six of the regression models included social capital variables as the dependent variable (network degree, network hierarchy, network constraint, sum of available information about college, frequency of conversations about college, and the percent of a student’s network that had obtained a Bachelor’s degree or higher). Students’ scores on the College-Going Self-Efficacy Scale and educational aspirations served as the independent variables in these models.

In the models predicting educational beliefs, college-going self-efficacy and educational aspirations measured at Time 2 served as the dependent variables for two separate regressions. The six measures of social capital collected at Time 1 (network degree, network hierarchy, network constraint, sum of available information about college, frequency of conversations about college, and the percent of a student’s network that had obtained a Bachelor’s degree or higher) served as independent variables. Individuals often over-estimate their capabilities on measures of self-efficacy (Bandura, 1997), which can lead to ceiling effects. To address the presence of ceiling effects, the relationship between college-going self-efficacy and social capital was examined using tobit regression, which is a special type of regression for use with dependent variables prone to ceiling effects (UCLA Statistical Consulting Group, n.d.).

**Treatment of missing data.** Missing value analysis was conducted in SPSS 21 to determine whether treatment of missing data was necessary. Results revealed that missing data were present in 245 cases and comprised 20% all data. The results of Little’s test indicated that the data were not missing completely at random, $\chi^2 (518) = 609.232, p = .003$; therefore I proceeded to determine if the data could be assumed to be missing at random. Data were not missing as a function of a particular group (e.g., potential first-
generation college students) but were missing primarily as a function of student absences and incomplete surveys that were unrelated to the survey administration (e.g., student had to miss part of class). As a result, the data were assumed to be missing at random.

Prior to imputing values for the missing data, cases where 30% or more of the data were missing were removed (n = 145) resulting in a final sample of 345. This level of missingness allowed for individuals who had completed the questionnaire for at least one time point to be retained in the dataset. Imputation was conducted in *MPLUS 6.0* using maximum likelihood estimation. A total of 50 imputed datasets were created and used for analysis.

**Results**

Prior to examining the potential reciprocal relationship between students’ social capital and their educational beliefs, I first calculated descriptive statistics and examined correlations between the statistical controls, measures of social capital, and measures of students’ educational beliefs. Table 14 presents descriptive statistics for all variables included in the regression models. Table 15 presents a correlation matrix of all variables included in the regression models.

**Predictors of structural social capital.** Table 16 presents the results of the three regression models predicting structural social capital (i.e., network degree, constraint, and hierarchy). The regression model predicted 12% of the variance in network degree (i.e., number of individuals in the network. p < .001). Two control variables were significantly related to the dependent variable. Gender was a significant predictor of network degree, β = -.22, p < .001. Boys’ networks contained .22 standard deviations fewer individuals in their networks than did girls, holding all other variables constant. Students’ perceived
Table 14

Descriptive Statistics for Control, Social Capital, and Educational Belief Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Cultural Capital</td>
<td>5.41</td>
<td>1.94</td>
<td>0-8</td>
</tr>
<tr>
<td>Perceived Social Status</td>
<td>6.29</td>
<td>2.15</td>
<td>1-10</td>
</tr>
<tr>
<td>Occupational Prestige</td>
<td>35.93</td>
<td>22.73</td>
<td>0-73.92</td>
</tr>
<tr>
<td>Gender</td>
<td>0.45</td>
<td>0.50</td>
<td>0-1</td>
</tr>
<tr>
<td>First-Generation Status</td>
<td>0.60</td>
<td>0.49</td>
<td>0-1</td>
</tr>
<tr>
<td><strong>Social Capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Degree (T1)</td>
<td>4.87</td>
<td>2.66</td>
<td>1-10</td>
</tr>
<tr>
<td>Network Hierarchy (T1)</td>
<td>0.01</td>
<td>0.03</td>
<td>0-0.39</td>
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<tr>
<td>Network Constraint (T1)</td>
<td>0.63</td>
<td>0.33</td>
<td>0-1.13</td>
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<tr>
<td>Sum of Available Information About College (T1)</td>
<td>23.87</td>
<td>19.20</td>
<td>1-101</td>
</tr>
<tr>
<td>Frequency of Conversations About College (T1)</td>
<td>4.21</td>
<td>2.35</td>
<td>0-9</td>
</tr>
<tr>
<td>Percent of Network with Bachelor’s Degree or Higher (T1)</td>
<td>20.28</td>
<td>27.68</td>
<td>0-100</td>
</tr>
<tr>
<td>Network Degree (T2)</td>
<td>4.14</td>
<td>2.34</td>
<td>1-10</td>
</tr>
<tr>
<td>Network Hierarchy (T2)</td>
<td>0.01</td>
<td>0.03</td>
<td>0-0.21</td>
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<tr>
<td>Network Constraint (T2)</td>
<td>0.70</td>
<td>0.31</td>
<td>0-1.13</td>
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<tr>
<td>Sum of Available Information About College (T2)</td>
<td>21.96</td>
<td>18.25</td>
<td>1-109</td>
</tr>
<tr>
<td>Frequency of Conversations about College (T2)</td>
<td>4.18</td>
<td>2.31</td>
<td>0-9</td>
</tr>
<tr>
<td>Percent of Network with Bachelor’s Degree or Higher (T2)</td>
<td>19.90</td>
<td>28.44</td>
<td>0-100</td>
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<tr>
<td><strong>Educational Beliefs</strong></td>
<td></td>
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</tr>
<tr>
<td>College-Going Self-Efficacy (T1)</td>
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<td>0.93</td>
<td>-2.81-1.60</td>
</tr>
<tr>
<td>Educational Aspirations (T1)</td>
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<tr>
<td>College-Going Self-Efficacy (T2)</td>
<td>0.11</td>
<td>0.92</td>
<td>-2.62-1.65</td>
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<tr>
<td>Educational Aspirations (T2)</td>
<td>2.96</td>
<td>1.43</td>
<td>0-5</td>
</tr>
</tbody>
</table>

*Note. N = 364. T1 = data collected at Time 1 (Fall 2013); T2 = data collected at Time 2 (Spring 2014). College-Going Self-Efficacy Scale Scores were calculated using an IRT Graded Response Model. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation Status variable, continuing generation students were coded as 0 and first-generation students were coded as 1.*
Table 15

**Correlations Among Control, Social Capital, and Educational Belief Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>10</th>
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</tr>
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<tbody>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1. College Cultural Capital</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2. Perceived Social Status</td>
<td>.03</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>3. Occupational Prestige</td>
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<td>.15</td>
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<td>4. Gender</td>
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<td>.02</td>
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<td>5. First-Generation Status</td>
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<td>-.30**</td>
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<td><strong>Social Capital</strong></td>
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<tr>
<td>6. Network Degree (T1)</td>
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<td>.14</td>
<td>.04</td>
<td>-.14</td>
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<td></td>
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</tr>
<tr>
<td>7. Network Hierarchy (T1)</td>
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<td>-.01</td>
<td>-.03</td>
<td>.03</td>
<td>.18</td>
<td></td>
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</tr>
<tr>
<td>8. Network Constraint (T1)</td>
<td>.00</td>
<td>.01</td>
<td>.17*</td>
<td>.03</td>
<td>.05</td>
<td>-.38**</td>
<td>-.10*</td>
<td></td>
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</tr>
<tr>
<td>9. Sum of Available Information About College (T1)</td>
<td>.30</td>
<td>.03</td>
<td>-.01</td>
<td>-.23</td>
<td>-.05</td>
<td>.48**</td>
<td>.05</td>
<td>-.15</td>
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</tr>
<tr>
<td>10. Frequency of Conversations About College (T1)</td>
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<td>.02</td>
<td>-.02</td>
<td>.06</td>
<td>-.12</td>
<td>.05</td>
<td>.11</td>
<td>.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Percent of Network with Bachelor’s Degree or Higher (T1)</td>
<td>.17</td>
<td>.10</td>
<td>.10</td>
<td>.02</td>
<td>-.29*</td>
<td>-.12*</td>
<td>-.08</td>
<td>.01</td>
<td>.09</td>
<td>.16</td>
<td></td>
</tr>
<tr>
<td>12. Network Degree (T2)</td>
<td>.06</td>
<td>.19*</td>
<td>-.06</td>
<td>-.21</td>
<td>-.02</td>
<td>.54**</td>
<td>.15</td>
<td>-.21</td>
<td>.34</td>
<td>-.08</td>
<td>-.10</td>
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<td>13. Network Hierarchy (T2)</td>
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<td>-.05</td>
<td>.01</td>
<td>-.12</td>
<td>.05</td>
<td>.13</td>
<td>.09</td>
<td>-.06</td>
<td>.09</td>
<td>-.12</td>
<td>-.05</td>
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<td>14. Network Constraint (T2)</td>
<td>.00</td>
<td>-.02</td>
<td>.08</td>
<td>.13</td>
<td>-.04</td>
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<td>-.02</td>
<td>-.19</td>
<td>.19</td>
<td>.04</td>
<td>.03</td>
</tr>
<tr>
<td>15. Sum of Available Information About College (T2)</td>
<td>.29</td>
<td>.04</td>
<td>-.04</td>
<td>-.31</td>
<td>.04</td>
<td>.26**</td>
<td>.20</td>
<td>-.09</td>
<td>.56**</td>
<td>.05</td>
<td>.05</td>
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<tr>
<td>16. Frequency of Conversations about College (T2)</td>
<td>.21</td>
<td>-.06</td>
<td>.05</td>
<td>-.09</td>
<td>.04</td>
<td>-.09</td>
<td>.04</td>
<td>.16</td>
<td>.11</td>
<td>.36**</td>
<td>.21*</td>
</tr>
<tr>
<td>17. Percent of Network with Bachelor’s Degree or Higher (T2)</td>
<td>.17</td>
<td>.08</td>
<td>.19</td>
<td>.02</td>
<td>-.32**</td>
<td>.01*</td>
<td>-.03</td>
<td>.03</td>
<td>.14</td>
<td>.11</td>
<td>.57**</td>
</tr>
<tr>
<td><strong>Educational Beliefs</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. College-Going Self-Efficacy (T1)</td>
<td>.34*</td>
<td>.16</td>
<td>.16</td>
<td>.01*</td>
<td>-.09</td>
<td>.12</td>
<td>.05</td>
<td>.01</td>
<td>.20</td>
<td>-.01</td>
<td>.08</td>
</tr>
<tr>
<td>19. Educational Aspirations (T1)</td>
<td>.34</td>
<td>.11</td>
<td>.14</td>
<td>-.29**</td>
<td>-.08</td>
<td>.16</td>
<td>.09</td>
<td>.03</td>
<td>.27</td>
<td>.07</td>
<td>.10</td>
</tr>
<tr>
<td>20. College-Going Self-Efficacy (T2)</td>
<td>.28</td>
<td>.15</td>
<td>.12</td>
<td>-.10</td>
<td>-.14</td>
<td>.16</td>
<td>.04</td>
<td>-.02</td>
<td>.19</td>
<td>.10</td>
<td>.07</td>
</tr>
<tr>
<td>21. Educational Aspirations (T2)</td>
<td>.38</td>
<td>.08</td>
<td>.15</td>
<td>-.21</td>
<td>-.06</td>
<td>.05</td>
<td>.06</td>
<td>.08</td>
<td>.26</td>
<td>.16</td>
<td>.17</td>
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(continued)
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<tr>
<th>Variable</th>
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<th>14</th>
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<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
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<tbody>
<tr>
<td><strong>Social Capital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Degree (T2)</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Hierarchy (T2)</td>
<td>.28**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>14. Constraint (T2)</td>
<td>-.36**</td>
<td>-.18**</td>
<td>---</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>15. Sum of Available Information About College (T2)</td>
<td>.59**</td>
<td>.16</td>
<td>-.22**</td>
<td>---</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>16. Frequency of Conversations About College (T2)</td>
<td>-.14**</td>
<td>-.04</td>
<td>.00</td>
<td>.12</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Percent of Network with Bachelor’s Degree or Higher (T2)</td>
<td>-.10**</td>
<td>-.01</td>
<td>-.14</td>
<td>.07</td>
<td>.13</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Educational Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. College-Going Self-Efficacy (T1)</td>
<td>.17</td>
<td>-.02</td>
<td>-.04</td>
<td>.20</td>
<td>.03</td>
<td>.09</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Educational Aspirations (T1)</td>
<td>.15</td>
<td>.05</td>
<td>.01</td>
<td>.32*</td>
<td>.13</td>
<td>.18</td>
<td>.34</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>20. College-Going Self-Efficacy (T2)</td>
<td>.21*</td>
<td>.08</td>
<td>.03</td>
<td>.22</td>
<td>.15</td>
<td>.06</td>
<td>.56**</td>
<td>.38**</td>
<td>---</td>
</tr>
<tr>
<td>21. Educational Aspirations (T2)</td>
<td>.33</td>
<td>.62**</td>
<td>.13</td>
<td>.08</td>
<td>-.10</td>
<td>.27</td>
<td>.19</td>
<td>.27**</td>
<td>.31**</td>
</tr>
</tbody>
</table>

*Note. N = 364. T1 = data collected at Time 1 (Fall 2013); T2 = data collected at Time 2 (Spring 2014). For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation Status variable, continuing generation students were coded as 0 and first-generation students were coded as 1.

*p < .01. **p < .001.
Table 16

Multiple Linear Regression Analyses Predicting Structural Social Capital

<table>
<thead>
<tr>
<th>Variable</th>
<th>Network Degree T2 (β)</th>
<th>Network Constraint T2 (β)</th>
<th>Network Hierarchy T2 (β)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.62**</td>
<td>0.97**</td>
<td>0.55</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Capital</td>
<td>-0.04</td>
<td>0.02</td>
<td>-0.03</td>
</tr>
<tr>
<td>Social Status</td>
<td>0.19*</td>
<td>-0.04</td>
<td>-0.04</td>
</tr>
<tr>
<td>Occupational Prestige</td>
<td>-0.11</td>
<td>0.07</td>
<td>0.03</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.22**</td>
<td>0.15*</td>
<td>-0.11</td>
</tr>
<tr>
<td>First-Generation Status</td>
<td>-0.00</td>
<td>-0.03</td>
<td>0.05</td>
</tr>
<tr>
<td><strong>College-Going Self-Efficacy (T1)</strong></td>
<td>0.16*</td>
<td>-0.08</td>
<td>-0.02</td>
</tr>
<tr>
<td><strong>Educational Aspiration (T1)</strong></td>
<td>0.04</td>
<td>0.07</td>
<td>0.04</td>
</tr>
<tr>
<td>Model R²</td>
<td>0.12**</td>
<td>0.03</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Note. N = 364. T1 = data collected at Time 1 (Fall 2013); T2 = data collected at Time 2 (Spring 2014). β reflects standardized beta values. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation Status variable, continuing generation students were coded as 0 and first-generation students were coded as 1.

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

Social status was also a significant predictor of network degree; every one unit increase in perceived social status accounted for a .19 standard unit increase in the number of individuals in students’ networks holding all other variables constant, β = .19, p = .001. College-going self-efficacy predicted network degree, which accounted for a .16 standard unit increase in network degree, β = .16, p = .003, holding all other variables constant. Students who had higher levels of confidence in their ability to attend college sought out more individuals to talk to about college.

Neither the control variables nor self-efficacy or educational aspirations predicted a significant proportion of the variance in network constraint (i.e. connectedness of the network) or hierarchy. This meant that neither the connectedness of the network or the potential for an individual in the students’ network to wield influence over other network members was significantly predicted by students’ educational beliefs, their prior college-
preparatory experiences, social status, gender, or potential first-generation college student status.

**Predictors of informational social capital.** I next examined the relationship between educational beliefs and three types of informational social capital (i.e., available information about college, frequency of conversations about college, percentage of students’ network who had obtained a Bachelor’s degree or higher). Results for these regression models are presented in Table 17.

Table 17

*Multiple Linear Regression Analyses Predicting Informational Social Capital*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Available Information About College T2 (β)</th>
<th>Frequency of Conversations About College T2 (β)</th>
<th>Percent of Network With Bachelor’s Degree or Higher T2 (β)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>9.62</td>
<td>2.69**</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Capital</td>
<td>0.17*</td>
<td>0.19*</td>
<td>0.13*</td>
</tr>
<tr>
<td>Social Status</td>
<td>0.04</td>
<td>-0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Occupational Prestige</td>
<td>-0.08</td>
<td>0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.23**</td>
<td>-0.03</td>
<td>0.08</td>
</tr>
<tr>
<td>First-Generation Status</td>
<td>0.05</td>
<td>0.05</td>
<td>-0.28**</td>
</tr>
<tr>
<td><strong>College-Going Self-Efficacy (T1)</strong></td>
<td>0.10</td>
<td>-0.05</td>
<td>-0.04</td>
</tr>
<tr>
<td><strong>Educational Aspiration (T1)</strong></td>
<td>0.17*</td>
<td>0.08</td>
<td>0.14*</td>
</tr>
<tr>
<td>Model $R^2$</td>
<td>0.20**</td>
<td>0.06</td>
<td>0.15**</td>
</tr>
</tbody>
</table>

*Note.* $N = 364$. T1 = data collected at Time 1 (Fall 2013); T2 = data collected at Time 2 (Spring 2014). β reflects standardized beta values. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation Status variable, continuing generation students were coded as 0 and first-generation students were coded as 1.

* $p < .01$ ** $p < .001$.

The first model tested the relationship among educational beliefs and the amount of information about college available in students’ networks and accounted for 20% of the variance, $p < .001$. Two of the statistical controls, college cultural capital, $β = .17$, $p = .002$, and gender, $β = -.23$, $p < .001$, were significant predictors of information about college available in students’ networks. Students who had more college cultural capital
obtained on average .17 standard units more information about college, holding all other variables constant. Boys obtained less information from their college-going networks than did girls, holding all other variables constant. College-going self-efficacy was unrelated to available information about college. However, educational aspirations significantly predicted the amount of available information about college, $\beta = .17, p = .003$. Holding all other variables constant, students with higher educational aspirations had more information about college available to them compared to students with lower educational aspirations.

I next examined predictors of how often students spoke with individuals in their network about college. The control variables and students’ educational beliefs did not predict a significant proportion of the variance in frequency of conversations about college. This means that prior college preparatory experiences, social status, gender, potential first-generation college student status, and educational beliefs did not predict how often students spoke to individuals in their network about college.

The control variables and educational beliefs explained 15% of the variance in the educational composition of students’ college information networks (i.e., the percentage of individuals in students’ networks who had obtained at least a Bachelor’s degree). Two statistical controls were significant predictors in this model: college cultural capital, $\beta = .13, p = .008$ and potential first-generation college student status, $\beta = -.28, p < .001$. An increase in college cultural capital by one unit increased the percentage of the network by .13 standard units, holding everything else constant. The percentage of individuals in students’ networks who had obtained at least a Bachelor’s degree was .28 standard units lower for potential first-generation college students compared to continuing-generation
students. College-going self-efficacy was unrelated to the educational level of members of students’ networks. Educational aspirations had a significant, positive relationship, $\beta = .14, p = .009$. Students with higher educational aspirations had a greater proportion of network members who had completed a college degree or higher, holding all other variables constant.

The results presented above indicate some relationship between educational beliefs and available social capital in students’ networks. With regard to structural social capital, students’ confidence in their ability to prepare for college was a significant predictor of the number of individuals in their network. Students’ educational aspirations were predictive of two types of informational social capital: the amount of information in students’ networks and the percentage of individuals in students’ networks who had obtained a Bachelor’s degree or higher.

**Predictors of educational beliefs.** I next examined whether social capital significantly predicted students’ educational beliefs when the same control variables are held constant. Table 18 presents the results of the two regression models predicting college-going self-efficacy and educational aspirations. Both outcome variables were measured at Time 2 (Spring 2014). All social capital variables (i.e., predictors) in the model were measured at Time 1 (October 2014).

Only the control variables were significant predictors of both college-going self-efficacy and educational aspirations; none of the social capital variables were predictive of students’ beliefs. The model predicting scores on the measure of college-going self-efficacy accounted for 13% of the variance, $p < .001$. In this model, college cultural capital was the only significant predictor of students’ college-going beliefs. Students’
with higher levels of college cultural capital had significantly higher college-going self-efficacy, $\beta = .22$, $p < .001$.

College cultural capital and gender explained 22% of the variance in students’ educational aspirations, $p < .001$. Students with higher college cultural capital scores (i.e., those who had completed more college-preparatory activities) had significantly higher educational aspirations holding all other variables constant, $\beta = .27$, $p < .001$.

Table 18

*Multiple Linear Regression Analyses Predicting Educational Beliefs*

<table>
<thead>
<tr>
<th>Variable</th>
<th>College-Going Self-Efficacy T2 ($\beta$)</th>
<th>Educational Aspirations T2 ($\beta$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.08**</td>
<td>0.60</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Capital</td>
<td>0.22**</td>
<td>0.27**</td>
</tr>
<tr>
<td>Social Status</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td>Occupational Prestige</td>
<td>0.04</td>
<td>0.10</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.04</td>
<td>-0.14*</td>
</tr>
<tr>
<td>First-Generation Status</td>
<td>-0.10</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Network Degree (T1)</strong></td>
<td>0.11</td>
<td>-0.02</td>
</tr>
<tr>
<td><strong>Network Hierarchy (T1)</strong></td>
<td>-0.02</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Network Constraint (T1)</strong></td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Sum of Available Information About College (T1)</td>
<td>0.04</td>
<td>0.15</td>
</tr>
<tr>
<td>Frequency of Conversations About College (T1)</td>
<td>0.08</td>
<td>0.07</td>
</tr>
<tr>
<td>Percent of Network with Bachelor’s Degree or Higher (T1)</td>
<td>-0.02</td>
<td>0.09</td>
</tr>
<tr>
<td>Model $R^2$</td>
<td>0.13**</td>
<td>0.22**</td>
</tr>
</tbody>
</table>

*Note. N = 364. T1 = data collected at Time 1 (Fall 2013); T2 = data collected at Time 2 (Spring 2014). $\beta$ reflects standardized beta values. For the Gender variable, girls were coded as 0 and boys were coded as 1. For the First-Generation Status variable, continuing generation students were coded as 0 and first-generation students were coded as 1. *$p < .01$ **$p < .001$.|

Boys’ educational aspirations were lower than girls’ educational aspirations, $\beta = -0.14$, $p = .005$, controlling for all other variables. The results from these models show a positive relationship between college-preparatory activities completed by students and their educational beliefs.
Discussion

This study examined whether a reciprocal relationship exists between available social capital in students’ networks and their educational beliefs. Using social cognitive theory and capital theory as guiding frameworks, I examined students’ college information networks and their college-going beliefs. I will conclude this chapter by discussing my findings, offering suggestions for future research, and describing several limitations.

Students’ college-going self-efficacy was positively related to the number of individuals in their network (network degree). Educational aspirations were positively related to the amount of information available about college, and the education level of members of students’ information networks. These findings suggest that students who are confident in their ability to be prepared to go to college or who have aspirations to continue their education beyond high school actively seek out more individuals to whom they can talk about college. Students in these circumstances may be exercising personal agency to access information and resources available from others who can help them attain their educational goals (Bandura, 2001). Individuals with lower levels of self-efficacy are less likely to take advantage of opportunities that present themselves (Bandura, 1997). Indeed, students with lower levels of college-going beliefs and aspirations reported talking to fewer individuals about college and collected less information from the individuals in their networks.

The significant relationship between educational beliefs and available social capital indicates that students may be utilizing proxy agency via individuals in their networks. Proxy agency is exercised when individuals seek out others with access to
beneficial resources, experience, or influence (Bandura, 2001). Students who aspire to higher levels of education seem to be taking advantage of proxy agency by seeking out more individuals who have knowledge and firsthand experience with four-year institutions.

I found no significant relationship between students’ available social capital at Time 1 and their educational beliefs at Time 2. In other words, the social capital measures included in this study (i.e., network degree, constraint, hierarchy, total information available in the network, percentage of network with a Bachelor’s degree or higher, and frequency of conversations about college) were not predictive of students’ self-efficacy to attend college or of students’ educational aspirations. This suggests that there may not be a reciprocal relationship between available social capital and students’ educational beliefs. I will next discuss the theoretical and practical implications of these findings.

**Theoretical implications.** Although significant reciprocal relationship was found between social capital available in students’ networks and their educational beliefs, the findings presented in this study still support the basic tenets of social cognitive theory. Recall that social cognitive theory describes a triadic, reciprocal relationship between personal, environmental, and behavioral factors (Bandura, 1997). Bandura described the relationship between these three factors as interactive, and asserted that “reciprocity does not mean that the three sets of interacting determinants are of equal strength. Their relative influence will vary for different activities and under different circumstances” (p. 6). A bidirectional influence between two specific factors may not always be present. The reciprocal relationship described in social cognitive theory allows for educational
beliefs to influence how students access social capital; however, the social capital that students have access to may not always directly influence students’ educational beliefs.

Indeed, it may be that other environmental factors are influencing students’ beliefs. College cultural capital was significantly related to both college-going self-efficacy and students’ educational aspirations. This finding indicates that students who had completed more experiences related to college-preparation had more confidence in their ability to be prepared for college and also aspired to higher levels of education. Many of the college cultural capital items included in this study are reflective of environmental factors that might contribute to students’ college-going beliefs (e.g., talking to parents and guidance counselors about going to college). The original conception of the reciprocal relationship described at the outset of this study did not take into account that other environmental factors, such as those included in the measure of college cultural capital, may play a role. A revised model of the reciprocal relationship between environmental and personal factors, such as the one reflected in Figure 9, may better account for the variance in the strength and direction of the relationship between capital and students’ educational beliefs.

Figure 9. Revised model of the reciprocal relationship between capital and students’ educational beliefs.

Implications for practice. As noted above, having completed activities related to college preparation was significantly related to students’ educational beliefs, available
information about college, and the education level of individuals in students’ networks. These findings are consistent with previous research linking available social capital to educational attainment (Bourdieu, 1996; Teachman, 1987). Researchers have noted that students who attend four-year colleges have more financial and informational resources available to them than do students who enroll in two-year colleges or those who do not enroll (Engberg & Allen, 2010). As such, it may be best for schools and communities to focus their efforts on familiarizing students with college life via college visits, meetings with college admissions officers, and support for college preparation through intensive academic advising.

A logical next step in this research is to examine how students come to form their college-relevant beliefs in the first place. This dissertation indirectly examined the influence that vicarious experience and social persuasion might have on students’ college-going self-efficacy by examining the models and messages present in students’ information networks. Further investigation of the sources of students’ educational beliefs is needed to better understand what factors are most influential to students’ beliefs about attending college. It may be that students who reported lower college-going self-efficacy and educational aspirations simply do not want to go to college and are not seeking out additional information and resources that will prepare them for college. Although I was able to determine how far students intended to go in school via their educational aspirations, I was not able to determine the reasons why some students do not wish to go to college. The literature on rural and first-generation college students suggests that lower educational aspirations may be due to economic barriers and a lack of information (Reeves, 2012; Roscigno & Crowley, 2001). Therefore, removing students
who indicated that they did not intend to go to college may have unfairly excluded some students who might consider college if they were more aware of the resources available to them. Additional quantitative and qualitative inquiries examining the qualities and experiences of students with higher and lower levels of college-going self-efficacy and educational aspirations are needed to better understand the underlying mechanisms driving students to seek out information about college.

Potential first-generation college students had fewer individuals in their networks with a Bachelor’s degree or higher. This suggests that first-generation college students may be at a disadvantage when it comes to accessing proxy agency. Further investigation into differences in the structure and composition of potential first-generation college students’ college information networks is needed to answer this question. Educational programs targeting parents of first-generation students and key community members can help to better inform those individuals to whom first-generation college students turn to for information and support.

College cultural capital, originally conceptualized as a control variable in this study, proved to be an important predictor of both available social capital in students’ networks and students’ educational beliefs. This relationship could be investigated further by examining which of the eight experiences used to measure college cultural capital in this study explain the most variance in social capital or educational beliefs outcomes. This measure could also be expanded to examine other college preparatory activities, such as researching potential colleges, attending financial aid and ACT or SAT workshops.
Limitations. There are some limitations of this study that should be noted. This study was not designed to assess behavioral outcomes (e.g., college enrollment, graduation from high school). This prevented me from fully exploring the relationship between personal, behavioral, and environmental factors described by social cognitive theory (Bandura, 1997). Bandura noted that “it takes time for a causal factor to exert its influence” (p. 6). Although this study employed a time lag design, it was not a true longitudinal study. Ideally, researchers should track students from middle school, where students are first laying the groundwork for their postsecondary plans, to college matriculation. Using the personal network analysis techniques described in this study, researchers could better track network change over time and better understand the relationship between who students talk to about college, their educational beliefs, and their eventual educational outcomes.

Another limitation of the present study was that the data do not reveal the ways in which students’ cultural capital was obtained. For example, some students may have been able to attend summer academic enrichment camps as a result of academic achievement (i.e., Kentucky’s Governor’s Scholars Program); others may have paid tuition in order to attend a summer camp. Both experiences are similar, but one has a direct connection to the amount of economic capital a parent may have. A more nuanced measure of college cultural capital and the ways in which it is obtained can better differentiate between cultural capital tied to social or economic status and that obtained as a result of academic achievements.

It is important to better understand the relationship between students’ social status and their completion of college preparatory activities. No significant relationship was
found among the measures of perceived social status and occupational prestige and college cultural capital included in this study. However, others have noted that a family’s social standing within the community may alter the types of educational resources afforded to their children (Duncan, 1996, 2001; Roscigno & Ainsworth-Darnell, 1999). In this study, I elected to include a perceived social status measure that asked students to compare their social standing to others in the United States, as opposed to another measure which asked students to compare their social standing to others in their community. This more localized measure of perceived social status may have been more appropriate and may have provided more information on how social status within the community might influence students’ educational decisions and the resources afforded to them.

The nonsignificant results of social capital predicting educational beliefs suggest that there may have been limitations in my methodological approach. It may be that the alpha level chosen for this study ($\alpha = .01$) was too conservative, leading to Type II error. In the regression model predicting educational aspirations, for example, the sum of information available about college had a standardized beta value of .15 and a $p$ value of .018. A less conservative alpha level would have supported the presence of a reciprocal relationship between social capital and educational beliefs.

Another limitation of this study is the measure of college-going self-efficacy that was used. Several problems arose with the items included in the original scale. For example, IRT analyses revealed that participants were not using the bottom two categories very frequently, resulting in a combination of these response categories. In addition, DIF analyses revealed that the college-going self-efficacy items relating to
persistence were interpreted differently by middle and high school students. This suggests that assessing confidence about persisting in college may be too difficult for middle school students. Post-hoc revisions of the scale were conducted in order to remove problematic items and to collapse categories. The revised scale should be administered to a new sample and re-examined to confirm the validity of the model found in this study (DeAyala, 2009).
Chapter 5: Discussion

The aim of this dissertation was to obtain a better understanding of how students go about obtaining information about college in a community where few have obtained a Bachelor’s degree. I sought to contribute to the literature by using a novel methodology (i.e., personal network analysis) to investigate how students obtain social capital and to study the relationship between social capital and students’ educational beliefs.

I explored this phenomenon in two studies. In the first empirical study, I investigated the structure and makeup of students’ college information networks, and examined differences in available social capital by grade level, gender, and potential first-generation status.

The findings from Study 1 (Chapter 3) provide a descriptive overview of students’ college information networks and reveal several differences in student’s access to social capital by grade level, gender, and potential first-generation college student status. There was a relatively low percentage of individuals in students’ networks who had obtained a Bachelor’s degree or higher. For school districts and other individuals interested in increasing college-going, this finding reflects a need to make it easier for students to make contact with college-educated individuals.

The overall connectedness of students’ college information networks described in this study reflects the close-knit and supportive nature of rural and Appalachian communities that is described previous research (Howley et al., 1996; Khattri et al., 1997; Smith et al., 1995). This connectedness presents benefits and challenges. In a community where the majority of individuals know and interact with one another, interventions designed to inform a variety of individuals (e.g., family members, school
staff, churches, and community organizations) might help to bring individuals from all aspects of a child’s life together and to support that child’s educational aspirations. On the other hand, in a community where few adults have completed a college-education, it may be difficult for students to seek out role models to whom they can turn for advice. Smaller communities may not offer as much exposure to a variety of potential career paths. Schools and community organizations can help students to bridge this gap by exposing them to potential careers and connecting students with mentors to whom they can talk about college.

In the second empirical study, I examined the reciprocal relationship between students’ social capital and their educational beliefs. The results of Study 2 (Chapter 4) revealed that there was not a direct reciprocal relationship between students’ available social capital and their educational beliefs. However, several important findings did emerge. Students who had higher levels of college-going self-efficacy sought out more individuals to talk to about college. Students who had higher educational aspirations obtained more information about college and had networks comprised of more individuals who were college-educated. Together, these findings suggest that students who perceive themselves to be college-bound are actively seeking out individuals and information that will help them attain their educational goals. There was not a significant relationship between social capital and students’ educational beliefs. However, the activities that students had completed that helped them to prepare for college, such as visiting a college campus or attending a summer enrichment camp, played an important role in predicting not only students’ educational beliefs but the available social capital in their networks. These findings indicate that the college-preparatory activities that
students complete can be the impetus for students to seek out information about college and can also spark a students’ interest in going to college.

The results of Study 2 highlight the importance of further studying the relationship among cultural capital, social capital, and students’ educational beliefs. It may be that social capital serves as a mediator of cultural capital and educational beliefs. For example, students who participate in college-preparatory activities are by nature exposed to more individuals to whom they can talk about college, which in turn may influence students’ college-going beliefs and aspirations.

The research presented in Study 1 and Study 2 could be extended by examining how available social capital differs as a function of the types of individuals in students’ networks (i.e., family members, peers, school staff, community members, and college liaisons). In addition, differences in perceived importance of information received about college and perceived support for educational plans could also be examined for differences among these types of individuals. This would yield useful information for school districts interested in increasing college readiness among their students.

It is important to draw attention to the fact that the results of this dissertation come from one rural Appalachian community; it is possible that the outcomes presented here might differ if a similar study were conducted in a suburban, urban, or even another rural community. However, the implications of the results of this dissertation can applied to students in any community. Students who are interested in going to college benefit from being surrounded by individuals who can provide them with information about college-going. Potential first-generation college students in particular would benefit from being paired with college-educated mentors that can provide guidance as they navigate
the road to college. Communities that heed this advice have the potential to foster a college-going culture that will better support those students who wish to attend college.
Appendix A

Initial Institutional Review Board Approval for Dissertation Study (March 2013)

Initial Review

Approval Ends
March 14, 2014

IRB Number
13-0100-F4S

TO:
Amanda Rutz, MA
226 Deady Hall
0017
(806) 207-4944

FROM:
Chairperson/Vice Chairperson
Non-medical Institutional Review Board (IRB)

SUBJECT:
Approval of Protocol Number 13-0100-F4S

DATE:
March 25, 2013

On March 25, 2013, the Non-medical Institutional Review Board approved minor revisions requested at the convened meeting on March 15, 2013 for your protocol entitled:

Motivation and achievement in Rural Appalachia

Approval is effective from March 15, 2013 until March 14, 2014 and extends to any consent/assent form, cover letter, and/or phone script. If applicable, attach to the IRB approved consent/assent document(s) to be used when enrolling subjects. [Note: subjects can only be enrolled using consent/assent forms which have a valid “IRB Approval” stamp unless special waiver has been obtained from the IRB.] Prior to the end of this period, you will be sent a Continuation Review Report Form which must be completed and returned to the Office of Research Integrity so that the protocol can be reviewed and approved for the next period.

In implementing the research activities, you are responsible for complying with IRB decisions, conditions and requirements. The research procedures should be implemented as approved in the IRB protocol. It is the principal investigator’s responsibility to ensure any changes planned for the research are submitted for review and approved by the IRB prior to implementation. Protocol changes made without prior IRB approval to eliminate apparent hazards to the subject(s) should be reported in writing immediately to the IRB. Furthermore, discontinuing a study or completion of a study is considered a change in the protocol’s status and therefore the IRB should be promptly notified in writing.

For information describing investigator responsibilities after IRB approval has been obtained, download and read the document “PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research” from the Office of Research Integrity’s Guidance/Policy Documents website [http://www.research.uky.edu/ori/human/guidance.html#Prg]. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORI’s website [http://www.research.uky.edu/ori/]. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at (859) 257-6428.

Chairperson/Vice Chairperson

Inclusive Opportunity, Diversity
Approval for Continuation of Study (February 2014)

Office of Research Integrity
IRB, IACUC, RRDC
315 Kinkead Hall
Lexington, KY 40506-0057
859 257-9428
Fax 859 257-3993
www.research.uky.edu/ori/

Continuation Full Review
Modification Approved: Study Personnel

Approval Ends
February 20, 2015

IRB Number
13-0100-F48

TO: Amanda Butz, MA
226 Dickey Hall
0017
PI phone: (606)207-4944

FROM: Chairperson/Vice Chairperson
Non-medical Institutional Review Board (IRB)

SUBJECT: Approval of Protocol Number 13-0100-F48

DATE: February 24, 2014

On February 21, 2014, the Non-medical Institutional Review Board approved your protocol entitled:

Motivation and Achievement in Rural Appalachia

Approval is effective from February 21, 2014 until February 20, 2015 and extends to any consent/assent form, cover letter, and/or phone script. If applicable, attached to the IRB approved consent/assent document(s) to be used when enrolling subjects. [Note, subjects can only be enrolled using consent/assent forms which have a valid "IRB Approval" stamp unless special waiver has been obtained from the IRB]. Prior to the end of this period, you will be sent a Continuation Review Report Form which must be completed and returned to the Office of Research Integrity so that the protocol can be reviewed and approved for the next period.

In implementing the research activities, you are responsible for complying with IRB decisions, conditions and requirements. The research procedures should be implemented as approved in the IRB protocol. It is the principal investigator's responsibility to ensure any changes planned for the research are submitted for review and approval by the IRB prior to implementation. Protocol changes made without prior IRB approval to eliminate apparent hazards to the subject(s) should be reported in writing immediately to the IRB. Furthermore, discontinuing a study or completion of a study is considered a change in the protocol's status and therefore the IRB should be promptly notified in writing.

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Chairperson/Vice Chairperson
Appendix B

Letter to Parents about Study

March 22nd, 2013

Dear Parent or Guardian:

Your child is being invited to take part in a research study about students’ attitudes toward school. This study will help us learn how students’ attitudes toward school influence their motivation and achievement in math and science. There are no known reasons why your child should not take part in this study.

If your child volunteers to take part, he or she will be one of about 1,400 students to do so in the [redacted] public school system. The person in charge of this study is Amanda Butz, a doctoral student from the University of Kentucky Department of Educational, School, and Counseling Psychology. This study is being conducted under the supervision of Dr. Ellen Usher, Associate Professor of Educational Psychology at the University of Kentucky. Other people on the research team might assist at different times during the study.

Researchers will come to your child’s math and science classroom once during the 2012-2013 school year and three times during the 2013-2014 and 2014-2015 school year to give students a questionnaire about their beliefs and attitudes about school. The questionnaires will be read aloud to students and will take less than 45 minutes to complete. The researchers will answer any questions your child may have. To help us answer important questions about student attitudes, we will be contacting your child’s school and requesting access to your child’s academic records, such as report card grades and achievement test scores. Your child’s teachers will also complete a rating of competence and motivation in science and math class. To protect your child’s privacy, any information that will allow these scores to be traced back to your child will be removed.

To the best of our knowledge, the things your child will be doing have no more risk of harm than he or she would experience in everyday school activities. Your child will not miss classroom instruction by participating in this study. There is no guarantee that your child will get any benefit from taking part in this study, but your willingness to allow your child to take part may help parents, teachers, and researchers better understand student motivation.

Your child’s participation in the study is completely voluntary. You or your child may stop your child’s participation at any time, even if you have given permission for him/her to participate. There is no penalty for students who choose not to participate. Students who choose not to participate will be asked to read quietly.

Students’ responses will be confidential and stored in a secure location. Your child will not be personally identified in any written materials, including published results of the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. No school names will be used. There are no costs associated with taking part in the study.

If your child is over the age of 13, we may administer the survey using an online survey system. Please be aware, while we make every effort to safeguard your child’s data once received from the online survey/data gathering company, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while on the survey/data gathering company’s servers, or while en route to either them or us. It is also possible that raw data collected for research purposes may be used for marketing or reporting purposes by the survey/data gathering company after the research is concluded, depending on the company’s Terms of Service and Privacy policies.

(letter continues on reverse side)
Form L - MARA Parent Letter

We will keep private all research records that identify participants to the extent allowed by the law. However, there are some circumstances in which we may have to share student's information to other people. For example, the law may require us to share a student's information to a court if they report a child being abused or if they pose a danger to themselves or someone else. Also, we may be required to share information which identifies a student to people who need to be sure we have done the research correctly; these would be people from such organizations such as the University of Kentucky.

If you do not wish for your child to participate in this study, simply sign the bottom of this form and return it to the school office by March 29, 2013. If you have any questions about this survey, do not hesitate to contact Amanda Butz by email (amanda.butz@uky.edu) or Dr. Ellen Usher by phone (859) 257-8647 or by email (ellen. usher@uky.edu). If you have any questions about your child’s rights as a participant in this study, please contact the Office of Research Integrity at the University of Kentucky at 859-257-5428 or toll free at 1-866-400-9428.

******************************************************************************

Please return this form only if you do not want your child to participate in this study*

I do NOT want my child, __________________________________________ to complete the questionnaire.

Child's Homeroom Teacher/Grade: __________________________________________

Parent/Guardian Signature: __________________________ Date: _______________

Parent/Guardian Printed Name: __________________________________________
Appendix C

College Information Network Measures

Name Generator

Directions: In the spaces provided below, list any people with whom you have had important or influential conversations about college. These people could be family members, friends, classmates, other people at school (such as teachers or guidance counselors) or other adults. You do not need to list full names. First names and last initials are fine, so long as you know who they are.

Person 1:
Person 2:
Person 3:
Person 4:
Person 5:
Person 6:
Person 7:
Person 8:
Person 9:
Person 10:

Name Interpreters

Note: Each of these questions is asked for each person that the respondent names in the name generator.

Relationship.
How do you know ________? Please select the answer below that best describes your relationship to this person.

- Parent
- Grandparent
- Step-parent
- Brother or sister (including step-brothers/sisters and half brothers/sisters)
- Other family member (for example: aunts, uncles, cousins)
- Foster parent/legal guardian other than family member
- Family friend
- Classmate
- Friend or acquaintance
- College student
- College coach or representative from college prep program such as GEAR UP, Upward Bound, or Robinson Leadership Program
- Guidance counselor
- Teacher
- Principal, superintendent, or other school administrator
- School staff
• Sports coach
• Church member or church family
• Staff from summer enrichment program (for example: Governor’s scholars program or summer camp at a university)
• College admissions officer or other college staff
• Other (please describe):

Gender.
What is _________’s gender?
   Male
   Female

Years known.
How many years have you known _________? Please enter the number of years and months that you have known this person. For example, if you have known this person for one and a half years, enter 1 for years, 6 months.

Education.
Has _________ completed a college degree?
   • No
   • 2 year degree (Associate’s degree or vocational degree/certificate from a community college.
   • 4 year degree (Bachelor’s degree)
       Master’s degree (M.A., M.B.A., or M.S.)
   • Doctoral degree or other professional degree (PhD, MD, Law degree)
   • I’m not sure

Frequency of conversation.
On average, how often do you speak with _________ about college?
   • Never
   • Less than once a year
   • About once or twice a year
   • Several times a year
   • About once a month
   • 2-3 times a month
   • Nearly every week
   • Every week
   • Once a day
   • Several times a day
Topics.
What do you talk with ________ about? Select all topics that you talk to this person about.

- Which college to go to.
- Reasons not to go to college.
- Preparing for a career instead of going to college
- The cost of college
- How to apply for financial aid
- Preparing for/taking the ACT or SAT
- Classes to take in high school to prepare for college
- Possible majors in college or what courses to take in college
- Career plans for after college
- Your grades in high school
- How to keep in touch with family when you are at college
- Extracurricular activities/clubs/sports to participate in at college.
- How to apply for college
- Admission requirements for college
- I don’t talk to this person about college
- Other: ________________

Importance of information
How importance is the information about college that you obtain from ________?

1 (not at all important to me) to 6 (extremely important to me)

Support
How supportive is _________ of your college plans?

1 (not at all supportive) to 6 (extremely supportive)

Network connectedness.
Do ________ and ________ know each other?

- Yes
- No
- Not Sure

Note. This question is asked for each pairing of individuals that the person names in his/her information network.
Appendix D

Measures of Students’ Beliefs about College

Revised College-Going Self-Efficacy Scale

Directions: Using the scale from 1 (not at all confident) to 6 (completely confident), answer the questions below. Remember that you can select any number from 1 to 6.

How confident are you that you can complete the following tasks?
* 1. Find a way to pay for college
* 2. Get accepted to a college.
* 3. Have emotional/moral support from family for going to college.
* 4. Choose a good college.
* 5. Get a scholarship or grant for college.
* 6. Make an educational plan that will prepare you for college (For example: plan out what courses and tasks you need to complete to be prepared for college).
* 7. Make your family proud with your choices after high school.
  8. Choose college courses that best fit your interests.
* 9. Pay for college even if members of your family cannot help you.
  10. Get good grades in your high school math classes.
  11. Get good grades in your high school science classes.
* 12. Choose the high school classes needed to get into a good college.
  13. Know enough about computers to get into a good college.
  14. Go to college after high school.
  15. Find a way to pay for each year of college.
  16. Get A's and B's in college.
  17. Get your family to support your wish to finish college.
  18. Take care of yourself at college.
  19. Fit in at college.
  20. Get good enough grades to keep a scholarship.
  22. Care for your family while in college.
  23. Set your own schedule while in college.
  24. Make friends at college.
  25. Get the education you need for your choice of career.
  26. Get a job after you graduate from college.
  27. Get good enough grades to finish college.
  28. Pick the right things to study at college.
  29. Do the assigned work in college classes.
  30. Understand your assigned readings in college.
  31. Write course papers in college.
  32. Keep up to date with your schoolwork in college.
  33. Do well on your exams in college.
  34. Ask your college advisor questions.
35. Ask you college professor questions.
36. Participate in class discussion in college.
37. Adjust to living away from home.

Educational Aspirations

What is the highest degree that you plan to obtain in school?

- I do not plan to graduate high school
- High school diploma/ GED
- 2 year degree (For example: Associate’s degree or Vocational degree/certificate from a community college)
- 4 year degree (Bachelor’s degree from a college or university)
- Master’s degree (M.A., M.B.A., or M.S)
- Doctoral degree or other professional degree (PhD, MD, Law degree)
- I’m not sure
Appendix E

College Cultural Capital

Have you completed any of the following? Select “Yes” or “No” for each of the following items:

1. Visited a college campus
2. Attended summer academic enrichment camps
3. Talked with parents about what high school courses to take prepare for college?
4. Researched possible college majors?
5. Talked with my school guidance counselor or other school staff member about applying to college?
6. Talked with my parent(s)/guardian(s) about going to college?
7. Participated in Gear Up?
8. Talked with my school guidance counselor or other school staff about what high school courses to take to prepare for college?
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* pseudonym used to protect confidentiality of school district and participants in this dissertation study.
Amanda R. Butz
5/1/15

EDUCATION

2011 Master of Arts, Adult and Higher Education
Morehead State University (Morehead, KY)

2006 Certificate in World Music Cultures
The Florida State University (Tallahassee, FL)

2002 Bachelor of Arts, Individualized Major, (Arts Administration),
Indiana University (Bloomington, IN)

WORK EXPERIENCE

05/2012 – 08/2012 Interim Associate Director, Graduate Programs, Morehead State University

05/2010 – 08/2011 Graduate and Undergraduate Program Assistant I, Morehead State University

07/2009 – 05/2010 Enrollment Services Specialist, Morehead State University

08/2007 – 06/2009 Assistant to the Dean of Faculty, Mount Holyoke College

09/2005 – 08/2007 Staff Assistant I, Technology & Professional Programs, Tallahassee Community College

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2011 Outstanding Graduate Student, Adult and Higher Education Program

2010 AAACE Graduate Student Conference Scholarship
PUBLICATIONS


SELECTED PRESENTATIONS


