

FROM ASPIRATIONS TO ACCESS:  
THE ROLE OF PLACE IN THE FACILITATORS OF AND BARRIERS TO  
POSTSECONDARY EDUCATION ATTENDANCE

A DISSERTATION  
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BY

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This dissertation is dedicated to my late grandmother, Sharon Kay Starkey (a.k.a. “Meem”), who instilled in me the importance of a higher education, which served as the fuel for this project and many more to come. Thank you for teaching me that it matters not where you come from but where you are going!

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## **ABSTRACT**

**DISSERTATION:** From Aspirations to Access: The Role of Place in the Factors that Facilitate or Impede Postsecondary Education Attendance

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Using data from the Educational Longitudinal Study of 2002, sponsored by the National Center for Education Statistics, this study presented an ecological approach to examining the individual, family, and school factors that facilitated or impeded postsecondary education attendance. Also, this study examined how place (i.e., rural, urban, and suburban) moderated the relations among certain individual and contextual factors and postsecondary education attendance. Historically, a core of factors including academic achievement, parent's educational attainment, parents' educational aspirations, and household income, has been consistently identified as predicting college attendance. In addition to those variables, this study revealed three additional factors, extracurricular activities, employment, and parents' educational aspirations for their student, which provided a unique contribution above that of the aforementioned core factors to the outcome of college attendance. The results also indicated that place did not moderate the relations among individual and contextual predictors and college attendance. However, in an exploratory analysis, a few factors were found to uniquely predict college

attendance for students from each place (i.e., rural, urban, and suburban). By providing an understanding of the unique strengths and needs of students from rural and urban settings, the findings of this study may be used to inform the development of policies on higher education and intervention programs, such as the Higher Education Act, in order to ameliorate disparities in postsecondary education attendance among rural, urban, and suburban students.

## CHAPTER 1

### INTRODUCTION

*There are no guarantees in life, with or without a college diploma...but the odds are increasingly stacked against those with the least education and training.*

(Gladiex, 2004, p. 18).

A postsecondary education holds economic and social value at the individual, local, and national levels (Baum & Payea, 2004). In dramatic contrast from what may have been experienced by past generations, postsecondary education is a necessary credential for many well-paying, secure jobs in today's society, whether in the form of a college degree or advanced training from a technical school (Strauss & Howe, 2005). Those aged 25-34 who hold at least a bachelor's degree earn significantly more income than those with less education (Wirt, Choy, Rooney, Provasnik, Sen, & Tobin, 2004). Further, communities with greater percentages of college educated residents experience less crime and have fewer citizens relying on governmental support (Baum & Payea, 2004).

#### *Statement of the Problem*

The postsecondary educational attainment of American students has been discussed frequently among researchers and policymakers because not all students are attaining postsecondary educations at the same rate (Cameron & Heckman, 2001; Goetz,

2001). In its influential report, *Measuring Up 2000*, the National Center for Policy and Higher Education (NCPHE; 2001) identified preparation for and participation in postsecondary education among the most important policy issues. Indeed, James B. Hunt Jr., Chairman of the NCPHE said, “Geography, wealth, income, and ethnicity still play far too great a role in determining the educational opportunities and life chances of Americans” (2001, para. 6).

A vast amount of research has been published on the existence of and potential solutions for the educational attainment gap between low-income, minority urban students and their affluent, White counterparts (Charles, Roscigno, & Torres, 2007; Perna, Milem, Gerald, Baum, Rowan, & Hutchens, 2006; Roscigno & Crowley, 2001; Solorzano, 1992). However, a similar discrepancy exists for rural students, particularly for racial, ethnic, and class minorities living in those geographic areas (Charles, et al., 2007; Cobb, McIntyre, Pratt, 1989; Roscigno & Crowley, 2001; Shaw, De Young, & Rademacher, 2004; Van Hook, 1993). For example, disparities in college enrollment were found among participants of the National Educational Longitudinal Study 1988 (NELS: 88) with approximately 64% of suburban and urban students enrolled in college compared to 56% of rural students (Hu, 2003). Further, among high school students in Pennsylvania, 48% of rural students reported having no postsecondary education while only 28% of urban students and 36% of suburban students reported no postsecondary education (Yan, 2002).

To attain a college education one must first gain access to and attend a postsecondary education institution. An abundance of federal and privately funded

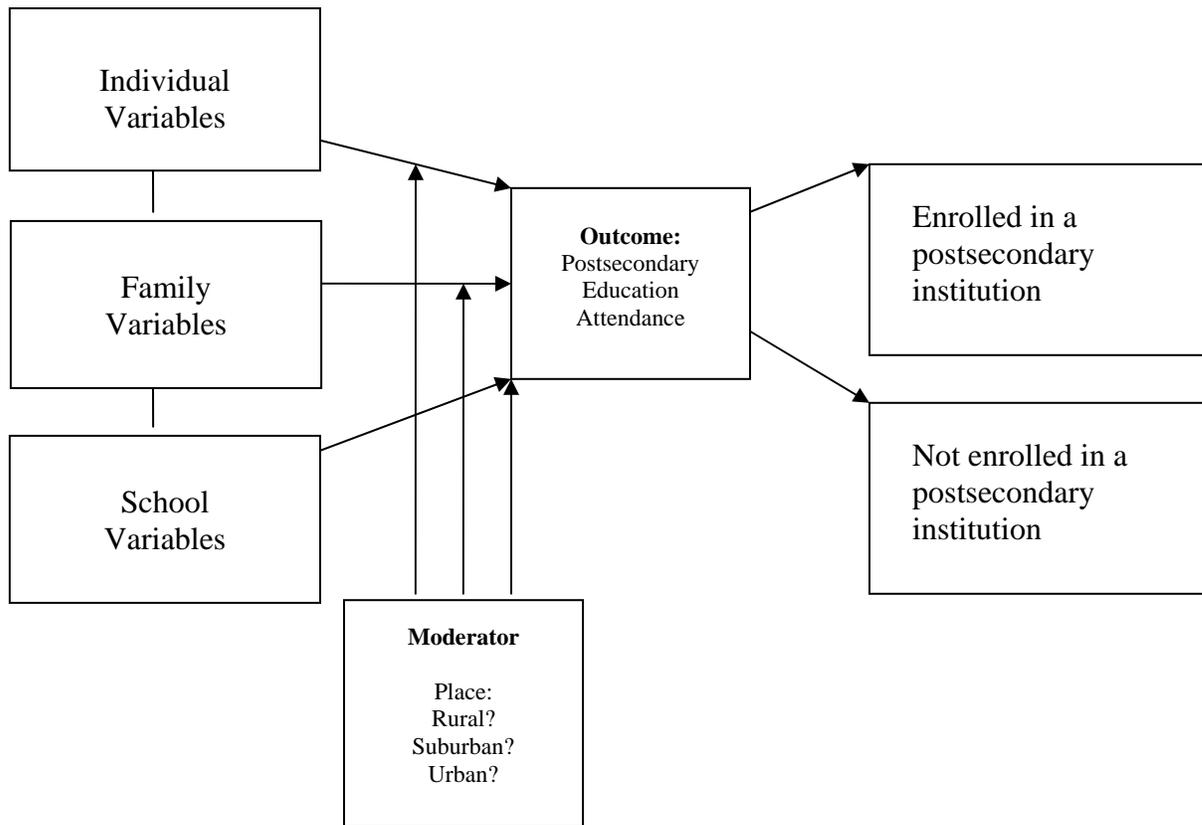
intervention programs (e.g., GEAR UP, Project GRAD) have been developed to improve postsecondary education attendance for low-income and minority youth. The outcomes of these programs include improvements in academic achievement, higher educational aspirations, and increased college attendance rates (Gándara, Gándara, & O'Hara, 2001). Despite these advancements, access to higher education, as indicated by college attendance, remains unequally distributed, particularly between rural and non-rural students (Hu, 2003; Shaw, et al., 2004; Smith, Beaulieu, & Seraphine, 1995).

A comprehensive examination by Gándara et al. (2001) found that the majority of college preparation programs target underrepresented students in urban settings. Some programs may have participants from rural areas; however, disparities in access may be a reflection of program components that are incongruent with the needs of rural students. Factors identified as facilitating postsecondary access in urban settings may not promote attendance among rural students due to differences in available resources and local infrastructure. An effective element found in existing intervention programs was awareness of participants' backgrounds (Gándara et al., 2001). This is imperative when working to improve postsecondary attendance for underrepresented students from varying geographic settings, which is why scholars and policymakers will find the outcomes of this study particularly informative.

To eradicate the existing disparities in postsecondary education attendance, we must learn more about the individual and contextual factors that facilitate or impede attendance for rural students. The current study investigated whether previously reported disparities between rural, urban, and suburban students' postsecondary attendance still

exist. Next, the study identified individual, family, and school factors that facilitated or impeded upon college attendance. Finally, the study determined if and how those factors were moderated by level of urbanicity (i.e., rural, suburban, or urban), heretoforth referred to as place (see Figure 1).

Figure 1. Place as a Moderator for Contextual Influences on Postsecondary Enrollment.



*Theoretical Framework*

Human development does not occur in a vacuum. Instead, developmental and educational outcomes are influenced by characteristics of the person as well as aspects of the environment in which that person lives. Bronfenbrenner (1977) asserted “the understanding of human development demands going beyond the direct observation of

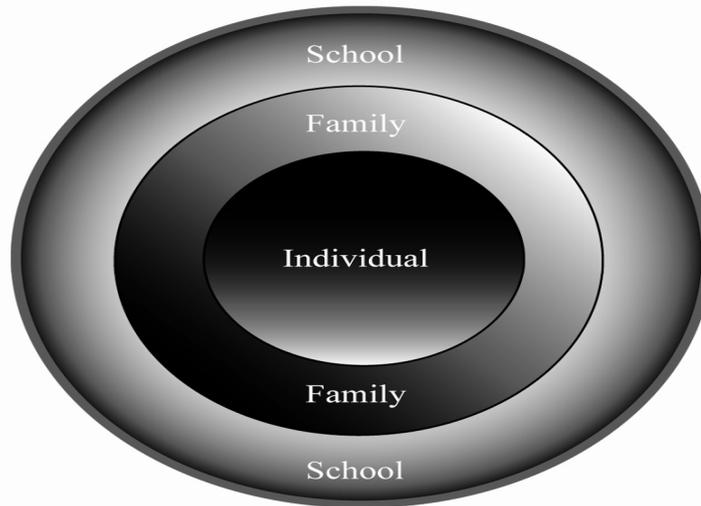
behavior on the part of one or two persons in the same place; it requires examination of multiperson systems of interaction, not limited to a single setting, and must take into account aspects of the environment beyond the immediate situation containing the subject” (p. 514). Therefore, in examining influences on educational outcomes it is necessary to investigate relationships from an ecological perspective by considering the context within which the individual develops.

Many educational and vocational researchers (e.g., Albert & Luzzo, 1999; Ali & Saunders, 2006) have used The Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994), developed from Bandura’s Social Cognitive Theory. SCCT provides an ecological framework for examining the processes through which people develop interests, make decisions, and attain varying levels of success in their career and educational pursuits. SCCT addresses how cognitive-person variables, other person variables, and environmental variables interact with each other to ultimately influence educational or career outcomes. Although SCCT had yielded a number of inquiries on cognitive-person variables, few studies have examined environmental variables. A Concentric Model of Environmental Influences, proposed by Lent, Brown, and Hackett (2000) within the SCCT, whereby one’s environment is conceived as a series of embedded layers with the individual residing in the innermost circle surrounded by the immediate environment (i.e., family), which is encircled by the larger social context (i.e., school), served as the framework for the proposed study (see Figure 2).

*Review of Literature*

Families and schools are shaped by the communities in which they reside. A consequence of living in any location is access to or restriction from opportunities and resources. The economic resource disparities of communities have negative effects upon family and school investments (Roscigno & Crowley, 2001). Lower SES families are less likely to be able to provide their children with opportunities

*Figure 2.* The Concentric Model of Environmental Influences (Lent et al., 2000)



related to social and cultural capital, which have been related to postsecondary education attendance (Roscigno, Tomaskovic-Devey, & Crowley, 2006). Likewise, schools from poor communities are less likely to offer their students a diverse array of courses, programming, or have success in attracting high quality teachers (McCracken & Barcinas, 1991; Williams, 2003).

Approximately 22% of rural children live in poverty (U.S. Census Bureau, 2007). Although it has been acknowledged that the rate of rural children living in poverty is comparable to that of urban children living in poverty, rural poverty is not simply urban poverty in a rural setting (Khattri, Riley, & Kane, 1997). Spatial stratification results in places varying significantly in the opportunities and resources available to their residents (Roscigno & Crowley, 2001). Distinct characteristics of rural and urban families and schools may serve to facilitate postsecondary education attendance through unique structures and processes, which this study sought to highlight.

The characteristics of rural and urban families are remarkably different. The attributes of rural families include a greater likelihood of being intact, greater parental involvement in students' education, and close community ties (Roscigno et al., 2006). Unfortunately, many rural families lack social and cultural capital, especially technological resources and parental educational attainment (McCracken & Barcinas, 1991), and they have high rates of unemployment, substance/alcohol abuse, and teenage pregnancy (Roscigno & Crowley, 2001). Although urban students face similar challenges as well as challenges unique to their locale, such as violence and gang activity (Roscigno et al., 2006), they may draw from resources such as large public libraries, clinics, community centers, and museums not available to those in more isolated, rural settings (Khattri et al., 1997). The presence or absence of these variables may have distinct influences on the postsecondary educational opportunities of rural and urban students (Roscigno et al., 2006).

In a similar vein, the characteristics of rural schools are remarkably different from those of urban settings. The struggles of rural schools parallel those encountered by rural families and communities (Roscigno & Crowley, 2001) as they too possess a unique set of characteristics that may function as attributes or detriments to the academic success of rural students. The constructive features of rural schools are small school and class size, high levels of community support, and strong parent-teacher relations (Khattri et al., 1997; McCracken & Barcinas, 1991). Rural schools face the challenge of overcoming institutional disadvantages including limited access to educated role models, limited curricular offerings, difficulty transporting students, outdated technology, and difficulty attracting and retaining qualified teachers (Fan & Chen, 1998; McCracken & Barcinas; Williams, 2003). In contrast, urban schools are often large, allowing them to offer a diverse array of courses, extracurricular activities, and athletics (McCracken & Barcinas, 1991). The disadvantages of large schools include decreased opportunities for participation in activities and breakdowns in school, family, and community relations (McCracken & Barcinas, 1991; Smith et al., 1995).

These notable differences among rural, urban, and suburban contexts can have significant implications for numerous postsecondary outcomes. Several studies have examined the individual and contextual factors that predict postsecondary education *attainment* (e.g., Adelman, 1999; Charles et al., 2007; Kaufman & Gabler, 2004); however, much less research has examined the individual, family, and school factors related to postsecondary education *attendance* and even fewer studies have examined how these factors facilitate *attendance* for students differently based on *place*. It is

imperative to consider students' individual characteristics as being embedded in those backgrounds or places that help to shape students' life opportunities (Marjoribanks, 2003) because the distribution of resources and opportunities are often a function of the local community (Roscigno & Crowley, 2001). Research has consistently demonstrated the numerous differences between rural, urban, and suburban communities (Roscigno et al., 2006; Roscigno & Crowley, 2001). The literature is very limited in explaining how educational processes vary through spatial stratification, typically operationalized as level of urbanicity and/or rurality (Roscigno & Crowley, 2001).

Smith et al. (1995) examined differences in the relations between family level variables and college attendance among rural, suburban, urban students. They found parental monitoring of activities and school work to have a beneficial impact on college attendance for urban students only and family income to be a significant predictor of college attendance for all except rural students. These findings support the hypothesis that factors related to attendance may be moderated by place. Smith et al. (1995) provided a valuable contribution to the literature; however, one limitation of the study was the focus on family factors and the absence of school factors. By examining only one context (i.e., family) while neglecting others (i.e., school), one cannot examine the relative impact of each context on the outcome variable.

Multivariate analyses of individual, family, and school characteristics will help disentangle the underlying factors related to the disproportionate educational opportunities for students in different places (Hu, 2003). There are very few studies that have taken a multi-contextual approach in examining the factors related to postsecondary

education attendance. Using data from NELS:88, Yan (2002) compared the factors that influenced the postsecondary enrollment of rural Pennsylvania students to those of students in urban and suburban areas. He found differential patterns of relations among postsecondary attendance and the predictor variables for rural, urban, and suburban students. For example, he found that individual educational expectations had a varied effect based on place; rural students (27%) who did not go to college were twice as likely as their urban and suburban counterparts (15% and 13%, respectively) to expect to complete only high school.

Snyder (2004) also examined the differences in the relations among contextual factors and postsecondary access for rural and non-rural students. He found that enrollment in more math and science courses, participation in extracurricular activities, family income, and parent expectations were instrumental in facilitating college attendance for rural students. Additionally, he found home resources and parent education to have a unique influence on college enrollment for rural students only and private school attendance or attendance at a school with a high percentage of disadvantaged minorities to increase college attendance for non-rural students. The outcomes of both of these studies suggest that factors related to postsecondary attendance may indeed be moderated by place (i.e., rural, urban, and suburban).

### *The Current Study*

The purpose of this study was to investigate the nature of disparities in postsecondary education attendance, defined as enrollment in a 2- or 4-year college within two years after high school graduation, among rural, urban, and suburban students.

Moreover, the researcher addressed the limitations in previous work in several ways. First, as suggested by Roscigno and Crowley (2001), this study concurrently examined the impact of individual, family, and school characteristics on the outcome of postsecondary attendance. Second, the study utilized three groups of students: rural, urban, and suburban. A major attribute of the Yan (2002) and Snyder (2004) studies was the inclusion of a non-rural comparison group, which allowed them ascertain whether the predictor variables had effects only on rural students or on non-rural students as well. One limitation, however, of the Snyder (2004) study was the way in which students were grouped dichotomously as rural or non-rural, whereby urban students were placed in the same category of suburban students. Historically, suburban students have been more likely to have access to family and school resources than urban students (Roscigno et al., 2006; Roscigno & Crowley, 2001); therefore, grouping students from these two distinct locations together may lead to a confounding of several variables and an inability to truly understand patterns of variables related to college attendance and attainment (Roscigno & Crowley, 2001). Additionally, the predictor variables in the Snyder (2004) study were all derived from data collected during the students' senior year of high school even though similar data from the sophomore year were available from the NELS: 88 dataset. Research has consistently indicated that preparation for postsecondary education begins well before the student's senior year of high school (Gándara, et al., 2001). In fact, contextual factors, such as home resources, parents' educational aspirations, and school resources, in a student's life during elementary and middle school can be influential to the student's enrollment in college. Therefore, the current study examined the relations

among variables from the students' sophomore year of high school and postsecondary education attendance.

In addition, earlier work could be advanced by using different statistical analyses. Rather than estimating separate models and comparing unparallel regression lines based on location, which do not account for differences in within group variance, this study examined interactions between place and other contextual factors within a single regression model. Finally, rather than relying on older databases, the data in the current study were gleaned from the Education Longitudinal Study: 2002 (ELS: 2002), which is current and more likely to reflect the lives of today's students.

This study investigated the existence and nature of disparities in postsecondary education attendance among rural, urban, and suburban students. To obtain a more accurate depiction of how place moderates the influence of individual, family, and school factors on attendance, the study examined the relations among the predictor variables and the outcome variable of postsecondary attendance. Additionally, the role of place in moderating those relations was examined. The following research questions were addressed:

*Based on enrollment at a 2- or 4-year college immediately after high school:*

*(1) Is place (i.e., rural, urban, suburban) related to postsecondary education attendance? If so, what is the nature of that relationship?*

*(2) What individual, family, and school factors predict postsecondary education attendance?*

(3) *Among rural, suburban, and urban students, for which individual, family, and school factors does place moderate their influence on postsecondary education attendance?*

#### *Significance of the Study*

Over the past several years, the *United States Department of Education*, the *National Center for Education Research*, and *The Spencer Foundation*, along with many state governments, have declared access to postsecondary education among their top priorities. Educational investments do not occur in a vacuum. Geographical inequities have been linked with barriers to educational opportunity (Rosigno et al., 2006). To eradicate existing disparities in postsecondary education access, we must acquire an understanding of the individual and contextual factors that facilitate or impede access for underrepresented students. As individual states examine the educational attainment of their citizens to meet the demands of the national and global economy, policymakers will find the results of this study particularly useful. By providing an understanding of the unique strengths and needs of students from rural settings, the outcomes of this study can be used to inform the development of policies on higher education and intervention programs in order to eradicate problems with postsecondary education attendance for rural students.

## CHAPTER 2

### REVIEW OF THE LITERATURE

#### *Importance of Postsecondary Education*

Postsecondary education holds economic and social value at the individual, local, and national levels. For those without a postsecondary education, the United States' job market is shrinking and wages are declining (Reid & Moore, 2008). A college degree has become a necessary credential for many well-paying, secure jobs in today's society (Smith, et al., 1995; Strauss & Howe, 2005), as the level of educational attainment one holds exerts a powerful influence on whether one has a job, the character of the job, and the level of earnings from the job (Beaulieu & Mulkey, 1995). American citizens, ages 25-34, who hold at least a bachelor's degree, earn significantly more income per year than those with less education (Wirt, et al., 2004). Further, those communities with greater percentages of college educated citizens experience less crime and have fewer citizens relying on governmental support (Baum & Payea, 2004). Unfortunately, however, not all American students are earning postsecondary degrees at the same rate, particularly class-, race-, and geographic-minority students (Cameron & Heckman, 2001; Goetz, 2001).

The pathways to postsecondary education are considered to be multi-stage processes that involve the formation of educational aspirations, academic preparation, and enrollment in college (Hu, 2003). To enroll in a postsecondary institution and eventually attain a higher education, one must first gain *access*, through engaging in

preparatory behaviors, applying, and gaining acceptance to an institution of higher education. Postsecondary education access, and subsequent attendance (of central interest to the current study), is only one of three major thresholds for students' postsecondary careers, typically followed by persistence and success. Persistence is establishing credits toward a degree credential and success denotes the completion of the degree credential (Adelman, 2007).

Students with the most difficulty accessing and attending college are often those who are the first generation in their family to attend, children from immigrant families, and those from low SES homes (Choy, 2001; Reid & Moore, 2008). Preparing first generation and low-income students for postsecondary education requires more than simply raising standardized achievement test scores (Wimberly & Noeth, 2004). Instead, researchers must recognize the preparatory factors that serve to facilitate or impede postsecondary education attendance in order to create and implement interventions that prepare all students for higher education throughout the K-12 process (Reid & Moore, 2008). There is a dearth of research that focuses on the individuals, programs, and experiences that students perceive as influencing their decision to pursue and attain a higher education (Reid & Moore, 2008).

Disproportionate rates of postsecondary attendance exist among students in metropolitan (i.e., non-rural) and non-metropolitan areas (i.e., rural; Blackwell & McLachlan, 1999; Hu, 2003; Smith et al., 1995; Yan, 2002). Typically, suburban students have the highest likelihood of attending college (67%), while rural students have the lowest (45%; Smith et al., 1995). For example, disparities in college enrollment were found among participants of the National Educational Longitudinal Study 1988 (NELS:

88) with approximately 64% percent of suburban and urban students enrolled in college compared to 56% of rural students enrolled (Hu, 2003). In a retrospective study among students in Pennsylvania, 48% of rural students reported having no postsecondary education while only 28% of urban students and 36% of suburban students reported no postsecondary education (Yan, 2002). Interestingly, however, many researchers agree that rural schools do as well or better than their suburban and urban peers at educating students (Ballou & Podgursky, 1995; Reeves & Bylund, 2005; Fan & Chen, 1998) suggesting that academic preparation may not be the most salient factor influencing the current disparities in postsecondary access for rural areas.

### *Defining Rurality*

Defining rurality and determining which communities are considered rural are quite complicated tasks. The modern society of the United States of America centralizes around urban areas and values urban life so one knows what urban is yet one is still unclear about what exactly comprises and defines rural. There is great frustration within the literature over the lack of a precise demographic definition of rural. Indeed, researchers have been calling for a more consistent definition for many years (Noble, 1981; Odell, 1988) because there are currently several common and federal definitions. Many definitions of rural include issues related to farming although most rural areas are non-farming such as fishing villages in New England and Southwestern Indian reservations (Colangelo, Assouline, Baldus, & New, 2003). For example, the Merriam-Webster Online Dictionary defines rural as “of or relating to the country, country people or life, or agriculture” (Merriam-Webster, 2008).

Federal agencies even have difficulty creating a common definition for rural, many of which define rural as a residual category. For example, in the Census 2000, the United States Census Bureau defined “rural” as consisting of all areas located outside of Urbanized Areas (UAs) or Urban Clusters (UCs). Urban Areas, as defined by the U.S. Census Bureau, are those areas that have a population density of at least 1,000 people per square mile and surrounding areas that have an overall density of at least 500 people per square mile (U.S. Census Bureau, 2007). There are two distinct categories of urban areas: Urbanized Areas (UAs) and Urbanized Clusters (UCs). UAs have populations greater than 50,000 whereas UCs have populations less than 50,000. Further, under this definition, all persons living in UAs and in places (e.g., cities, towns, villages) with a population of 2,500 or more outside of UAs are considered the urban population while all others are considered rural. Additionally, some areas are "split" between urban and rural territory, and the population and housing units they contain often are partly classified as urban and partly classified as rural. For instance, St. Mary's County, MD, is a predominantly rural county that contains a substantial urban population.

Another definition of rurality is provided by the White House’s Office of Management and Budget (OMB). The OMB designates areas as metro on the basis of standards released in January 1980, whereby each metropolitan statistical area (MSA) must include at least one city with 50,000 or more inhabitants or an urbanized area with at least 50,000 inhabitants and a total MSA population of at least 100,000 (75,000 in New England). Each MSA must include the county in which the central city is located (the central county) and additional contiguous counties (fringe counties), if they are economically and socially integrated with the central county. Any county not included in

an MSA is then considered non-metro. Discrepancies in federal definitions result in inconsistencies in reporting on communities. For example, the Census Bureau classifies 61.7 million (25 percent) of the total population as rural while the OMB classifies 55.9 million (23 percent) of the total population as non-metro. Further, according to the Census definition, 97.5 percent of the total U.S. land area is rural while the OMB reported that 84 percent of the land area is non-metropolitan.

Classifying populations based on dichotomous or residual definitions may have serious implications with respect to educational funding and legislation. The United States Department of Agriculture (USDA) identified a problem with the dichotomous definitions provided by the Census Bureau and the OMB. By allowing only two categories (i.e. metro/urban or non-metro/rural) the continuum of variation that exists within non-metro areas is neglected. To overcome this limitation, the USDA uses continuum codes (1-9) based on the degree of urbanization and proximity to metro areas to distinguish non-metro areas from one another. For example, an urban population of 20,000 that is adjacent to a metro area would be classified as a 4 and a completely rural population of fewer than 2,500 not adjacent to a metro area would be classified as a 9. However, the USDA advises using caution when making broad generalizations about non-metro communities as they will not necessarily be representative of any particular subset of those areas. Each of these governmental institutions defined rural as it best suited their research needs. The field of research on rural education is in great need of a universal operational definition of “rural.”

The National Center for Education Statistics (NCES), sponsored by the U.S. Department of Education, is charged with acting as the principal federal office for

collecting and analyzing education data. In 2006, NCES, supported by the Census Bureau, employed a new urban-centric classification system to reflect the changes in the U.S. population and the definition of key geographic concepts (NCES, 2009). The locale codes in the new NCES system are based on a location's proximity to an urbanized area. There are four major locale categories: city, suburban, town, and rural, each of which is then subdivided into three subcategories. Cities and suburbs are subdivided into the categories small, midsize, or large while towns and rural areas are subdivided into categories of fringe, distant, or remote, based on their proximity to an urban center (NCES, 2009). These resulting twelve categories are based on several key concepts used by the U.S. Census to define an area's urbanicity: principal city, urbanized area, and urban cluster. Again, with this method of categorization, rural areas are designated as a residual category based on the U.S. Census definition. However, when necessary, the adoption of this new classification system by NCES will allow for researchers to discriminate rural schools and districts in remote areas from those that may be located just outside an urban center.

#### *Differences among Rural, Urban, and Suburban Settings*

Educational research and policy has neglected the role of place (i.e., rural, urban, suburban) by paying very little attention to the spatial inequalities in achievement and attainment (Roscigno, et al., 2006). Rural and urban areas are vastly different from suburban places in the availability of resources, largely due to the nature of the local economy, economic development, and spatial stratification (McCracken & Barcinas, 1991; Roscigno et al., 2006). Since the emergence of the urban sprawl during the 1950s (Gillham, 2002), inner urban areas have experienced decentralization resulting in a

residual population of poor and minority citizens dependent on unstable, low-wage, and service sector jobs (Roscigno et al., 2006). Likewise, since the farm crisis of the 1980s (Harl, 1990), the economies of rural communities have been affected by industrial restructuring, particularly in relation to farming, which increased rates of unemployment and dependence on part-time service work (Roscigno et al., 2006; Roscigno & Crowley, 2001) leading to an exodus of families from rural areas. However, over the past several decades suburban areas have flourished as these communities tend to be populated by college educated two-parent families and have lower rates of poverty than rural and urban areas (Roscigno et al., 2006).

The economic well-being of children is depressed in inner city and rural areas as local economic opportunity influences family socioeconomic status and structure through the availability and quality jobs (McCracken & Barcinas, 1991; Roscigno et al., 2006). Families and schools in America's inner cities and rural places simply lack many of the resources that promote educational achievement and attainment as these families tend to have lower household income, less parental educational attainment, and more siblings per household (Roscigno, et al., 2006). These resource shortfalls explain inner city and rural deficits in achievement and attainment as they are partially mediated through investments, such as parental involvement and course offerings, made by families and schools (Roscigno et al., 2006).

Although rural and urban areas may share the struggles of poverty (Blackwell & McLachlan, 1999), it has been averred that rural poverty is not simply urban poverty in a rural setting (Khattri, et al., 1997). Rural Americans are generally poorer than their urban and suburban counterparts (Beeson & Strange, 2000; McCracken & Barcinas, 1991). On

average, rural workers earn 71% of what urban workers receive (Williams, 2003). In 2000, 13.4% of rural families were living in poverty compared to 10.8% of families in metropolitan areas. Moreover, of the 200 persistently poor counties in the United States of America, 195 are rural and of the 66 poorest U.S. counties, 59 are rural (Beeson & Strange, 2003). Child poverty rates in these counties run two to three times higher than the national average (Beeson & Strange, 2003). Due to the disproportion of poverty among rural settings, rural and non-rural places differ significantly in institutional resources at both the family and the school level (Roscigno & Crowley, 2001). The cultural, social, and economic factors prevalent in urban and suburban areas that serve to push students toward higher education may be weaker or lacking in rural settings (Smith et al., 1995).

#### *Family and Community Characteristics*

Characteristics of the families and communities in which youth reside can influence their attitudes and beliefs about the importance of postsecondary education (McCracken & Barcinas, 1991). Areas with higher family incomes, lower poverty rates, and higher educational attainment of adults may provide an atmosphere of positive role models and strong support for higher levels of educational attainment (Blackwell & McLaughlin, 1999). However, family resource disparities can translate into inequalities in educational investments such as household educational items, cultural capital, and parents' expectations (Roscigno & Crowley, 2001).

The economic, social, and demographic characteristics of rural communities are quite unique (Khattri et al., 1997). Rural students tend to be white (McCracken & Barcinas, 1991), live in two-parent families (Blackwell & McLachlan, 1999), and are

seen as presenting fewer problems in schools; therefore “the strategies for dealing with this population may need to reflect such differences” (Khattri et al., 1997, p. 31).

Unfortunately, compared with other places, rural students are disadvantaged in several respects. Rural parents tend to have lower incomes on average, are less likely to have attended college, and are less inclined to encourage their children to attain a higher education (McCracken & Barcinas, 1991; Roscigno & Crowley, 2001; Smith et al., 1995). Moreover, rural students see fewer college graduates and working professionals in their daily lives (Smith et al., 1995). Personal relationships, cooperative problem-solving, and being accepted by the community are important aspects of rural life (Burnell, 2003). Being accepted by one’s community may be viewed as an attribute; however, if one’s community does not value higher educational attainment, then that need for acceptance may translate into lower educational aspirations and a decreased likelihood of college attendance.

### *School Characteristics*

The local economy shapes the availability of school resources through local property taxes (Roscigno et al., 2006). Both rural and urban schools have high concentrations of poor students; however, rural schools tend to have lower per-pupil expenditures (McCracken & Barcinas, 1991; Roscigno & Crowley, 2001). Rural schools will resemble rural families in their degree of resources and are distinctly different from urban schools (Roscigno & Crowley, 2001).

Schools are the focal point of activity for rural communities because they serve as a place for education and as a meeting space for political and social affairs (Colangelo, et al. 2003). Rural residents have traditionally taken pride in and felt a strong ownership of

their schools and, thus, report having a strong commitment to educational improvement (Colanelgo, Assouline, & New, 1999). Unfortunately, for several decades rural schools have been threatened with the possibility of the closing of local community schools in favor of consolidated systems and these communities have experienced a brain drain of their community's brightest students (Howley, Harmon, & Leopold, 1996). Rural residents see this as a disincentive for devoting resources to and encouraging postsecondary education because they recognize that the beneficiaries of these investments will be the non-rural areas that students will move to in search of employment opportunities.

The most common problematic feature of rural and urban schools is monetary expenditure (Roscigno & Crowley, 2001); however, there are marked differences in the environments of rural and urban schools (Gándara et al., 2001). Rural schools tend to have fewer of the problems found in urban schools (McCracken & Miller, 1988). Rural students are less likely to feel pressure to engage in gang activity, more likely to report being influenced by their parents in making important postsecondary decisions, and spend more time doing homework (Gándara et al., 2001). Other attributes of rural schools include smaller class size, few discipline problems, positive student work ethic, attitude, and motivation (McCracken & Miller, 1988; Williams, 2003). Rural teachers report that teaching in rural schools is facilitated by a slower paced, flexible teaching environment, personal relationships among faculty, students, and parents, support and cooperation of the administration and local community, student respect for teachers, and parental involvement in schools (McCracken & Miller, 1988; Williams, 2003).

Rural schools also confront several detriments, many of which are unique to their geographical setting. The challenges faced by rural schools include prematurely low educational aspirations of students, a lack of parental knowledge about the educational process, parents' lack of encouragement for students' goals, conservative attitudes of the community, cultural deprivation, lack of diversity, and long bus rides for students (Gándara et al., 2001; McCracken & Barcinas, 1991; Williams, 2003). Moreover, teaching within rural settings is often inhibited by narrow-mindedness of local residents, less varied curriculum, fewer counselors and teachers, scheduling difficulties, outdated teaching materials, and lack of resources for field trips (Blackwell & McLachlan, 1999; McCracken & Barcinas, 1991; McCracken & Miller, 1988; Williams, 2003).

Urban schools are facing an uphill battle with a number of challenges unique to their locale (Predmore, 2004). The classrooms of urban schools are more chaotic as these schools tend to be filled with overly contentious students and gang violence (Gándara et al., 2001). Other challenges of urban schools include overcrowded classrooms, decrepit facilities, lack of equipment, and teacher shortages (Predmore, 2004).

Issues related to the educational achievement and attainment of rural students warrant national attention (Beeson & Strange, 2000). Research on policy issues faced by rural students is scant. Although the rural population has been shrinking over the past century, over 18% of schools are considered rural (ELS: 2002) and every U.S. state has at least one rural school and most likely even more (NCES, Common Core of Data, Table 2, 2003-2004). One-third of America's school children attend schools in rural areas or small towns of fewer than 25,000 people and 21% of those students attend schools in places with fewer than 2500 people (Beeson & Strange, 2000; Williams, 2003).

Unfortunately, though, it is the education of urban children that gets nearly all of the attention. Because rural people are widely dispersed, they often become politically invisible and, in many states, action on behalf of rural schools needs to be an urgent priority (Beeson & Strange, 2000). Unfortunately, though, researchers tend to define economic progress as growth in terms of development by eliminating what is rural. Therefore, the current solutions seem to centralize around urbanizing rural communities even though rural families and schools offer many unique attributes that could be built upon to achieve academic success and improve postsecondary attendance among their students (Beeson & Strange, 2000).

### *Factors Related to Postsecondary Outcomes*

#### *Individual Factors*

Individual factors such as academic achievement, high school grades, and educational aspirations have been linked to postsecondary educational attendance and attainment in the previous literature. Student attitudes and beliefs, such as the value of postsecondary education, the importance of living close to family, and whether the student finds school interesting and challenging, also are predictive of college enrollment. Demographic factors of gender and race may be related to patterns of higher education as well. The role of these variables in postsecondary outcomes will be discussed below.

*Educational aspirations and expectations.* Educational aspirations and expectations have been ultimately linked with adolescents' likelihood of college attendance (Blackwell & McLaughlin, 1999; Chenoweth & Galliher, 2004) and eventual educational attainment (Marjoribanks, 2003; Yan, 2002). The aspirations of youth, which are based on dreams and desires, are generally higher than their expectations,

which involve the acknowledgement of resources, abilities, and requirements.

Expectations generally decline with age, while aspirations remain high (Hansen & McIntire, 1989).

The educational aspirations and expectations developed by students are built upon their experiences and backgrounds (Odell, 1988) and those experiences are often “determined in part by the families in which they are members, the communities in which they reside, and the schools that they attend” (McCracken & Barcinas, 1991, p. 30). For the past half century, studies have consistently indicated that rural students have lower educational and occupational aspirations than small town and urban students (Cobb et al., 1989; McCracken & Barcinas, 1991; Van Hook, 1993). In fact, low educational aspirations have been deemed “a problem for rural America” (Cobb et al., 1989, p. 11). During the 1950s and 1960s, size of place and educational aspirations were positively related (Smith et al., 1995). Currently, however, the movement of higher income families into suburban areas, due to central city economic decline, has resulted in a curvilinear relationship between college aspirations and community size, with suburban students aspiring for the highest levels of education followed by the aspirations of urban and rural students (Cobb et al., 1989). Unfortunately, rural students have continued to report the lowest educational aspirations compared to urban and suburban students (Barcinas, 1989; Blackwell & McLaughlin, 1999; Cobb et al., 1989; Haller & Virker, 1993; Hansen & McIntire, 1989; Howley, 2006; Hu, 2003; Marjoribanks, 2003; McCracken & Barcinas, 1991; Sarigiani, Wilson, Peterson, & Vicary, 1990). For instance, in 1989, Cobb et al., found that only 22.6% of rural students aspired to finishing a college degree while 26.1% of urban and 27.8% of suburban students aspired to do so. Further, Barcinas (1989)

found that 84% of urban youth reported wanting to continue their education beyond high school while only 74% of rural youth reported wanting to continue onto postsecondary education.

Contemporary researchers have found that although the educational aspirations of rural students have improved over the past several years, with 37.7% now aspiring to attend a four-year college (Marjoribanks, 2003), they still trail the aspirations of urban and suburban students (Blackwell & McLaughlin, 1999; Howley, 2006; Hu, 2003). For example, a higher percentage of rural students (16.6%) reported aspirations for high school or below than urban (11.0%) or suburban (10.6%) students (Hu, 2003). Further, lower percentages of rural students (28.2%) had aspirations for a four-year college education than urban (30.8%) and suburban (32.9%) students (Hu, 2002). Only 22% of rural students aspired to attend graduate school while 31.1% of urban and 27.3% of suburban students aspired to a postgraduate education.

Researchers have begun to notice, however, that the educational aspirations of rural youth are only slightly lower than those of urban youth. For example, Blackwell and McLaughlin (1999) found that the average years of educational aspirations for rural boys' (13.8) and girls' (14.2) were relatively similar to those of urban boys and girls who aspired to 14.6 years of education. Further, Howley (2006) reported that rural children tended to aspire to graduate from high school only, or from a community college, in only slightly greater percentages than non-rural youth. Although rural youth expected to achieve less education than their non-rural counterparts, the most apparent disparity is in terms of youth's expectations for postgraduate education (Howley, 2006).

Individual characteristics and environmental influences, such as family background and community settings, may be associated with adolescents' educational aspirations (Gándara et al., 2001; Jodl, Michael, Malanchuk, Eccles, & Sameroff, 2001; Marjoribanks, 2003; Yang, 1981). The lower educational aspirations of rural students may be linked to an accelerated transition to adulthood (Cobb et al., 1989; Crockett & Bingham, 2000; Yan, 2002), which may influence how rural adolescents view their life course. Rural youth reported seeing themselves completing their education at a younger age than their urban and suburban counterparts. In a study comparing the expectations of urban and rural students, Cobb et al. (1989) found that 46% of rural adolescents reported that they already completed or expected to complete their full-time education before age twenty while only 30.3% of urban students shared those expectations. An accelerated life timetable has negative consequences on college attendance. For example, rural students who did not attend college were nearly twice as likely (27%) as urban (15%) and suburban (13%) students to expect that they would end their education with high school (Yan, 2002).

A potential reason for an accelerated timetable among rural youth is early transition into the workforce for both men and women due to economic hardship within rural communities (Cobb et al., 1989; Crockett & Bingham, 2000). It is important to note that early parenthood was not linked with an accelerated life course among rural adolescents. However, successful school performance and higher parental education were both linked with extended education and later timing for role transition (Crockett & Bingham, 2000).

Commitment to place is another aspect that may influence the educational aspirations of students. Rural children seek higher education within the context of their families' commitment to place (Howley, 2006), which may anchor young people to communities with few job opportunities for those with a college education (Crockett & Bingham, 2000). For example, Haller & Virkler (1993) found that half of the variance in educational aspirations between rural and non-rural students was due to disparate occupational aspirations between the two groups whereby fewer rural adolescents (33%) aspired to the high-level professional jobs than their non-rural peers (44%) because those types of jobs are generally uncommon in rural areas (Hansen & McIntire, 1989).

Educational aspirations also have been strongly and positively linked with parental education whereby students' expectations might be hindered by a lack of family and community role models with higher education (Van Hook, 1993). Rural students with lower educational aspirations tended to engage in occupations that their families had pursued such as agriculture and trades (Van Hook, 1993). Compared with urban and suburban students, rural students come from families with limited experience in higher education. Thus, students from rural areas often are not advised why they should go to college as rural parents may have reluctance to encourage their children to seek a higher education (Davies, Crow, Hamilton, & Salois, 2006). Additionally, family poverty may further contribute to rural youths' belief that economic constraints may preclude them from affording higher education.

The cultural, social, and economic factors prevalent in urban and suburban communities that serve to push students toward higher education may be weaker or lacking rural communities (McCracken & Barcinas, 1991; Smith et al., 1995). The

educational aspirations of rural students often are limited due to geographical constraints and economic boundaries (Burnell, 2003; Rojewski, 1989). Rural youth face shrinking occupational opportunities in their home communities (Van Hook, 1993) as many jobs have disappeared due to international outsourcing and the depletion of natural resources; therefore, in their daily lives, rural students are exposed to fewer persons filling roles that require a college diploma (Smith et al., 1995). As a result of this economic uncertainty, many rural students ask why they should learn the skills and information necessary for a higher education if there are no jobs that require them (Davies et al., 2006).

Gender effects have been revealed through significant differences in educational aspirations, college enrollment, and educational attainment patterns between rural males and females. Among rural seventh graders, girls reported higher educational aspirations than boys; girls aimed to obtain a bachelors degree and boys aspired to an associates degree (Cowley, Meehan, Wilson, & Wilson, 2003). Rural girls are more likely to attend college (Marjoribanks, 2003; Yan, 2002), whereas among urban students boys are more likely to attend college (Yan, 2002).

The research on interactions between gender and factors that influence college attainment has been mixed. Cheoweth and Galliher (2004) concluded that college related decisions of males were influenced more by family and peer factors, such as parents' college attendance or friends' plans to attend college; whereas females tended to be influenced by individual characteristics such as perceived intelligence and high school curriculum. In contrast, Blackwell and McLachlan (1999) found the likelihood of males attending college was influenced by individual characteristics, such as extracurricular activities, and females were influenced by family characteristics, such as household

income. The inconsistencies in these findings indicated the need for further research and, if certain patterns which have emerged in previous research are maintained, those gender variations certainly warrant differential postsecondary attendance intervention strategies for boys and girls (Cheoweth & Galliher, 2004).

For young adults from different race and ethnic backgrounds, the patterns of relationships among individual characteristics, school environments, students' educational aspirations and educational attainment vary greatly (Marjoribanks, 2003). There are ethnic group differences in adolescents' educational aspirations and in the nature of the relationship between those aspirations and eventual educational attainment (Hurtado, Inkelas, Briggs, & Rhee, 1997; Marjoribanks, 2003). Hurtado et al. (1997) found that among 10<sup>th</sup> grade students, Asian Americans had the highest expectations for postsecondary attainment with nearly 42% expecting to attend both college and graduate school. Latinos reported the lowest expectations for degree attainment with 11% expecting only to finish high school or less and 27% expecting to attend graduate school. Approximately 10% of African Americans expected to only finish high school or less compared with 8% of white students (Hurtado et al., 1997).

Although some may hold high educational aspirations, ethnic groups differ in the extent to which high educational aspirations are maintained. Indeed, the expectations for postsecondary education are not immediately evident in the college preparatory behaviors of some groups of students. For instance, black and Hispanic youth have less stable aspirations (Kao & Tienda, 1998) as indicated by the fact that 45% of African Americans and 47% of Latinos did not even apply to college during 12<sup>th</sup> grade nor did approximately a quarter of these groups who were identified as high achievers in the 8<sup>th</sup> grade (Hurtado

et al., 1997). These patterns of behavior suggest that certain racial or ethnic minority students may experience continuing barriers on route to higher education (Hurtado et al., 1997). It is plausible that Hispanic youth, given the lower education levels of their parents, lack pertinent information about the college application process and financial aid opportunities. Therefore, some students may believe that their parents' financial status makes college an impossible dream, while others lack concern for their academic performance and preparatory behaviors rendering them less likely to be admitted to a postsecondary educational institution (Kao & Tienda, 1998). Challenges with college aspirations and preparation may be more prominent in urban settings as rural schools are less likely to have a high concentration of minorities (McCracken & Barcinas, 1991; Roscigno & Crowley, 2001).

*Early academic performance.* Academic performance at the beginning of secondary school has an important impact on the formation of adolescents' educational aspirations (Marjoribanks, 2003) and college preparatory behaviors. Students of high academic ability are more inclined to plan for college than those of lower academic ability (Odell, 1994). Achievement score means for rural and inner city adolescents are generally lower than for suburban students (Roscigno et al., 2006). However, based on a national sample (NELS: 88), Fan and Chen (1998) found that rural students performed as well as if not better than their peers in metropolitan schools on measures of achievement in reading, math, science, and social studies. Similarly, in a direct comparison of rural and urban students, Khattri et al., (1997) found that the academic achievement of poor, rural students was better than that of poor, urban students.

*High school curriculum.* A challenging high school curriculum, including honors, Advanced Placement, and International Baccalaureate courses may facilitate college attendance. Indeed, Yan (2002) found that rural, urban, and suburban students who did not attend college were more likely to be in a non-academic high school program than those who enrolled in college. Further, among those same students who were high school graduates yet did not attend college, 98-100% was likely to have not taken any physics, chemistry, or biology courses in high school. Among rural students, specifically, those who enrolled in college were much more likely to be enrolled in an academic program than those who did not attend college (Yan, 2002).

Advanced high school coursework provides students with a perception of preparedness and is strongly related to college aspirations (Chenoweth & Galliher, 2004; Odell, 1988). Urban students reported an appreciation for the rigorous college preparatory work and environment in their secondary schools because they felt that they prepared them for college (Griffen, Allen, Kimura-Walsh, & Yamamura, 2007; Reid & Moore, 2008). However, other urban students reported feeling challenged in college due to sub-par academic skills in math and science (Reid & Moore, 2008). First-generation students, particularly those from low-income, rural and urban families, often lack the rigorous academic preparation of their peers with college-educated parents because their parents do not understand the importance of taking challenging courses (Martinez & Klopott, 2005). Further, the narrow school curriculum provided by rural schools often inhibits rural students from acquiring the academic background needed to succeed in college (Rojewski, 1999). In fact, a lack of college-preparatory course choices by rural

youth may be related to decreased rates of college attendance for this population (McCracken & Barcinas, 1991).

*Extracurricular activities.* Youth who participate in school and community activities are more likely to enter college than those who do not (Blackwell & McLaughlin, 1999; McGrath, Swisher, Elder, & Conger, 2001). School activities help form social and cultural capital by encouraging participants to become more committed to their schools and communities and by facilitating the formation of school and community networks (Blackwell & McLaughlin, 1999). Extracurricular activities may also require parent participation, thus increasing the potential for parent-child and parent-parent interactions (Blackwell & McLaughlin, 1999).

Extracurricular programs have helped urban students to become better prepared for college (Reid & Moore, 2008). Although a greater variety of extracurricular activities was offered in urban and suburban schools (McCracken & Barcinas, 1991), rural students were just as or more likely to have participated in such activities (Blackwell & McLaughlin, 1999; McCracken & Barcinas, 1991) than their urban and suburban counterparts. Additionally, rural students have been found to be more likely to aspire to leadership positions in their communities than urban and suburban students (Cobb et al, 1989).

Extracurricular high school activities can have differential effects based on gender (Fejgin, 1991). High school team sports typically involve boys more than girls; whereas, activities that involve the formation of cultural capital such as band, choir, or drama, typically involve girls more than boys (DeMoulin, 2002). However, Blackwell & McLaughlin (1999) found that rural girls gain the least from participation in clubs,

whereby only participation in an honors society increased the educational attainment of rural girls while club activity in general increased the educational attainment for urban girls. Among rural boys, higher educational attainment was related to participation in sports, community clubs, and honors clubs.

*Adolescent employment.* In the United States, most students begin to adopt a work role during adolescence (Entwisle, Alexander, & Olson, 2000). Eighty-percent of high school students work at some point during high school and approximately 30% of those students work over 20 hours each week (Singh, Chang, & Dika, 2007). Moreover, according to the Bureau of Labor Statistics (2005), 37% of students, between the ages of 16 and 19, work during the academic year.

There are three theoretical perspectives on adolescent employment. The first theory posits that work compliments school by emphasizing the values of the workforce and this creates a smoother transition from school to work (Staff & Mortimer, 2007). Contrarily, the zero-sum model of adolescent employment purports that time is limited and time spent at work detracts from time spent engaged in school including homework and extracurricular activities (Marsh, 1992). Thus, employment weakens school involvement and academic performance. The third perspective asserts that adolescent work exhibits curvilinear effects on academic outcomes whereby low-level to moderate work facilitates academic achievement and attainment and more intense work patterns deteriorate such outcomes (Singh, 1998).

Several research findings have supported the viewpoint that work compliments school by reporting small positive effects of school on work (Leventhal, Graber, & Brooks-Gunn, 2001; Mortimer, 2003). A well-rounded adolescent, typically valued by

college admission offices, often combines paid work, school and extracurricular activities (Shanahan & Flaherty, 2001), which may facilitate higher levels of educational attainment (Hudson & Hurst, 2002). In 2007, Staff and Mortimer reported that working part-time during high school was linked with patterns of academic and work strategies, such as time management, that were conducive to the attainment of a bachelor's degree. In particular, they found that among at-risk youth moderate work hours in conjunction with academics appeared to facilitate educational attainment.

Other research, however, has supported the zero-sum model of adolescent employment indicating that such work hampers academic achievement. Carr, Wright, and Brody (1996) reported that students who had worked more hours during high school had significantly less education over twelve years later. Moreover, the largest effect was found in relation to students' not attending college or, if they did attend, not completing a degree. Intense work hours of youth, typically greater than fifteen to twenty hours each week, has been linked to lower test scores (Marsh & Kleitman, 2005; Singh, 1998), higher rates of school absenteeism and dropout (Warren, LePore, & Mare, 2000), and lower grades (Quirk, Keith, & Quirk, 2001; Singh, 1998; Singh, Chang, Dika, 2007). These results are often believed to be due to students displaying less school engagement (Singh, 1998; Singh, Chang, & Dika, 2007) and having less time for homework (Marsh & Kleitman, 2005; Singh, 1998).

A third and more recent school of thought on the effects of adolescent employment has indicated that working has a curvilinear effect on academic outcomes for youth. Findings indicating a curvilinear effect have revealed that few to moderate working hours may be conducive to academic achievement and attainment and more

intense hours are believed to be detrimental to academic outcomes (Kablaoui & Pautler, 1991; Quirk, et al., 2001; Steinberg & Cauffman, 1995; Staff & Mortimer, 2007).

However, indications on the number of hours which are considered optimal are conflicting. Kablaoui and Pautler (1991) as well as Steinberg & Cauffman (1995) reported positive effects of working on academic achievement to up to 15 to 20 hours per week and negative effects on achievement when the student works more than 15 to 20 hours each week. Quirk et al. (2001) found that students who worked fewer than 12 hours per week often earned similar or better grades than those who did not work yet reported a noticeable drop in grades after 11 to 13 hours of work per week. Thus, indicating that while excessive work may hinder academic performance, a small amount may facilitate such performance.

Although a substantial amount of research has been devoted to understanding the nature of the relationship between adolescent work patterns and academic outcomes, few researchers have considered the direction of the relationship between students' academic characteristics and the number of working hours each week. Singh (1998) reported that work and academic achievement have reciprocal effects. These effects are demonstrated by the fact that students who initially have high academic achievement are less likely to work long hours whereas students who are low early achievers are more likely to work longer hours after experiencing problems in school, resulting in a self-selection of student workers whose academic achievement is further negatively affected (Quirk et al., 2001; Singh, 1998). Interestingly, however, work behavior was found to cut across socio-economic status (Singh, 1998) and some even found that working teens were more likely to come from affluent families (Carr et al., 1996). Thus, negative effects from working,

such as lower achievement and lower educational aspirations are unlikely to be resource driven and rather the result of work-related experiences (Carr et al., 1996).

*Students' values and attitudes.* Student attitudes, such as the importance of postsecondary education and whether the student finds school interesting and challenging, may be related to eventual postsecondary educational attendance. Regardless of ethnicity, rural students' attitudes about school were more similar to one another than they were to their urban counterparts. Gándara et al. (2001) concluded that the academic expectations may differ for students in urban and rural schools, which may lead to the existence of disparities in student attitudes between the two groups. For instance, rural students devoted one to two hours each weeknight to homework, whereas urban students devoted only 30 minutes to one hour each to homework (Gándara et al., 2001). This could be due to ability, work ethic, or amount of work assigned by the teachers. Rural high school teachers were explicit in noting that they assigned more homework for college-prep classes than other classes (Gándara et al., 2001) suggesting that they held their students to a higher standard than urban teachers. Students may reflect on the consequences of their academic attitudes and behaviors once they are realized upon graduation or college matriculation. For instance, some urban students reported that not taking high school coursework seriously caused them grief in college as many of them were unprepared for the academic expectations of higher education (Reid & Moore, 2008).

Attitudes about the importance of postsecondary education also may influence whether students pursue and attend college. Rural students reported self-improvement in terms of money and status as reasons to attend college (Chenoweth & Galliher, 2004).

Reasons rural students gave for not attending college included being able to make enough money without a degree and not liking school (Chenoweth & Galliher, 2004). Students holding such reasons for and against attending college may have an impact on the likelihood of postsecondary attendance.

Rural families tend to value their local communities highly and thus are committed to remaining in those areas (Crockett & Bingham, 2000). In fact, Howley et al. (1996) asserted, “holding on to home is difficult work for rural people” (p. 158). For example, a larger percentage of rural (83.4%) than non-rural (71.7%) parents indicated that they did not intend to move from their communities within the next few years (Howley, 2006). Moreover, rural adolescents desire to remain in the communities in which they grew up and live near family; however, limited economic options due to declining employment in rural areas, may lead rural students to sense that their futures might be more promising elsewhere (Howley, 2006; Johnson, Elder, Jr., & Stern, 2005).

Once rural youth realize their educational aspirations, they find that they must compromise the desire for social mobility and advanced education with their family and communities ties (Howley, 2006; Howley et al., 1996), due to the fact that the attainment of a college education often requires students to leave their local area for a period of time (Crockett & Bingham, 2000; Richards, 2004). Residential preferences have been associated with the academic achievements of rural youth and their educational plans. In fact, rural students cited an opportunity for escape as one of the major reasons for attending college and wanting to stay at home as a major reason for not wanting to attend college (Chenoweth & Galliher, 2004). Similarly, Johnson et al. (2005) found that rural adolescents with higher grades attached less importance to living in their home

community and that those with higher ambitions were less residentially attached to both family and community. Interestingly, however, neither necessarily involved the desire to leave the area. In fact, although Johnson et al. (2005) indicated that rural youth with higher educational attainment expectations were less residentially attached to their community and family, educational plans had little to do with actual desires to leave; the desire to leave the area was actually associated with lower attainment perhaps because youth who left had less family support in pursuing higher education. These findings were similar to previous work by Howley et al. (1996) who reported that among high ability rural students, dissatisfaction with one's home area served to push students out of the community and complement the pull felt by more modern, urbanized settings. Most importantly, however, these forces were infrequently related to one's need for a higher education and more related to other personal factors.

#### *Family Factors*

“Youth are captives of family and social history” (Hansen & McIntire, 1989, p. 48). Student characteristics and educational outcomes are shaped by the family and community (Blackwell & McLaughlin, 1999; Roscigno et al., 2006) to the extent that parents may have the greatest impact on students' career goals (Kotrlik & Harrison, 1989; Richards, 2004). Yang (1981) asserted that the decision of youth to enter college is strongly influenced by the expectations of parents and students have reported that parents influenced their career choice more than any other factor in their life (Kotrlik & Harrison, 1989).

Family level decisions about educational investments are related to the availability of family resources, such as income, family structure, and parent education.

Those resources are mediated through household investments, such as parental expectations, household educational items, and cultural capital (Roscigno & Crowley, 2001), each of which have independently predicted college attendance (Smith et al., 1995). Interestingly, family background has been shown to affect students differently based on rurality, ethnicity, and gender (Blackwell & McLaughlin, 1999; McCracken & Barcinas, 1991; Smith et al., 1995).

*Family SES.* Research has consistently affirmed the significant role of family socioeconomic status (SES) in shaping children's educational trajectories (Israel et al., 2001; Roscigno & Crowley, 2001; Roscigno et al., 2006). Children born into more affluent homes tend to have high academic achievement and attainment (Marjoribanks, 2003). Parents of higher SES can invest in their children's education by using their time and money to create a home environment where education is valued and expected (Israel, Beaulieu, & Hartless, 2001; Roscigno et al., 2006).

Family SES is most often operationalized as some combination of household income and/or parents' education (Teachman, 1987). In terms of annual household income, inner city and rural families lag behind those residing in suburban locale by \$14,000 and \$8,000, respectively (Roscigno et al., 2006). Further, rural families lag behind non-rural families in annual income by \$8000 (Roscigno & Crowley, 2001).

Socioeconomic status can have both direct and indirect effects on college attendance. SES has been positively related to educational and occupational aspirations (Hansen & McIntire, 1989), which can subsequently influence students' behaviors as they relate to college attendance and attainment. Although Chenoweth & Galliher (2004) found no significant relationship between perceptions of relative income and college

attendance plans, a general lack of financial resources was related to problems in the college decision process. Further, a strong relationship was found between fathers' occupations and the decision of rural boys to attend college as well as SES level and actual college attendance (Chenoweth & Galliher, 2004).

The effect of socioeconomic status on postsecondary attendance has different effects based on rurality and gender. The impact of SES appeared to differ for rural and urban students although the results have been conflicting (Blackwell & McLaughlin, 1999; Smith et al., 1995). Smith et al. (1995) found family income to strongly influence college attendance for all except for rural students; contrarily, Blackwell and McLaughlin (1999) found family poverty to be more detrimental to the college attainment of rural boys than rural girls or urban youth. Chenoweth & Galliher (2004) corroborated the findings of Blackwell and McLaughlin (1999) when they found social class to be associated with rural males' plans to attend college but not the plans of rural females.

*Family structure.* The influence of family structure on academic achievement is strong (Rosigno & Crowley, 2001). Family structural patterns have been shown to influence educational outcomes negatively through limited resources and possible household stress (Rosigno & Crowley, 2001). Rural families are more likely to have two parents (Khatti et al., 1997); however, rural trends in divorce and non-marital childbearing are converging towards those of inner city areas (Rosigno et al., 2006; Rosigno & Crowley, 2001). Inner city families are much more likely to be single-parent households and have slightly more children compared to suburban locales (Rosigno et al., 2006). Comparatively, rural adolescents are less likely than suburban adolescents to be members of single-parent families but more likely to have siblings (McCracken &

Barcinas, 1991; Roscigno et al., 2006). Children in single-parent or step-parent families do not do as well in school and have an increased likelihood of dropping out (Roscigno & Crowley, 2001). Although the effects of nontraditional family structure on academic achievement have been affirmed, family structure has been found to have no influence on educational or vocational aspirations (Hansen & McIntire, 1989) or college attendance, regardless of community size (Smith et al., 1995).

*Parents' educational attainment.* Parental educational attainment exerts a strong influence on college attendance for students in all places (Smith et al., 1995). Indeed, the educational attainment of parents' has been found to be more influential than family income on students' academic achievement and attainment (Davis-Kean, 2005). Inner city and rural families lag behind suburban families in having college educated parents (Roscigno et al., 2006; Roscigno & Crowley, 2001). However, urban youth compared with rural youth (are more likely to have parents who have completed some college 40%; 9.5%, respectively) and who have professional occupations than rural youth (27%; 20%, respectively; Blackwell & McLaughlin, 1999; McCracken & Barcinas, 1991).

The level of parents' education can have both indirect and direct effects on college attendance. Low parental educational attainment has been linked to lower educational aspirations in youth (Teachman, 1987). Educational attainment influences how parents structure and interact with their children within the home environment, promoting academic achievement. The expectation that a child will graduate high school versus attend college has implications for the types of stimulation in the home and the affective relationship between the parent and the child (Davis-Kean, 2005). A strong relationship between college plans and parental college attendance has been confirmed

(Chenoweth & Galliher, 2004). Unlike parents without a college education, the experiences of college educated parents have resulted in their ability to facilitate their children's transition to higher education by acting as a source of knowledge about the process (Bloom, 2007; Chenoweth & Galliher, 2004; Griffen et al., 2007). Contrarily, first-generation college students face the task of applying to colleges without much assistance from their parents because they lack knowledge about the process (Bloom, 2007; Choy, 2001; Wimberly & Noeth, 2004). Students who lived in communities where people talked about going to college or had family members, including aunts, uncles, or cousins, who had gone to college were more likely to report that they too would go to college (Chenoweth & Galliher, 2004; Gándara et al., 2001). These families and communities may place a greater emphasis on education and instill in their children the belief that a college education is both important and necessary (Chenoweth & Galliher, 2004).

The effects of parents' educational attainment on college access may differ based on rurality or gender. For example, Blackwell and McLaughlin (1999) found that parents' education was very influential on the educational attainment of rural and urban girls and, to a lesser extent, urban boys. However, parents' educational attainment did not explain the educational attainment of rural boys. Instead, rural boys' educational attainment was positively related to living in communities with an overall higher percentage of college graduates.

*Family resources.* Family social capital is comprised of the norms, social networks, and relationships between adults and children, which condition the environment for educational achievement and attainment (Israel et al., 2001). It includes

structural elements, such as family composition, educational household resources, and parental educational attainment, as well as process elements including parental involvement, parents' nurturing activities, and informal educational opportunities (Smith et al., 1995). Children's access to the family social capital depends on the physical presence or absence of parents in the home as well as the quantity and quality of the interaction occurring between parents and their child (Roscigno & Crowley, 2001). The availability of social capital within the family promotes a child's educational achievement and attainment by providing a nurturing environment with guidance on behaviors that are deemed appropriate and inappropriate (Israel et al., 2001). Educational household resources are important for students' orientations towards school (Teachman, 1987). Families that have magazines and newspapers and that hold library cards provide resources for learning and an emphasis on the importance of books and reading (Blackwell & McLaughlin, 1999).

Roscigno and Crowley (2001) noted a gap in home resources between rural and non-rural students. In 2006, Roscigno et al., found disparities for those same resources among inner city and rural youth with rural students having small deficits in household educational items. This study corroborated the findings of a previous study which indicated that urban children had slightly more educational resources in their homes than rural youth (Blackwell & McLaughlin, 1999). The relationship between home resources and educational attainment may vary depending on size of community. For example, Blackwell & McLaughlin (1999) found that rural girls gained more from family background and resources.

*Parents' educational aspirations and expectations.* The expectations parents hold for their children have a profound influence on their children's academic achievement, aspirations, and attainment (Fan & Chen, 2001; Odell, 1988). In the previous literature, rural parents have been perceived as being much less supportive of their children's college education than their urban counterparts and instead more supportive of full-time jobs, trade schools, and the military (Cobb et al, 1989; Hansen & McIntire, 1989). However, the current literature on the expectations of rural parents is mixed. Roscigno and Crowley (2001) highlighted the persistent gap in parental expectations between rural and non-rural parents with rural parents having much lower expectations than non-rural parents.

When comparing rural to non-rural researchers must be cognizant of the fact the suburban students and families may bias the sample of non-rural students such that accurate comparisons between urban and rural cannot be made. After examining the parental expectations of rural, urban, and suburban students separately, Yan (2002) found that rural students who did not attend college were more likely to report that their fathers expected them to attend vocational school or end their schooling with high school. Further, these students were less likely than their urban or suburban counterparts to report that their fathers expected them to attend college or graduate school. Similarly, rural students were more than twice as likely as urban or suburban students to be expected by their mothers to end their education with high school (26% versus 4% and 12%, respectively; Yan, 2002). On the contrary, rural, urban, and suburban students who enrolled in college were much more likely to say that their fathers expected them to attend college and/or graduate school and less likely to expect them to attend vocational

school (Yan, 2002). These findings corroborated past research which indicated rural parents tended to have lower expectations about their children's educational attainment (Blackwell & McLaughlin, 1999; DeYoung, 2002). However, Cowley et al. (2003) found that, unlike the results of Cobb et al. (1989), rural parents professed to hold high collegiate aspirations for their children.

The discrepancy in the aforementioned findings could be due to how parental expectations or aspirations are being operationally defined and measured. Aspirations are hopes and desires based little on reality whereas expectations are based on what parents foresee happening given the available resources and circumstances. Therefore, it is plausible that rural parents do have just as high educational aspirations for their children as urban and suburban parents; however, given the local labor market, family income, and community resources, the expectations of rural parents' may be much lower than those of urban and suburban families (Roscigno & Crowley, 2001).

The effects of parents' educational aspirations or expectations for their students may differ based on rurality or gender. For example, Smith et al. (1995) found that the impact of parental expectation was dramatic for all students except those in urban areas. Moreover, among urban students, expectations had much less of a beneficial effect for females than for males (Smith et al., 1995). Blackwell and McLaughlin (1999) found that having a parent discourage college attendance had no effect on the educational attainment of rural girls whereas for the other three groups such discouragement decreased educational attainment, with rural boys being more affected than urban boys and girls.

*Parental involvement.* The small size and tight-knit social structure of rural communities foster increased parental involvement in all aspects of children's lives including education (Khattari et al, 1997). The operational definition of "parental involvement" is diverse (Fan & Chen, 2001), which may explain the mixed findings of the effects of parental involvement on academic achievement and attainment (Fan & Chen, 2001; Gándara et al., 2001; Smith et al., 1995). Some studies have considered parental involvement to entail simply parental supervision or monitoring (Fan & Chen, 2001; Smith et al., 1995) while others considered parental involvement to include providing support by helping with homework (Gándara et al., 2001).

There appears to be mixed results of the differential effect of parental involvement based on rurality. Gándara et al., (2001) found that, in general, white rural girls reported feeling that they were provided more support at home than did white urban girls. However, Smith et al. (1995) found that parental monitoring of students activities and schoolwork had a positive effect on suburban and urban students only.

More frequent parental discussions about college are significantly related to college enrollment (Yan, 2002). Rural students tend to come from families with little or no experience with college and who may have reluctance to encourage or tolerate higher education (Davies et al., 2006). Thus, many rural students lack information about how to choose where to attend, how to apply, and how to obtain financial aid (Chenoweth & Galliher, 2004; Davies et al., 2006). Cowley et al. (2003) found that although rural parents reported little contact with the school about courses and grades needed to get into college, they clearly expected that school-based personnel were providing educational information to their children. Unfortunately, however, rural students assign little value to

school personnel other than the teacher (Cowley et al., 2003) so it is likely that these messages and information may not be taken seriously.

Conversations between parents and students about college attendance are beneficial to college access and attainment. Yan (2002) found that most students who attended college reported that they “sometimes” or “often” discussed postsecondary education with their parents and very few reported that they “never discussed” college. Discussions about college between students and parents appear to affect students differently based on place. For example, rural students who did not attend college were more likely than their urban and suburban counterparts to report that they “never” discussed going to college with parents and were less likely to discuss college “often” (Yan, 2002). Moreover, rural students who did not go to college were two to three times less likely than urban or suburban students to say that they “often” discussed college with their parents (Yan, 2002).

### *School Factors*

Public schools are funded largely by the property taxes of local citizens; therefore, the values and attitudes of families and communities can significantly influence the character of these schools and can orient children toward their future position in society (Israel et al., 2001). School investments are determined largely by the local structures of resource and opportunity. Educators and school boards will likely invest in accordance with their perceived needs of the local population and the demands of the local labor markets (Roscigno & Crowley, 2001).

America’s rural schools have been considered a visible minority (Lewis, 1992). The environment of rural schools can differ greatly from those of suburban and urban

areas (McCracken & Miller, 1988; Williams, 2003). Rural schools are greatly disadvantaged by the inequities perpetuated by current school funding strategies because rural communities tend to have higher poverty rates and lower property values; thus, they are unable to raise adequate resources through these means (Williams, 2003).

Schools throughout rural America are inclined to be numerous and small by necessity and community preferences (Beeson & Strange, 2000). Rural schools, which tend to be close to the communities they serve, both physically and relationally (Jones & Southern, 1992), have similar needs of other schools yet face some challenges that are unique to their locale. These challenges include strained recruitment and retention of educators, expectations for teachers to teach out of their specialty field, long bus rides for some students, limited curriculum and lack of advanced courses, and limited laboratory, technology, and library resources (Davies et al., 2006; McCracken & Barcinas, 1991; Roscigo & Crowley, 2001; Williams, 2003).

*School size.* There is much discussion in the literature about the effects of school size and about which size is optimal (e.g., Funk & Bailey, 1999; Howley, Strange, & Bickel, 2000; Kimber, 2003; Lay, 2007; Raywid, 1999). Some have suggested that a preponderance of the evidence favored smaller schools (Howley et al., 2000; Irmsher, 1997; Raywid, 1999) whereas other studies caution those against the potential detriments of smaller schools (Kimber, 2003; Lay, 2007). The small population of rural communities tends to yield smaller schools whereas urban and suburban schools tend to be much larger. Nearly 75% of rural schools are small, enrolling fewer than 400 students and approximately 20% of those schools enroll fewer than 100 students (Howley et al., 2000).

A consensus has yet to be reached regarding the optimal size for a school. In 1959, Constant (as cited in Colangelo et al., 1999) averred that in order to offer a comprehensive curriculum, schools must have at least 750 students, yet most rural schools do not have nearly this many students. Raywid (1999) weighed in on the optimal school size when he suggested upper limits for exactly how large “small” should be. He proposed that in order to achieve the maximize the benefits of “small” while still providing a variety of resources, elementary schools should cap enrollment at 350 students and high schools should have an enrollment of no larger than 900 students. This assertion supported a previous conclusion by Swanson (1988) that, provided a regional center was available, the minimum size for a school to be beneficial to students was between 400 and 600. However, Howley et al. (2000) suggested that optimal size should actually be contingent on community SES, whereby the poorer the community, the smaller the schools should be (Howley et al., 2000).

The small size of rural schools offers benefits and challenges to educators and students. Student-teacher ratios are typically lower in rural schools than in non-rural schools (Roscigno & Crowley, 2001). These lower ratios may translate to lower student-counselor ratios as well and may serve to provide students with more individualized attention and more opportunities to seek help with academic issues, including questions about college access (Gándara et al., 2001). Larger schools, particularly those of urban settings, may assign too many students to a single counselor, thus leading to frustration in gaining access to college application and scholarship information (Griffen et al., 2003). Unfortunately, however, these lower student-teacher ratios are likely a function of lower population densities in rural areas rather than of a resource rich environment (Roscigno &

Crowley, 2001). For example, rural schools struggle to recruit and retain qualified teachers (Davies et al., 2006; Williams, 2003); therefore, the lower student-teacher ratios may be compromised by teachers who have less training and fewer credentials and by the fact that teachers are needed to serve multiple roles (Colangelo et al., 1999).

Small school and class size is not always a detriment to the educational process. Consolidating school districts to create larger high schools offering more course variety is not likely to increase student achievement (Johnson, 2006) even though a limited curriculum could impact a student's ability to be accepted into college. For example, smaller school districts in Iowa did not exhibit lower levels of academic achievement than larger districts, despite facing greater socioeconomic challenges (Johnson, 2006). Further, after controlling for SES factors, children in smaller schools were more academically successful than those in larger schools and had higher graduation rates.

Small schools have been associated with a myriad of benefits for students including greater opportunities for extracurricular participation, leadership roles, and character development (Cross & Burney, 2005; Cross & Dixon, 1998). The smaller size of rural schools and communities also provides a safer environment (Howley et al., 2000), a greater sense of belonging (Cross & Burney, 2005; Gentry, Rizza, & Gable, 2001), and close community ties (Howley et al., 2000). Best practice teaching methods are often easier to implement within smaller classes and schools as they allow for flexibility in planning and more opportunities to tailor curriculum for individualized instruction (Colangelo et al., 1999; Cross & Burney, 2005), which could explain the higher achievement among disadvantaged students in smaller schools (Howley et al., 2000; Jimerson, 2006; Stern, 1994).

It is uncertain as to whether the benefits of small school size on academic achievement will actually translate to benefit postsecondary education attendance rates. In fact, Chenoweth & Galliher (2004) found that among rural students, greater school belonging, a characteristic of small schools, was not associated with plans to attend college. Unfortunately, there is a paucity of research on the influence of any other aspects of school size on postsecondary attendance.

*School resources.* Regardless of location or school size, school resources make a difference in students' educational outcomes; yet, unfortunately, for many rural schools, laboratory, technology, and library resources are limited (Davies et al., 2006). Differences in these resources along with limited course offerings, including less advanced courses (Spicker, Southern, & Davis, 1987), and inadequately heated or cooled buildings have been identified as potential reasons for disparities in academic achievement and educational attainment between rural and urban students (Jones & Southern, 1992).

Rural schools are the last to be connected to the digital world and receive updated software and programming. These resources, if offered in an expedited manner, could help solve curricular problems associated with distances and sparse populations (Beeson & Strange, 2000). This is partially due to the fact that students living in rural locales receive approximately \$700 a year less in educational expenditures than their non-rural counterparts (Rosigno & Crowley, 2001). Although resources in rural schools make it difficult to provide wide course offerings or technological innovations, the intimacy of rural schools and communities allow for the natural resources of the surrounding

community to support student learning and provide them with opportunities not available in urban settings (Khattri et al., 1997).

*Academic press.* Teachers' higher expectations have improved academic achievement and decreased the likelihood of dropping out of high school (Roscigno & Crowley, 2001). Teacher expectations and academic pressure are equally important for one's likelihood of seeking a postsecondary education. Parallel with parental expectations, teachers' expectations are likely to be depressed in places with limited labor market opportunity (Roscigno & Crowley, 2001). Therefore, the expectations of teachers in rural settings will likely differ from those of students in urban or suburban settings, which have greater economic and job prosperity.

Overall, rural teachers have been found to hold lower expectations for their students compared with non-rural teachers and teacher expectations were often less important to rural students than non-rural ones (Roscigno & Crowley, 2001). Further, more rural youngsters than urban reported that their teachers and counselors "didn't care" what their postsecondary plans were (Cobb et al., 1989). On the contrary, urban students from Los Angeles reported that teachers were supportive, encouraged students' college goals, and were facilitative in the college application process (Griffen et al., 2003). Further, urban students who matriculated to higher education have reflected upon the supportive relationships they maintained with certain high school teachers, counselors, and administrators who helped them prepare for college (Reid & Moore, 2008).

#### *Ecological Approaches to Studying Educational Outcomes*

Developmental and educational outcomes are influenced by characteristics of the individual and contextual factors related to the environment in which that person lives.

Bronfenbrenner (1977) asserted this when he stated “the understanding of human development demands going beyond the direct observation of behavior on the part of one or two persons in the same place; it requires examination of multiperson systems of interaction, not limited to a single setting, and must take into account aspects of the environment beyond the immediate situation containing the subject” (p. 514). Therefore, in examining influences on educational outcomes it is necessary to investigate relationships from an ecological perspective by considering the context within which the individual develops. Much of the previously reviewed literature examined the influence of contextual factors on educational outcomes. However, the majority of those studies examined the relations among only one or two factors and educational outcomes such as postsecondary educational aspirations, attendance, or attainment.

A plethora of researchers have examined the relations among a multitude of individual, family, and school factors and postsecondary-related educational outcomes for all students (e.g., Adelman, 1999; Blackwell & McLaughlin, 1999; Bui, 2005; Castellino, Lerner, Lerner, & von Eye, 1998; Charles et al., 2007; Chenoweth & Galliher, 2004; Choy, 2001; Cobb et al., 1989; Cowley, et al., 2003; Dyk & Wilson, 1999; Flouri, 2006; Hurtado et al., 1997; Jodl et al., 2001; Johnson et al., 2005; Kaufman & Gabler, 2004; Kelp Kern, 2000; Marjoribanks, 2003; McGrath, et al., 2001; Odell, 1988; Perna, 2000; Roscigno et al., 2006; Roscigno & Crowley, 2001; Shaw et al., 2004; Smith et al., 1995; Snyder, 2004; Yan, 2002). Each of the aforementioned studies greatly informed the development of the proposed study by illustrating relationships among certain individual, family, and school factors that directly or indirectly impacted educational outcomes. However, only some of those studies (Bui, 2005; Charles et al., 2007; Choy,

2001; Hurtado, et al., 1997; Kelpie Kern, 2000; McGrath et al., 2001; Perna, 2000; Smith et al., 1995; Snyder, 2004; Yan, 2002) considered postsecondary *attendance* as the outcome variable. As previously mentioned, *attendance* is a necessary requisite for educational *attainment* (Adelman, 2007; Hu, 2003). Further, it is plausible that the factors which successfully predict postsecondary educational *attainment* may not completely overlap with those factors that influence postsecondary educational *attendance*. Awareness of the factors that influence college attendance is crucial in ameliorating the access disparities that currently exist.

#### *The Role of Place in Postsecondary Education Attendance*

In examining the ecological influences on postsecondary education attendance, it is important to consider students' individual characteristics as being embedded in those backgrounds that help to shape students' life opportunities (Marjoribanks, 2003). Roscigno & Crowley (2001) asserted that researchers must acknowledge that the existence of resource inequalities is due to local structures of opportunity (Roscigno & Crowley, 2001). Research has consistently demonstrated the numerous differences between rural, urban, and suburban communities (McCracken & Barcinas, 1991; Roscigno et al., 2006; Roscigno & Crowley, 2001). Although some studies have examined the relations among multiple individual and contextual factors and college attendance, the literature is very limited in explaining how educational processes vary through spatial stratification, typically operationalized as level of urbanicity and/or rurality (Roscigno & Crowley, 2001). Families and schools are shaped by the places in which they reside, and such places vary significantly in opportunities and resources (Roscigno & Crowley, 2001). The differences in the available opportunities and

resources may have differential impacts on the relations among ecological variables and postsecondary attendance.

Using data from the High School and Beyond Longitudinal Survey, collected by the United States Department of Education's National Center for Education Statistics (NCES), Smith et al. (1995) examined the relationship between social capital and college attendance across varying types of communities. The social capital variables were comprised of family structure variables, community social capital variables, and family financial capital variables. Family structure variables were whether the mother worked outside of the home, whether the parents knew what the child was doing at all times, whether the parent monitored the child's school work, and whether the student indicated that either of the parents expected him or her to attend college, as well as the number of parents and siblings in household. Community social capital variables were the number of moves since 5<sup>th</sup> grade and a dichotomous indication of church attendance. Family financial capital consisted of family income and parental educational attainment. A social capital model of college attendance based upon the relationships among the social capital variables, as measured during the students' sophomore year, and the dichotomous outcome variable of college attendance, as indicated two years after high school graduation, was estimated as a full model and as separate models for rural, urban, and suburban students.

The results of Smith et al. (1995) indicated that spatial stratification (i.e., place) influenced the relationships among social capital variables and college attendance. For example, they found that having a working mother only predicted college attendance for suburban students but not urban or rural students. Further, they found that the number of

siblings did not significantly predict access for rural students but moderately predicted access for students in other locations. Parental expectations predicted college access for all except urban students while family income predicted access for all except rural students. Smith et al. (1995) concluded that the relationship between components of social capital and educational attainment may vary based on the size of the community. This study provided a valuable contribution to the literature; however, the study focused only on family factors and not school factors as well. Roscigno and Crowley (2001) asserted that the consequences of examining only one context were inconclusive or weak effects of school factors, and/or an overestimation of the influence of family.

Research on educational outcomes, such as college attendance, will benefit greatly from the acknowledgement of the interrelationship between the family and school (Reid & Moore, 2008). Strong social and academic support networks provide students with the necessary social capital that they will need for attending a postsecondary institution (Adelman, 2007; Martinez & Klopott, 2005; Reid & Moore, 2008). Like Bronfenbrenner (1977) and others (Adelman, 2006; Marjoribanks, 2003; Martinez & Klopott, 2005; Reid & Moore, 2008), Roscigno et al., (2006) supported multi-contextual approaches to educational research in their assertion that, “recognizing the embedded nature of families and schools and the consequences for resources and investment disparities across place offers a more dynamic and fluid picture than do overly individualistic frameworks of educational processes and outcomes” (pg. 2139). Therefore, rather than examining a single ecological context, it is beneficial to study the influence of multiple contexts simultaneously.

This multi-contextual approach is evident in the model of The Social Cognitive Career Theory (SCCT; Lent, et al., 1994), which has informed the theoretical model of the current study. Many educational and vocational researchers (e.g., Albert & Luzzo, 1999; Ali & Saunders, 2006) have used SCCT as it provides a framework for examining the processes through which people develop interests, make decisions, and attain varying levels of success in their career and educational pursuits. SCCT addresses how cognitive-person variables, other person variables, and environmental variables interact with each other to ultimately influence educational or career outcomes. Although SCCT has yielded a number of inquiries on the cognitive-person variables, few studies have examined the environmental variables. A Concentric Model of Environmental Influences, proposed by Lent et al. (2000) within the SCCT, whereby one's environment is conceived as a series of embedded layers with the individual residing in the innermost circle surrounded by the immediate environment (i.e., family), which is encircled by the larger social context (i.e., school), served as a framework for the current study (see Figure 2).

Comprehensive, multivariate analyses including individual, family, and school characteristics will help disentangle the underlying processes related to the disproportionate rates of postsecondary attendance in different types of geographical settings (Hu, 2003). A few studies have examined the role of place using multivariate analyses. Using data from the National Longitudinal Youth Survey, collected by NCES, Blackwell and McLaughlin (1999) conducted a study examining the differences between students from rural and urban settings and the differential impact that individual and contextual variables had on educational attainment. In addition to providing descriptive

statistics on the differences in family background, school attributes, and extracurricular participation, they conducted a multiple linear regression and found that individual, family, and school factors influenced educational attainment differently for rural and urban youth. For example, they found that educational attainment was predicted best by family characteristics, particularly having a college educated mother and home resources, for rural girls, and by individual characteristics, such as academic achievement and extracurricular activities, for rural and urban boys. Additionally, they found that among urban girls, both family background and extracurricular activities were influential in educational attainment although urban girls did not benefit as much from family background as rural girls.

Roscigno & Crowley (2001) considered whether the educational returns (i.e., higher academic achievement and a decreased likelihood of dropout) of family- and school-level resources and investments varied by place. Estimating separate models by employing hierarchical logistic regression, they found that the effects of some resources and investments on these educational outcomes were distinct for rural students, most likely due to the context and institutional disadvantages of the locale (Roscigno & Crowley, 2001). For example, they found that being female had a greater impact on achievement for rural students than for urban ones, indicating that family and school investments in boys and girls may vary across spatial contexts. Additionally, they found that although parental expectations had a positive effect for all students, the influence of these expectations impacted achievement and attainment slightly less for rural students. They also discovered that school-level investments have less of an influence on academic achievement for rural students than for urban students. For instance, they found that the

benefits of small student/teacher ratios and the offering of Advanced Placement classes did not impact the achievement or likelihood of dropout for rural students. The overall results of this study suggested again that place (i.e., rural versus urban) may be moderating the factors that influence postsecondary educational access. A major difference between the studies of Blackwell and McLaughlin (1999) and Roscigno and Crowley (2001) and the current study, however, is that the previous studies examined educational achievement and/or *attainment* rather than postsecondary educational *attendance*.

Currently, there are very few studies which have examined the impact of both individual and contextual factors on postsecondary educational attendance. Using data from NELS:88, Yan (2002) compared the factors that influenced the postsecondary enrollment of rural Pennsylvania students to those of students in urban and suburban areas. The sample contained 216 rural students, 103 urban students, and 323 suburban students. Yan (2002) conducted multivariate analyses to examine differences among students in various geographic settings. He found differential patterns of relations among postsecondary enrollment and the predictor variables for rural, urban, and suburban students. For instance, among rural students, females were more likely to attend college than males, whereas the opposite was true for urban students. Suburban students were equally likely to attend college regardless of gender. The influences of parental expectations varied by place, whereby rural students who did not attend college reported more often than urban students that their fathers expected them to attend vocational school or end their education with high school. Further, rural students were less likely than urban or suburban students to report that their fathers had collegiate or graduate

level expectations for their education (Yan, 2002). However, the influence of maternal educational expectations on postsecondary attendance did not vary by place.

Yan (2002) also found that individual educational expectations had a varied effect based on place; rural students (27%) who did not go to college were twice as likely as their urban and suburban counterparts (15% and 13%, respectively) to expect to complete only high school. Parental discussions about college impacted attendance differently for students from various geographical locales. Among students who did not attend college, those from rural locations were more likely than their urban and suburban counterparts to report that they never discussed college attendance plans with their parents. Further, these students were two to three times less likely than their urban and suburban counterparts to have discussed college often with their parents.

Also using data from NELS: 88, Snyder (2004) examined the differences by high school location in the influence of these factors on postsecondary access and attainment by comparing the effects of the predictor variables between rural and non-rural high school seniors. More specifically, he analyzed how school and family resources and investments, along with individual characteristics, moderated the effects of high school location on the likelihood of attending a 4-year college. The predictor variables in this study, based on responses from the students' high school senior year were: rural high school attendance; school factors: private school (i.e., Catholic), % disadvantaged minority, % free/reduced lunch, % single parent homes, % enrolled in AP courses, % enrolled in college prep, % college enrolled, school climate index, and daily attendance rate; family factors: total income, parent education, parent expectations, home education resources index, cultural capital index, and number of siblings; individual characteristics:

cumulative GPA, number of school changes, number of science units, number of math units, standardized science achievement score, standardized math achievement score, sports involvement, club involvement, extracurricular hours, religiosity, church attendance, disadvantaged race, and gender. For the rurality variable, the author divided all students into one of two groups: rural or non-rural. The non-rural group included students from both urban and suburban locations.

Snyder (2004) employed a hierarchical logistic regression using college attendance as the outcome variable. The predictor variables were entered in several stages. The first model included only high school location (rural or non-rural). The second model introduced the school factors with school location, the third model included family factors with school location, the fourth model included individual characteristics with school location, and the fifth model was the full model. To examine the differences in the influence of these factors on postsecondary attendance and attainment based on high school location, the author compared the effects of the predictor variables between rural and non-rural high school seniors.

The overall results of the Snyder (2004) study indicated that the influences of some individual and contextual variables were moderated by place. For instance, he found involvement in sports and being female to only be beneficial to college attendance for rural students. On the contrary, he found that time devoted to extracurricular involvement was only advantageous for non-rural students. Additionally, being a member of a minority race only had a negative effect on college attendance for students in non-rural locations. In terms of family influences, Snyder (2004) found that parental education and expectations for their children's education disproportionately improved the

likelihood of college attendance for rural students when compared to non-rural students. Further, although home educational resources were beneficial to postsecondary attendance for rural and non-rural students, they were significantly more influential for rural students. No differential effects based on place were found among the school-level variables. The studies by Yan (2002) and Snyder (2004) provided considerable contributions to the literature on the differential relations among individual and contextual variables on postsecondary education attendance for students in various geographical locales. A major attribute of each study was the utilization of a non-rural comparison group, which allowed them ascertain whether the predictor variables had effects only on rural students or on non-rural students as well.

This study attempted to advance the literature by overcoming the limitations in previous work. For example, in previous work (Snyder, 2004) students were grouped dichotomously as rural or non-rural whereby suburban and urban students were placed in the same category. Suburban students have been more likely to have access to family and school resources than urban students (Roscigno et al., 2006; Roscigno & Crowley, 2001); therefore, grouping students from these two distinct locations together may lead to a confounding of several variables and an inability to truly understand patterns of variables related to college attendance and attainment (Roscigno & Crowley, 2001). Thus, in the current study the three groups of students, rural, urban, and suburban, were examined separately. In addition, earlier work could be advanced by using different statistical analyses. Rather than estimating separate models and comparing unparallel regression lines based on location, which do not account for differences in within group variance, this study examined interactions between place and other contextual factors

within a single regression model. Finally, rather than relying on older databases, the data in the current study were gleaned from the Education Longitudinal Study: 2002 (ELS: 2002), which is current and more likely to reflect the lives of today's students.

### *The Current Study*

The current study investigated whether place (i.e., rural, urban, or suburban) was associated with postsecondary education attendance. Next, the study examined which individual, family, and school factors predicted postsecondary education attendance among all students. Further, to obtain an accurate depiction of how place moderated the influence of individual, family, and school factors on postsecondary education attendance, the current study examined the interactions among the predictor variables and the outcome variable of postsecondary education attendance (see Figure 2). The following research questions were addressed:

*Based on enrollment at a 2- or 4-year postsecondary educational institution within two years after leaving high school:*

- 1) *Is place related to postsecondary educational attendance? If so, what is the nature of that relationship?*
- 2) *What individual, family, and school factors predict postsecondary education attendance?*
- 3) *Among rural, suburban, and urban students, for which individual, family, and school factors does place moderate their influence on postsecondary education attendance?*

*Significance of the Study*

Over the past several years, the United States Department of Education, the National Center for Education Research, and The Spencer Foundation, along with many state governments, have declared postsecondary education among their top priorities. In its influential report, *Measuring Up 2000*, the National Center for Policy and Higher Education (NCPHE; 2001) identified preparation for and participation in postsecondary education among the most important policy issues. Indeed, James B. Hunt Jr., Chairman of the NCPHE said, “Geography, wealth, income, and ethnicity still play far too great a role in determining the educational opportunities and life chances of Americans” (2001, para. 6). In order to eradicate the existing disparities in postsecondary education access, we must tailor the components of intervention programs to fit the needs of underrepresented students. Thus, the outcomes of this study warrant the attention of policymakers and educators who are charged with improving rates of postsecondary education attendance for students those from geographically disadvantaged areas.

## CHAPTER 3

### METHODOLOGY

#### *Dataset*

This study employed a secondary analysis of data from the Education Longitudinal Study 2002 (ELS: 2002), which is sponsored by the U.S. Department of Education's National Center for Educational Statistics (NCES). NCES datasets are large, and, with weights, nationally representative. ELS: 2002 was appropriate for the current study as the data addressed issues related to the transitions of today's American youth from early high school into postsecondary education and the workforce. ELS: 2002 data were collected through stratified sampling procedures of randomly selecting schools (i.e., administrators, librarians, and teachers) and then selecting random students and families from within those schools (NCES, 2008), thus supporting the ecological framework of this study.

#### *Participants*

There were 2068 high school student participants; 53% were female. Twenty-one percent of the participants lived in a rural area, 29% lived in an urban area, and 50% lived in a suburban area (see Chapter 2 for definitions of these places). Seventy-six percent of the participants were White, 5% were Asian, 7% were African American, and 8% were Hispanic. Student participants of ELS: 2002 were high school sophomores

during the base-year (BY), high school seniors during the first follow-up (F1), and had been out of high school for at least two years at the time of the second follow-up (F2).

ELS: 2002 contains two cohorts of participants. The sophomore cohort is comprised of students who participated in ELS: 2002 during the base-year. The senior cohort is comprised of students who participated during the first follow-up, many of whom were part of the sophomore cohort along with students who transferred in and students who were added as a freshening sample. Students who were part of the *sophomore cohort* from rural, suburban, and urban schools who participated in ELS: 2002 during the base-year and second follow-up of data collection served as the sample. Suburban students, who are not of central interest to this study, have consistently been found to be the most likely of the three groups to attend a postsecondary education institution (i.e., Hu, 2003; Smith et al., 1995). Their inclusion in the current effort served to further inform the results by emphasizing the differences among the factors related to postsecondary attendance for students from each location. It is important to note that the original sample of ELS: 2002 exceeded 16,000 students. However, the exclusion of participants who were not part of the sophomore cohort or those who had missing data significantly reduced the sample size. It was determined that the full sample and the reduced sample were similar based on examination of descriptive statistics for both samples.

### *Measures*

*Outcome and moderator variables.* The dependent variable, *postsecondary education attendance* was reported by the student participants in the ELS: 2002 second

follow-up data. Students reported whether or not they had attended any two- or four-year secondary education institution at any time during the two years after high school. *School place* (i.e., rural, urban, or suburban) served as the moderator variable. This variable was derived from the school information gathered by NCES via the U.S. Census Bureau for use in the Common Core Data Study (i.e., CCD). Common data gathered in the CCD is imputed into other NCES datasets. There are four major locale categories: city, suburban, town, and rural, each of which is then subdivided into three subcategories. Cities and suburbs are subdivided into the categories small, midsize, or large while towns and rural areas are subdivided into categories of fringe, distant, or remote, based on their proximity to an urban center (NCES, 2009). It is important to note that the locale code for each school district is not derived on the location of the central office. Rather, it is based on the locale codes of schools within the district. For example, “if 50 percent or more of the public school students attend schools with the same locale code, that locale code is assigned to the district...if no single locale code accounts for 50 percent of the students, then the major category with the greatest percent of students determines the locale” (NCES, 2009). For the purposes of ELS: 2002, the locale codes have been collapsed into three: rural, urban, and suburban, based on the original locale code, with town comprising part of the suburban category (NCES, 2008). See Table 1 for a list of all of the variables used in this study.

*Individual variables.* The student demographic variables of *sex* and *race/ethnicity* were derived from the ELS: 2002 base year data. The *sex* variable was dichotomous: male or female. The *race/ethnicity* variable identified students as belonging to one of

four racial/ethnic categories: white, African-American, Hispanic, and Asian. Members (e.g., Native Americans) of other racial categories (e.g., Native Americans were filtered out).

Several factors, reported by the student, were used to measure students' academic characteristics. The *high school credential* variable, reported during F2, was a dichotomous indication of whether the student received a high school diploma or some other type of certificate. The *high school program* variable, reported during the BY, was a dichotomous indication of whether or not the student was enrolled in a college preparatory academic program (versus non-academic programs such as vocational or technical). The *AP exam* variable was a dichotomous indication of whether or not the student planned to take an Advanced Placement exam. A *standardized test score-composite* variable served as an indicator of academic achievement. These tests were created by NCES and administered to students during the base-year of data collection. The scores then were transformed into *z*-scores and reported as such in the ELS: 2002 base year codebook. In addition, *GPA*, was the calculated grade-point average for all academic courses, with honors courses, weighted, as collected through the transcript study during F1 (i.e., students' senior year of high school).

Data on students' activities outside of school also were examined. *Employment* and *extracurricular activity* variables were based on the student's report of how many hours per week were spent participating in those activities. *Community service* was assessed as whether or not the student participated in community service at least once per week.

Several variables, assessed during the BY, to gauge students' attitude about factors that may influence their likelihood of college attendance were whether the student *finds classes interesting or challenging*, the student *finds getting a good education important*, the student *finds getting away from local area important*, and the student *finds living close to friends and family important*. Each of the variables was dichotomous, such as, for example, whether or not the student finds classes interesting or challenging and whether or not the student believed that getting a good education was important. The *student's expectations* of their highest level of educational attainment were examined. Additionally, the students' *perception of mom's educational aspirations*, *perception of dad's educational aspirations*, and *perception of their favorite teacher's educational aspirations* for the student were assessed dichotomously as "attend college" or "other than attend college."

*Family variables.* Several parent demographic factors were reported by parents during the BY. The *parent's native language* indicated whether or not their native language was English. The *family composition* variable was a dichotomous indication of whether or not the family contained two parents. The construct of family composition was not exclusive to only a mother and a father, but included any combination of two parents within the home, including step-parents, grandparents, and guardians. The *parents' educational attainment* variable assessed the highest level of education completed by the most educated parent in the home and was expressed in years. For example, a high school diploma equated to twelve years of education while a bachelor's degree equated to sixteen years of education. Additionally, the *parents' educational*

*aspirations* for the student, an indication of the highest level of educational attainment they desired for their student, was examined. *Total household income*, also reported by the parents, was measured on a continuum, in dollars, as the total combined annual income of the family.

Additionally, students reported on a number of family characteristics during the BY of data collection. *Home resources* were assessed by summing the presence (or absence) of six specific educational and technological resources available in the home, such as more than fifty books, a home computer, and internet access. Scores ranged on this variable from zero to six. The *parent involvement* variable was derived from the mean of students' responses to four questions regarding their parents' involvement in school activities, including providing college-related information and advice, helping the student with homework, and attending concerts and plays with the student. Original response values for each of these variables ranged from one to four, yielding a possible score of four to sixteen on this composite variable.

*School variables.* School variables were all reported by the school administrator in the base year of the study (i.e., students' sophomore year). The two demographic school variables were *school enrollment* and *percent-free lunch*. The *school enrollment* variable was an indication of the school's total enrollment during the 2001-02 academic year. The *percent-free lunch* variable was used as an indication of the overall SES of the students at each participant's school. The *poor facilities and resources* variable was created by summing the responses to nine questions assessing whether or not the

administrator felt that student learning was hindered as the result of factors such as a lack of technology or poor physical building conditions. Scores ranged from zero to nine.

There were several variables indicative of the school ethos and support toward academic success and college attendance. The *career preparation* variable was created by summing the responses to four questions assessing whether or not certain career preparation opportunities (i.e., career plan development, internships, job shadowing, mentoring) were available to students in the school. Scores ranged from zero to four. The *percent college prep program* and the *percent vocational/technical program* variables were indications of the percentage of 10<sup>th</sup> grade students in each school who were involved in either a college preparatory program or a vocational/technical program. The *academic press* variable was an indication of the degree to which the school administrator believed that teachers in the school pressured students toward academic success. The *school mentoring* variable was the mean of how often students sought advice about college from a school counselor, a teacher, and a coach. There was a possible score range of one to four for the *school mentoring* variable.

### *Statistical Analyses*

Data analysis occurred in stages. First, the researcher tagged the variables of interest, including the sophomore cohort flag, F2 panel weight, and school ID linking variable, within the ELS: 2002 restricted file. The researcher imported the tagged variables into the Statistical Package for the Social Sciences (SPSS), version 16.0. The researcher used the filter variables to deselect the participants who were inapplicable and applied the weighting variable to the remaining cases. Various rare student populations

and school types have been disproportionately included in the ELS: 2002 due to the over-sampling of underrepresented populations by NCES. To account for the effects of the complex sampling procedures employed by NCES, such as over-sampling, and to ensure appropriate generalization of the results, a weighting variable must be applied to the data

Table 1

*Variables*

Variable Name/ELS Label	Data Type	Respondent	Year
Flag/Filter Variable			
Sophomore cohort flag/G10COHRT	Dichotomous	NCES	BY/F2
Sample Weight Variable			
BY-F2 panel weight/F2PNLWT	Discrete	NCES	BY/F2
Outcome Variable			
Postsecondary ed. attendance/F2B07	Dichotomous	Student	F2
Moderator Variables			
School place/BYURBAN	Categorical	NCES	BY/F2
Individual Variables			
Student's sex-composite/ BYSEX	Dichotomous	Student	BY
Student's race/ethnicity/BYRACE_R	Discrete	Student	BY
High school credential/F2PHSHDG	Dichotomous	Student	BY
High school program/BYSCHPRG	Dichotomous	Student	BY
AP exam/BYS55C	Dichotomous	Student	BY
Standardized test composite score/	Dichotomous	NCES	BY

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BYTXCSTD			
Student high school GPA/F1RAGP	Continuous	NCES	F2
Employment/BYS75	Continuous	Student	BY
Extracurricular activity participation/BYS42	Continuous	Student	BY
Community service/BYS44C	Dichotomous	Student	BY
Variable Name/ELS Label	Data Type	Respondent	Year
Finds classes interesting or challenging/BYS27A	Dichotomous	Student	BY
Finds getting good education important/BYS54O	Dichotomous	Student	BY
Finds getting away from local area important/BY54I	Dichotomous	Student	BY
Finds living close to friends and family important/BYS54H	Dichotomous	Student	BY
Student's educational expectations/ BYSTEXP	Continuous	Student	BY
Perception of mom's desires for student after high school/BY66A	Dichotomous	Student	BY
Perception of father's desires for student after high school/BY66B	Dichotomous	Student	BY
Perception of favorite teacher's desires for student after high school/BY66F	Dichotomous	Student	BY
Parents' native language/BYPARLNG	Dichotomous	Parent	BY
Family composition/BYFCOMP	Dichotomous	Parent	BY
Parent's educational attainment/BYPARED	Continuous	Parent	BY

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Parents' educational aspirations/BYPARASP	Continuous	Parent	BY
Total household income/BYINCOME	Continuous	Parent	BY
Home resources/BYS84A-BYS84E; BYS84H	Continuous	Student	BY
Parent involvement/BYS59D, BYP56C, BYP57C, BYP57D	Continuous	Student	BY

#### School Level Variables

Variable name/ELS Label	Data Type	Respondent	Year
School enrollment/ BYG10ER	Continuous	Admin.	BY
Percent free-lunch/ BY10FLP	Continuous	Admin.	BY
Poor facilities and resources/BYA50A-BYA50I	Continuous	Admin.	BY
Career preparation/BYA15A; BYA18B-BYA18D	Continuous	Admin.	BY
Percent college prep program/BYA14B	Continuous	Admin.	BY
Percent vocational/technical program/BYA14D	Continuous	Admin.	BY
Academic press/BYA51B	Continuous	Admin.	BY
School mentoring/BYS59A-BYS59C	Continuous	Admin.	BY

(NCES, 2003). Weighting variables were created by NCES for a variety of analyses using combinations of survey waves (e.g., BY or F2). The weighting variable used for the current study was the F2 panel weight, which is appropriate for studies examining variables from the base year and second follow-up (J. Wirt, NCES, personal

communication, February 7, 2008). An alpha level of .05 was used to determine statistical significance in each of the analyses.

### *Question 1*

*Based on enrollment at a 2- or 4-year college immediately after high school, is place (i.e., rural, urban, suburban) related to postsecondary education attendance? If so, what is the nature of that relationship?*

A Pearson Chi-Square test of association was conducted using SPSS 16.0. Outputs for the statistics of the Pearson Chi-Square analysis, Cramer's V, Goodman and Kruskal's Tau, and standardized residuals were selected. The Chi-Square analysis produced a 3 x 2 cross-tab table output displaying school urbanicity (i.e., rural, urban, or suburban) from the base year data and whether or not students had ever attended a postsecondary institution from the second follow-up. The standardized residuals were examined to determine which cells in the cross-tabulations were contributing most to the significant chi-square values. Standardized residual values with an absolute value greater than 2.00 were interpreted to mean that the observed value was significantly different than the predicted value (Agresti, 2002).

### *Questions 2 and 3*

*Based on enrollment at a 2- or 4-year college immediately after high school, what individual, family, and school factors predict postsecondary education attendance?*

*Based on enrollment at a 2- or 4-year college immediately after high school, among rural, urban, and suburban students, for which individual, family, and school factors does place moderate their influence on postsecondary education attendance?*

Multiple linear regression analysis is frequently used as a technique in predicting a continuous dependent outcome with a set of predictors. The use of a dichotomous outcome variable violates the assumption of normality and homoscedasticity for ordinary least squares regression; therefore, a direct logistic regression, the most appropriate analysis for predicting the presence or absence of an outcome variable (Tabachnick & Fidell, 2007), was conducted. Logistic regression is used often as a between-subjects strategy. However, the complex sampling procedures of ELS: 2002 resulted in several participants being from the same school, thus violating the assumption of independence of errors and potentially inflating the Type I error rate for the predictors (Tabachnick & Fidell, 2007). Therefore, to account for the lack of independence of errors, as suggested by Tabachnick & Fidell (2007), a logistic regression model was estimated using Generalized Estimated Equations in SPSS 16.0. GEE accounts for clustering of students and the correlations of responses by school that may occur as a result of such stratified sampling procedures (Molenberghs & Verbeke, 2005) employed by NCES.

Each predictor variable was carefully selected based on previous literature related to postsecondary education attendance or attainment as discussed in Chapter 2. The dichotomous outcome variable was whether or not the student had ever attended a postsecondary institution after high school. The moderator variable was school place (i.e., place). One logistic regression model was estimated, which included the individual factors, family factors, and school factors along with the interaction terms and the outcome variable. Unlike linear regression, logistic regression is based on a nonlinear

response function, known as the logit, (Tabachnick & Fidell, 2007). This is produced by taking the natural log of the probability of being in one of the outcome categories divided by the probability of being in the other outcome category with the best linear combination of predictors (Tabachnick & Fidell, 2007).

In addition to the  $B$  coefficients produced with multiple linear regression, logistic regression provides an odds ratio value for each predictor variable. The  $B$  coefficients in logistic regression are the natural log of the odds ratios and, thus, the odds ratios are the exponential value of each  $B$  expressed as  $\text{Exp}(B)$ . The significance of each predictor variable was examined through Wald's Test and the resulting  $p$ -value. If significant, the odds ratio, or  $\text{Exp}(B)$ , was analyzed to determine the relative odds of being in one of the two outcome categories (i.e., postsecondary education attendance or not) when the value of the predictor increased by one unit (Tabachnick & Fidell, 2007).

## CHAPTER 4

### RESULTS

#### *Descriptive Results*

Descriptive statistics of all factors by place are shown in Tables 2, 3, and 4.

Table 2

#### *Frequency counts for Individual and Family Variables*

Variable Name	Place		
	% Rural	% Urban	% Suburban
Postsecondary education attendance	80.5	89.9	87.6
Student's sex			
Female	54.3	53.3	52.6
Male	45.7	46.7	47.4
Student's Race			
Asian	0.80	6.10	5.20
African American	5.30	11.10	5.80
Hispanic	4.00	11.50	6.50
White	85.00	66.60	77.50
High school program			
Vocational/general	39.30	24.40	33.80
College preparatory	60.70	75.60	66.20
High school credential			
Diploma	83.60	85.90	85.90
Non-diploma	16.40	14.10	14.10

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Plans to take AP test	36.40	53.80	42.30
Community service	12.30	17.60	14.20
Finds classes interesting or challenging	57.10	62.90	61.70
Finds getting a good education important	99.60	100.00	99.40
Finds getting away from local area important	54.70	52.10	50.10
Finds living close to family and friends important	82.80	85.30	85.70
Perception of mom's desire for student after high school			
Attend college	84.00	87.60	84.60
Other than college	16.00	12.40	15.40
Perception of dad's desire for student after high school			
Attend college	83.20	85.90	82.90
Other than college	16.80	14.10	17.10
Perception of favorite teacher's desire for student after high school			
Attend college	83.80	87.40	85.40
Other than college	16.20	12.60	14.60
Parents native language			
English	97.00	88.00	91.00
Non-English	3.00	12.00	9.00
Family composition			
Two-parent	84.0	83.1	86.5
Less than two-parent	16.0	16.9	13.5

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Table 3

*Means and Standard Deviations of Individual and Family Variables by Place*

Variable Name	Place					
	Rural		Urban		Suburban	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Standardized test composite score	53.90	8.84	55.59	8.48	55.05	8.73
GPA	2.95	0.79	3.00	0.78	2.94	0.82
Employment	15.21	10.86	13.97	10.70	15.33	11.11
Extracurricular activity	6.78	6.01	6.06	5.93	6.51	6.05
Student's educational expectations	17.15	1.79	17.69	1.75	17.21	1.85
Parent's educational attainment	14.61	2.31	15.66	2.57	15.29	2.50
Parents' educational aspirations	16.96	1.91	17.66	1.79	17.21	1.85
Total household income	49,944	34,021	64,771	43,787	63,546	41,895
Home resources	4.69	1.27	4.99	1.24	4.97	1.15
Parent involvement	0.71	0.27	0.72	0.28	0.72	0.26

Table 4

*Means and Standard Deviations of School Variables by Place*

Variable Name	Place					
	Rural		Urban		Suburban	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
School enrollment	185.60	177.45	291.79	207.29	293.75	193.53
Percent-free lunch	18.16	15.66	16.80	22.33	16.08	17.94
Poor facilities and resources	1.76	0.67	3.78	1.68	1.67	0.60
Career preparation	2.04	1.24	1.40	1.17	1.82	1.22
Percent college prep program	60.84	28.16	75.94	33.75	66.05	31.02
Percent vocational/technical program	15.73	19.15	11.21	20.47	13.37	19.34
Academic press	4.07	0.70	4.43	0.71	4.19	0.84
School mentoring	0.31	0.30	0.35	0.30	0.34	0.31

***Question 1: Based on enrollment at a 2- or 4-year college immediately after high school, is place (i.e., rural, urban, suburban) related to postsecondary education attendance? If so, what is the nature of that relationship?***

*Chi-Square Results*

Overall, 87% ( $n = 1,794$ ) of students had attended at least one postsecondary institution, with 81% ( $n = 356$ ) of rural students, 90% ( $n = 534$ ) of urban students, and 88% ( $n = 904$ ) of suburban students had attended at least one postsecondary institution (see Table 5).

A Pearson Chi-Square analysis (see Table 5) indicated a significant association between level of place (i.e., rural, urban, and suburban) and postsecondary education attendance  $X^2(2) = 20.58, p < .001$ . Interestingly, however, the values for Cramer's V (.100) and Kruskal's and Goodman's Tau (.004), indicative of association strength and predictability, respectively, were relatively low. Thus, although place may have a significant association with college attendance, the effect of place on college attendance and the predictability of college attendance by place were minimal.

The standardized residuals (see Table 5) were analyzed to determine how closely the observed counts for each cell were compared to the predicted values if the null hypothesis were true. In this case, the null hypothesis is that there is no relationship between the two variables. Typically, standardized residuals with an absolute value greater than 2.00 are interpreted to indicate that the cell in question contributed significantly to the chi-square statistic (Agresti, 2002). The standardized

residual for rural students who had not attended a postsecondary education institution was 3.60, indicating that more rural students reported not attending college than were actually predicted to report doing so if the null hypothesis of no relationship were true. Among urban students, the standardized residual of those who reported not attending a postsecondary institution was -2.10, indicating that fewer urban students reported not attending college than were actually predicted to report doing so if the null hypothesis of no relationship were true.

Table 5

*Cross-tab Statistics of Postsecondary Attendance with Standardized Residuals*

		Postsecondary Education Attendance		
		Yes	No	Total
Rural	Count	356.00	86.00	442.00
	%	80.50	19.50	100.00
	Standardized residual	-01.40	03.60	N/A
Urban	Count	534.00	60.00	594.00
	%	89.90	10.10	100.00
	Standardized residual	0.80	-2.10	N/A
Suburban	Count	904.00	128.00	1032.00
	%	87.60	12.40	100.00
	Standardized residual	0.30	-0.70	N/A

Total	Count	1794.00	274.00	2068.00
	%	86.80	13.20	100.00

$n = 2068$ ; Pearson's Chi-Square test:  $X^2(2) = 20.58, p < .001$

***Question 2. Based on enrollment at a 2- or 4-year college immediately after high school, what individual, family, and school factors predict postsecondary education attendance?***

Results of the regression are shown in Table 6 and Table 7, including regression coefficients, standard errors, and odds ratios. For some of the independent variables the algorithm did not achieve convergence, requiring their removal from the model. Those variables were *parents' native language, importance of getting a good education, percent college prep program, percent vocational/technical program, and academic press*. It is plausible that this occurred as the result of too many variables relative to the few cases in one outcome. Additionally, combinations of certain discrete variables within the model may have resulted in many cells with no cases (Tabachnick & Fidell, 2007).

Table 6

*Regression Results for Individual and Family Variables among All Participants*

Variable	<i>B</i>	S.E.	Exp ( <i>B</i> )
Intercept	-7.70*	1.64	0.00
Urbancity			
Urban	-1.04	2.22	0.35
Suburban	2.21	1.78	9.07
Rural	0.00	0.00	0.00
Student's sex			
Female	0.11	0.26	1.12
Male	0.00	0.00	0.00
Student's race			
Asian	1.04	0.68	2.82
African American	0.18	0.27	1.20
Hispanic	-0.12	0.31	0.89
White	0.00	0.00	0.00
High school program			
Non-academic	-0.14	0.17	0.87
Academic	0.00	0.00	0.00
High school credential			
No high school diploma	-0.44*	0.19	0.64
High school diploma	0.00	0.00	0.00
Achievement test composite score	0.04*	0.01	1.04
GPA	1.12*	0.13	3.06
Plans to take AP exam			
Yes	0.12	0.18	1.12
No	0.00	0.00	0.00
Student's educational expectations	0.02	0.08	1.02
Finds classes interesting/challenging			
No	0.01	0.17	1.01
Yes	0.00	0.00	0.00

\* denotes significance at the .05 alpha level

Table 6, cont.

*Regression Results for Individual and Family Variables among All Participants*

Finds getting away from local area important			
No	0.37	0.29	1.45
Yes	0.00	0.00	0.00
Finds living close to family and friends important			
No	-0.33	0.21	0.72
Yes	0.00	0.00	0.00
Perception of mom's desire for student after high school			
Other than college	-0.17	0.51	0.84
Attend college	0.00	0.00	0.00
Perception of dad's desire for student after high school			
Other than college	-0.86	0.48	0.42
Attend college	0.00	0.00	0.00
Perception of favorite teacher's desire for student after high school			
Other than college	-0.16	0.22	0.85
Attend college	0.00	0.00	0.00
Extracurricular activities	0.04*	0.01	1.04
Employment	-0.02*	0.01	0.98
Family composition			
Less than two parents	0.19	0.22	1.20
Two parents	0.00	0.00	0.00
Parents' educational attainment	0.11*	0.04	1.12
Total household income	5.33 <sup>E-6</sup>	3.64 <sup>E-6</sup>	1.00
Parent involvement	0.05	0.51	1.05

\* denotes significance at the .05 alpha level

Table 6, cont.

*Regression Results for Individual and Family Variables among All Participants*

Home resources	0.16	0.10	1.17
Parents' educational aspirations	0.10*	0.04	1.11

\* denotes significance at the .05 alpha level

Table 7

*Regression Results for School Variables among All Participants*

Variable Name	<i>B</i>	S.E.	Exp( <i>B</i> )
School enrollment	-3.40 <sup>E-5</sup>	0.00	1.00
Percent-free lunch	-0.01*	0.00	0.99
Poor facilities and resources	-0.04	0.12	0.96
Career preparation	-0.07	0.07	0.93
School mentoring	-0.02	0.50	0.98

\* denotes significance at .05 alpha level

Statistical significance was determined using the Wald statistic for each predictor variable. According to the results of the Wald statistics, presented in Table 6, there were five individual variables that significantly predicted postsecondary education attendance. The *high school credential variable* was significant with a *B* coefficient of -.44 and an odds ratio of .64, indicating that earning a high school credential other than a high school diploma, such as a certificate of attendance or a GED, negatively predicted postsecondary education attendance. Moreover, attending college was .64 times as likely (i.e., a decreased chance of 36%) for those without a high school diploma than for those with a diploma. The *achievement test composite score* was significant with a *B* coefficient of .04 and an odds ratio of 1.04, indicating that achievement test

scores positively predicted postsecondary education attendance. Moreover, the odds of college attendance was 1.04 times more likely (i.e., a 4.0% increased chance) for each one unit increase in the achievement test composite score. High school *GPA* significantly predicted college attendance as well, with a *B* coefficient of 1.12, meaning that *GPA* positively predicted postsecondary education attendance. The odds ratio for high school *GPA* was 3.06, indicating that the likelihood of college attendance was 3.06 times more probable (i.e., a 206% increased chance) for each unit increase in *GPA* (e.g. from 2.0 to 3.0). Time spent participating in *extracurricular activities* positively predicted postsecondary education attendance with a *B* coefficient of .04. The odds ratio indicated that the probability of college attendance was 1.04 times more likely (i.e., a 4.0% increased chance) for each one unit increase in extracurricular activity participation. Contrarily, student *employment* negatively predicted college attendance with a *B* coefficient of -.02. The odds ratio indicated that the probability of postsecondary education attendance was .98 times more likely (i.e., a 2.0% decreased chance) for each one unit increase in hours spent at a part-time job.

In addition, there were two family variables and one school variable that significantly predicted postsecondary education attendance (Wald statistic indicated  $p < .05$ ). *Parent's educational attainment* positively predicted college attendance with a *B* coefficient of .11. The resulting odds ratio indicated that the likelihood of postsecondary education attendance was 1.12 times as probable (i.e., a 12% increased chance) for each one unit increase in parent's educational attainment. *Parents' educational aspirations* for the student also positively predicted postsecondary

education attendance with a  $B$  coefficient of .10. The odds ratio indicated that the probability of college attendance was 1.11 times as likely (i.e., an 11% increased chance) for each one unit increase in parent's educational attainment. *Percent-free lunch* was the only school variable which significantly predicted postsecondary education attendance. The percentage of students receiving free lunch was negatively related to college attendance ( $B = -.01$ ) for students from a given school. The odds ratio indicated that that the likelihood of postsecondary education attendance was .99 times as probable (i.e., a 1.0% decreased chance) for each one unit increase in percent of student receiving free lunch at the student's school.

***Question 3. Based on enrollment at a 2- or 4-year college immediately after high school, among rural, urban, and suburban students, for which individual, family, and school factors does place moderate their influence on postsecondary education attendance?***

#### *Regression Interaction Results*

To examine how the individual, family, and school factors differed by place, interaction terms were included in the full regression model. Descriptive statistics for each factor used in the by place model are shown in Tables 2, 3, and 4; results of the regression analyses with the interaction terms are shown in Table 8. The interaction terms were selected based on theoretical and empirical evidence suggesting differential relations based on place between certain predictor variables and postsecondary education attendance. For example, GPA might have significantly predicted college attendance for rural students but not for urban and suburban students.

The interaction terms all included place with urban and suburban as the reference categories and rural as the respondent category. Originally, the main effects and interactions within the model included the following predictor variables:

*student's sex, student's race, plans to take AP exam, student's educational expectations, finds classes interesting/challenging, finds getting away from local area important, finds living close to family and friends important, perception of mom's desire for student after high school, perception of dad's desire for student after high school, perception of favorite teacher's desire, extracurricular activities, employment, parents' educational attainment, total household income, parent involvement, home resources, parents' educational aspirations, school enrollment, and school mentoring.* However, due to a lack of convergence of the model, the

predictor variables that were successfully included in the interaction model were:

*student's sex, perception of mom's desire for student after high school, perception of dad's desire for student after high school, student's educational expectations, importance of getting away from local area, parent involvement, home resources, and school mentoring.*

None of the interaction terms were significant (see Table 8 for the *B* values, standard errors, and odds ratios). It is plausible that the null results for the interactions were due to reduced power of a small cell size relative to the number of predictor variables or reduced variability of variables (particularly the dichotomous ones) within each group (Tabachnick & Fidell, 2007). Similar to previous efforts by Snyder (2004), Yan (2002), and Smith et al. (1995), to further examine how the

Table 8

*Regression Results for Interactions*

Variable	<i>B</i>	S.E.	Exp ( <i>B</i> )
Female X Rural			
Urban	-0.28	0.42	0.76
Suburban	0.19	0.36	1.21
Rural	0.00	0.00	0.00
Perception of mom's desire (no college) X			
Urban	0.27	0.79	1.31
Suburban	-0.30	0.64	0.74
Rural	0.00	0.00	0.00
Perception of dad's desire (no college) X			
Urban	0.34	0.71	1.41
Suburban	0.47	0.63	0.16
Rural	0.00	0.00	0.00
Student's educational expectations X			
Urban	0.12	0.12	1.13
Suburban	-0.13	0.10	0.88
Rural	0.00	0.00	0.00
Importance of getting away (not) X			
Urban	-0.29	0.41	0.75
Suburban	-0.48	0.35	0.62
Rural	0.00	0.00	0.00
Parent involvement X			
Urban	0.74	0.74	2.11
Suburban	0.46	0.67	1.59
Rural	0.00	0.00	0.00
Home resources X			
Urban	-0.17	0.14	0.84
Suburban	0.01	0.13	1.01
Rural	0.00	0.00	0.00
School mentoring X			
Urban	-0.44	0.76	0.64
Suburban	0.31	0.62	1.36
Rural	0.00	0.00	0.00

\* denotes significance at the .05 alpha level

relations between the predictor variables and college attendance may have differed by place, separate regression models were run for rural, urban, and suburban students to explore which variables significantly predicted postsecondary education attendance for each respective group (see Table 9 and Table 10). It is important to note that, given the null interaction results, any apparent differences among the groups in terms of significant predictors of post-secondary attendance may be due to sampling variation rather than actual differences in the population. For this reason, the following results must be interpreted cautiously and viewed through the lens of exploratory research. The following research question guided that post-hoc regression analysis:

***Question 4. Based on enrollment at a 2- or 4-year college immediately after high school, which individual, family, and school factors successfully predict postsecondary education attendance among rural, urban, and suburban students, respectively?***

*Rural Students*

High school *GPA* and *favorite teacher's educational desires* for the student were the two individual variables that were significant in the model for rural students. *GPA* positively predicted postsecondary education attendance ( $B = 1.52$ ). The odds ratio,  $\text{Exp}(B) = 4.56$ , indicated that the probability of college attendance was 4.56 times as likely (i.e., a 356% increased chance) for each one unit increase in *GPA*. *Favorite teacher's desires* for the student to do something other than attend college after high school negatively ( $B = -.82$ ) predicted college attendance. The odds ratio,  $\text{Exp}(B) = .44$ , indicated that if the student believed that their favorite teacher's desired plans for them after high school did not involve attending college, then the

likelihood of that student actually attending college was .44 times as probable (i.e., a 56% decreased chance). No family or school variables significantly predicted college attendance among rural students, specifically.

#### *Urban Students*

Among urban students, the *standardized test composite score* positively ( $B = .05$ ) predicted college attendance. The odds ratio indicated that for every one unit increase in the test score the likelihood of attending college was 1.05 times or an increased chance of 5%. Similar to rural students, high school *GPA* positively ( $B = 1.19$ ) predicted postsecondary education attendance. The odds ratio,  $\text{Exp}(B) = 3.29$ , indicated that the probability of college attendance was 3.29 times as likely (i.e., a 229% increased chance) for each one unit increase in *GPA*. The *student's educational expectations* also positively ( $B = .21$ ) predicted postsecondary education attendance. The odds ratio,  $\text{Exp}(B) = 1.23$ , indicated that the likelihood of college attendance was 1.23 times as probable (i.e., a 23% increased chance) for each one unit increase in educational expectations of the student. There were no family or school variables that successfully predicted college attendance among urban students, specifically.

#### *Suburban Students*

Earning a *high school credential* other than a diploma (e.g., GED) negatively predicted ( $B = -1.32$ ) college attendance among suburban students. Moreover, the likelihood of attending college was .27 times as probable (i.e., a decreased chance of 73%) for those without a high school diploma than for those with a diploma. Like rural and urban students, high school *GPA* positively ( $B = 1.13$ ) predicted postsecondary education attendance. The odds ratio,  $\text{Exp}(B) = 3.11$ , indicated that the probability of

Table 9

*Regression Results for Individual and Family Variables by Place*

Variable Name	Place								
	Rural ( <i>n</i> = 434)			Urban ( <i>n</i> = 600)			Suburban ( <i>n</i> = 1034)		
	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )
Intercept	-5.14	3.29	0.01	-5.89*	2.92	0.00	0.51	3.26	1.67
Student's sex									
Female	0.09	0.52	1.09	-1.36	0.87	0.87	-0.05	0.37	0.95
Male	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High school credential									
Other than diploma	0.18	0.52	1.20	-0.27	0.52	0.76	-1.32*	0.40	0.27
Diploma	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Standardized composite test score	0.05	0.03	1.05	0.05*	0.02	1.05	0.00	0.03	0.10
Student high school grade point average	1.52*	0.28	4.56	1.19*	0.24	3.29	1.13*	0.33	3.11

\* denotes significance at the .05 alpha level

Table 9, cont.

*Regression Results for Individual and Family Variables by Place*

Variable Name	Place								
	Rural ( <i>n</i> = 434)			Urban ( <i>n</i> = 600)			Suburban ( <i>n</i> = 1034)		
	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )
Extracurricular activity	0.02	0.05	1.03	0.02	0.03	1.02	0.05	0.04	1.05
Importance of living close to friends and family									
No	-1.08	0.75	0.34	-0.27	0.44	0.76	0.80	0.42	2.22
Yes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Student's educational expectations	-0.11	0.15	0.90	0.21*	0.11	1.23	-0.15	0.12	0.86
Perception of favorite teacher's educational desires									
Other than college	-0.82*	0.42	0.44	-0.09	0.51	0.91	-0.49	0.47	0.61
Attend college	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\* denotes significance at the .05 alpha level

Table 9, cont.

*Regression Results for Individual and Family Variables by Place*

Variable Name	Place								
	Rural ( <i>n</i> = 434)			Urban ( <i>n</i> = 600)			Suburban ( <i>n</i> = 1034)		
	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )
Family composition									
Less than two									
parents	0.87	0.58	2.38	-0.31	0.38	0.73	0.51	0.43	1.67
Two parents	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total household									
income	2.15	1.47	1.00	-4.18	4.64	1.00	1.29	7.09	1.00
	E <sup>-5</sup>	E <sup>-5</sup>		E <sup>-6</sup>	E <sup>-6</sup>		E <sup>-5</sup>	E <sup>-6</sup>	

\* denotes significance at the .05 alpha level

Table 10

*Regression Results for School Variables by Place*

Variable Name	Place								
	Rural ( <i>n</i> = 434)			Urban ( <i>n</i> = 600)			Suburban ( <i>n</i> = 1034)		
	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )	<i>B</i>	S.E.	Exp ( <i>B</i> )
School enrollment	0.00	0.00	1.00	0.00	0.00	1.00	.002	0.00	1.00
Poor facilities and resources	0.27	0.37	1.32	-0.50	0.62	0.61	-.11	0.30	0.90
School mentoring	0.52	1.13	1.68	-0.72	0.89	0.49	-.53	0.50	0.59

\* denotes significance at the .05 alpha level

college attendance was 3.11 times as likely (i.e., a 211% increased chance) for each one unit increase in *GPA* (e.g., 2.0 to 3.0). Feeling that *living close to family and friends* was not important moderately and positively predicted college attendance ( $B = .80$ ) among suburban students. The odds ratio was 2.22, which meant that if the student felt that living near family and friends was not important to them, then the likelihood of that student attending college was 2.22 times as probable (i.e., an increased chance of 122%).

## CHAPTER 5

### DISCUSSION

Not all American students are attending college and attaining postsecondary educations at the same rate, particularly class-, race-, and geographic-minorities (Cameron & Heckman, 2001; Goetz, 2001). In particular, disproportionate rates of postsecondary education attendance exist among students in rural and non-rural areas (Blackwell & McLachlan, 1999; Hu, 2003; Smith et al., 1995; Yan, 2002). Historically, suburban students have displayed the greatest likelihood of attending college, followed by urban students, with rural students lagging the furthest behind (Smith et al., 1995).

Using data from the NCES ELS: 2002, the purpose of the current study was to determine if the previously reported disparities in postsecondary education attendance among rural, urban, and suburban students still exist today. Further, this study identified the individual, family, and school factors that significantly predicted college attendance among all students. Finally, this study examined how place (i.e., rural, urban, and suburban) moderated the relations among certain individual, family, and school factors and college attendance. The discussion to follow will focus on the following issues: (a) existing discrepancies in postsecondary education attendance, (b) factors related to postsecondary education attendance for all students (c) factors that are moderated by

place and (d) factors that predicted postsecondary education attendance for rural, urban, and suburban students.

*Existing Discrepancies in Postsecondary Education Attendance*

Discrepancies in postsecondary education attendance among rural, urban, and suburban students still exist today. The current study found that eighty-one percent ( $n = 356$ ) of rural students, 90% ( $n = 534$ ) of urban students, and 88% ( $n = 904$ ) of suburban students had attended at least one postsecondary education institution within two years after leaving high school. The findings of the current study, which indicated that rural students were less likely than non-rural students to attend college, are consistent with many previous studies that have reported disparities in college attendance among rural and non-rural students (Blackwell & McLachlan, 1999; Cameron & Heckman, 2001; Goetz, 2001; Hu, 2003; Smith et al., 1995; Yan, 2002). Overall, these results support the notion that intervention programming for rural students is necessary to improve their rates of postsecondary education attendance. Such programming might involve career preparation opportunities, such as mentoring and job shadowing as well as more rigorous coursework offerings, depending upon what is determined to successfully predict attendance among those students.

However, the findings of the current study, which indicated that urban students are attending college at a higher rate than suburban students, were inconsistent with the results of Smith et al. (1995), which found that suburban students had the highest likelihood of attending college among the three groups. One reason for this may be due, in part, to how “urban” was conceptualized by NCES, who collected the data for this

study. It is plausible that the “urban” sub-sample in the current study was more similar to the suburban students than the urban ones in the previous studies on college attendance (see Chapter 2). This surprising finding may also be due to a selection bias of the urban participants (and their parents) who were willing to participate in ELS: 2002. Thus, urban participants in this study may have been higher achievers and more likely to attend college than typical urban students.

Both of the aforementioned conclusions are supported by the descriptive statistics, which indicated that the individual and family characteristics of the urban sub-sample were quite similar to those of the suburban sub-sample (see Table 5). In fact, some of the descriptive characteristics of urban students seem to be more conducive to academic achievement and attainment, including college attendance, than those of suburban students. For instance, within the current sample, urban students had the highest GPAs, highest family income, highest level of parent’s educational attainment, highest parents’ educational aspirations for their student, and the greatest number of home resources. Further, although, historically, the household incomes of inner city and rural families have lagged behind those of suburban families by approximately \$14,000 and \$8,000, respectively (Roscigno et al., 2006), the urban participants in this study did not reflect those findings. In fact, the mean household income of urban families in this study was greater than that for both suburban and rural families. Based on the fact that SES is often operationalized as a combination of factors including family income, parents’ educational attainment, and home resources (Teachman, 1987), it appears that the SES level of the urban sub-sample is similar to or greater than that of the suburban students in the current

study. Moreover, SES has been found to have direct and indirect effects on college attendance as it has been related to educational and occupational aspirations (Chenoweth & Galliher, 2004; Hansen & McIntire, 1989), thus, providing a logical explanation for why the urban students in this sample were attending college at greater rates than suburban students.

Interestingly, however, the school factors among urban students seemed to be more reflective of urban students in the previous studies. For example, a slightly greater percentage of urban students received free lunch. Additionally, their school administrators felt to a much greater degree than rural and suburban administrators that their students' learning was hindered by poor facilities and resources. Yet, again, this disparity in family and school factors among urban students could reflect a selection bias of those who agreed to participate in the study in that the highest achieving students from the most facilitative, supportive urban homes were those who participated even though they attended characteristically urban schools.

One other possibility for why urban students attended college at a greater rate than suburban students could be due to protective factors provided by certain types of programming and course offerings within urban schools. For example, nearly 76% of urban students were enrolled in a college preparatory program versus 66% and 61% of suburban and rural students, respectively. Also, urban students (54%) were the most likely to report planning to take an AP exam versus rural and suburban students (36% and 42%, respectively). The benefits of such offerings in the urban schools may have shielded urban students from the potentially detrimental effects of attending a low-SES

school with poor building conditions and facilities. Finally, it is also plausible that urban students may have easier access to postsecondary institutions and can thus enroll more casually than suburban students.

#### *Factors Related to Postsecondary Education Attendance for All Students*

The individual factors that significantly predicted college attendance among all students were high school credential, achievement test composite score, GPA, extracurricular activities, and employment. For the purpose of this discussion, high school credential, achievement test composite score, and GPA are conceptualized as representing the more general academic performance. The family factors that significantly predicted college attendance were parent's educational attainment and parents' aspirations for their student. Only one school factor, the percentage of students receiving free lunch, significantly predicted college attendance. The relations between each of these constructs and postsecondary education attendance are discussed in the sections to follow.

#### *Academic Performance*

College preparatory behaviors and subsequent postsecondary attendance are greatly impacted by students' academic performance at the beginning of secondary school (Marjoribanks, 2003). Students of high academic ability and performance are more likely to plan for college than those of lower academic ability (Odell, 1994). Such academic performance is operationalized through high school GPA, achievement test scores, and the eventual attainment of a high school diploma.

In the current study, the likelihood of attending a postsecondary institution was reduced by 36% for students who did not earn a high school diploma. Achievement test composite scores positively predicted postsecondary attendance. More specifically, for each single unit increase in the test score, the likelihood of college attendance increased by 4%. This finding is logical given that students who perform better on achievement tests have typically been exposed to a more rigorous curriculum and exposure to such a curriculum was found to be related to college attendance (Chenoweth & Galliher, 2004; Odell, 1998). GPA, with honors courses weighted, which is often used in college admission decisions, also positively predicted college attendance. In fact, for every one unit increase in GPA the likelihood of a student attending college increased by 205%. It is important to note that a single unit of GPA is a whole number increase and not a tenth of a point. For example, raising one's GPA from a 2.0 to a 3.0 is a single unit increase resulting in an improved likelihood of attendance by 205%.

It is likely that these three variables work in conjunction with one another. Those of lower academic ability and/or GPA are less likely to earn a high school diploma and, thus, less likely to have the characteristics and qualities required for admittance and attendance at most postsecondary institutions. Moreover, students of lower ability and performance may experience motivation and self-esteem issues that might prevent them from seeking information about a postsecondary education, for example, from programs offered by community colleges and trade schools. Thus, educators should be cognizant of the fact that some community colleges have open enrollment, allowing for students with less than ideal high school performance to enroll in classes at those institutions. It is

imperative that this information be revealed to students (and their parents) who demonstrate less than ideal ability and performance so that they will be aware of the variety of options available to them for their postsecondary education path.

For students who demonstrate the ability and desire to attend college, educators may be advised to encourage those students to enroll in more advanced coursework (i.e., honors, Advanced Placement, International Baccalaureate). Exposure to such curricula is likely to improve achievement test scores and college performance (Chenoweth & Galliher, 2004; Odell, 1988). Participation in those classes also has been shown to raise educational aspirations and make students feel more prepared for college (Griffen et al., 2003; Reid & Moore, 2008). Unfortunately, the parents of first-generation students from low-income families often do not understand the importance of taking challenging courses (Martinez & Klopott, 2005). Moreover, some students decline enrollment in more difficult courses because they fear that a sub-par performance in a more advanced course may negatively impact their GPA. Educators should advise students (and their parents) that many colleges and universities weight honors courses in their calculation of student GPA for admission decisions and, subsequently, more rigorous courses may improve the student's likelihood of attending college.

#### *Extracurricular Activities*

Participation in extracurricular activities, such as athletics, student government, and academic clubs, helps students to form social and cultural capital by facilitating school and community networks through school engagement and community commitment (Blackwell & McLaughlin, 1999; Fredricks & Eccles, 2005; Marsh, 1992).

In the current study, participation in extracurricular activities positively predicted postsecondary education attendance. For every hour that a student participated in extracurricular activities, their likelihood of attending college increased by 3.5%. These findings were congruent with the results of previous research, which indicated that youth who participated in school and community activities were more likely to enter college than those who did not (Blackwell & McLaughlin, 1999; McGrath, et al., 2001). Additionally, this finding is particularly important because it reveals that participation in extracurricular activities provides a unique contribution to the outcome of postsecondary education attendance. This unique contribution is beyond that provided by academic factors and SES, which have previously been identified as the most salient factors related to college attendance and educational attainment.

Extracurricular activities have been related to numerous educational benefits that have, in turn, been linked to an increased likelihood of educational attainment including improved academic performance (Dumais, 2006; Fredricks & Eccles, 2006; Lipscomb, 2007), higher college entrance exam scores (Everson & Millsap, 2005), higher educational aspirations (Darling, 2005; Darling, Caldwell, & Smith, 2005; Mahoney, Cairns, & Farmer, 2003; Marsh & Kleitman, 2002), and decreased likelihood of high school dropout (Mahoney & Cairns, 1997). More specifically, the benefits of participation have been found through relations with higher levels of income and educational attainment up to 15 years after high school (Marsh, 1992). Extracurricular activities often require some form of parent participation, thus, increasing the likelihood for the parents' interaction with their student and other parents, and the student's

interactions with other potential mentors such as coaches and advisors (Blackwell & McLaughlin, 1999). These interactions may facilitate conversations and the transfer of information related to the college process, thereby increasing students' interest and knowledge in what it takes to "go to college."

Due to the non-experimental design of studies (including the current study) that have examined the relationship between extracurricular activity participation and college attendance, one must cautiously interpret those findings and not infer causation. Therefore, it is still unclear as to whether participation in extracurricular activities has a causal relationship with college attendance. It is plausible that students who originally hold the ability, desire, and expectations of attending college are more likely to choose to participate in extracurricular activities. Future research would benefit from quasi-experimental research designs as well as the development of structural equation models that may identify a possible causal relationship between extracurricular activity participation and college attendance.

Although it has been acknowledged that there is not a known causal relationship between extracurricular activity participation and college attendance, the relationship between participation and a variety of academic outcomes, including college attendance, provide some empirical support for the need of parents and educators to encourage such participation by their student(s). Even if such participation may not directly impact the likelihood of college attendance, being around other students who are likely to attend college, as well as mentors who can provide information about college, will certainly benefit the student.

*Employment*

Adolescent employment is quite common among American youth as 80% of high school students from all SES backgrounds work at some point during high school (Singh, 1998) and 30% of those students work over 20 hours each week (Singh et al., 2007). Further, 37% of older adolescents (i.e., ages 16 through 19) work during the academic year (Bureau of Labor Statistics, 2005). Participants in the current study reported working nearly 15 hours each week. Such employment negatively predicted college attendance and each hour worked per week decreased the likelihood of college attendance by 1.6%. Similar to extracurricular activity participation, this result is particularly important as it indicates that adolescent employment provides a unique contribution to the outcome of postsecondary education attendance above other factors such as academic performance and SES.

The current findings reflect the zero-sum theoretical perspective of adolescent employment, which asserted that time is limited and time devoted to work is time away from academic-related activities, including those that serve to prepare students for postsecondary education (Marsh & Kleitman, 2005; Singh, 1998; Singh et al., 2007). Moreover, these findings confirm those revealed in a longitudinal study by Carr et al. (1996) that indicated that students who worked more hours in high school had significantly less education over twelve years later as demonstrated by never having attended college and/or never completing a college degree. It is plausible that working, which has been previously linked to academic outcomes such as lower test scores and grades (Marsh & Kleitman, 2005; Quirk, et al., 2001; Singh, 1998; Singh et al., 2007), as

well as higher rates of school absenteeism and dropout (Warren et al., 2003), may be indirectly related to college attendance. Adolescent employment prevents students from engaging in more facilitative school activities including extracurricular activities and homework (Marsh & Kleitman, 2005; Singh, 1998; Singh et al., 2007). Additionally, it is possible that the work environment may have detrimental effects on students' attitudes toward attending college. In fact, Carr et al. (1996) found that working teens were more likely to come from affluent families and that the negative effects from working, such as lower achievement and lower educational aspirations, were unlikely to be resource driven and rather be the result of work-related experiences, such as the immediate gratification of a paycheck.

A curvilinear relationship between adolescent working and college attendance has been acknowledged previously (Kablaoui & Pautler, 1991; Quirk, et al., 2001; Steinberg & Cauffman, 1995; Staff & Mortimer, 2007). This effect has resulted in few to moderate (less than 15 each week) working hours being conducive to academic achievement and attainment whereas a greater number of hours (more than 15 each week) may impede academic outcomes, including college attendance (Kablaoui and Pautler, 1991; Steinberg & Cauffman, 1995). However, the design and statistical analysis of the current study did not allow the researcher to test for a curvilinear effect of employment on college attendance.

Finally, reciprocal effects between adolescent employment and student academic outcomes also should be considered. These effects result from students who are initially high academic performers being less likely to work long hours and students who are low

performers being more likely to work longer hours after struggling in school (Quirk et al., 2001; Singh, 1998). These relations may result in a self-selection of student workers; the academic outcomes for these students are then further negatively affected by employment. Moreover, it is plausible that the same students who elect to work may not have intended to attend college in the first place; therefore, although adolescent employment may significantly predict college attendance, it may not directly affect students' likelihood of attendance. Similar to the relationship between participation in extracurricular activities and college attendance, quasi-experimental designs and structural equation modeling are needed in future research to directly examine the effects of adolescent employment on college attendance.

#### *Parent's Educational Attainment*

The educational attainment of parents has been found to exert a strong influence on college attendance (Smith et al., 1995). In fact, parent's educational attainment was previously found to be more influential than family income on academic outcomes such as achievement and educational attainment (Davis-Kean, 2005). In the current study, parent's educational attainment positively predicted college attendance. In fact, each additional year of parent's educational attainment increased the likelihood of college attendance by 11.7%. This finding corroborated previous studies that found a similar relationship between parent's educational attainment and college attendance (Choy, 2001; Reid & Moore, 2008).

Parental educational attainment is often considered a composite factor of SES, which has consistently been linked to college attendance (Blackwell & McLaughlin,

1999; Chenoweth & Galliher, 2004; Hansen & McIntire, 1989; Smith et al., 1995).

Educational attainment of the parent(s) is very important because it influences how parents structure their home and how they interact with their children within that environment. For example, more educated parents will hold higher expectations for their children than less educated parents (Chenoweth & Galliher, 2004; Teachman, 1987).

Such expectations have implications for the affective relationship, types of conversations, and activities that occur between the parent(s) and child(ren) (Davis-Kean, 2005).

Moreover, contrary to first-generation college students, who face the task of navigating the higher education process without the knowledge and support of their parents (Bloom, 2007; Choy, 2001; Wimberly & Noeth, 2004), the experiences of parents with a college education enable them to more smoothly facilitate their children's understanding of and transition to higher education (Bloom, 2007; Chenoweth & Galliher, 2004; Griffen et al., 2002).

Although a significant relationship between parent's educational attainment and college attendance was revealed in the current study as well as many previous studies, this finding should be interpreted and generalized with caution. One is advised to not hastily conclude that because a student's parents did not attend college, then that student will likely not attend college. There are many first-generation college students at institutions around our nation. Mere exposure to discussions about college and knowing someone who has gone to college has been shown to improve both college aspirations and attendance (Chenoweth & Galliher, 2004; Gándara et al., 2001). Therefore, to ensure that these students do attend college, it is important that they have mentors outside of

their immediate family to guide them through the complex college application process (Bloom, 2007).

*Parents' Educational Aspirations for the Student*

The expectations parents hold for their children have a profound influence on their children's academic outcomes, including achievement, aspirations, and attainment (Fan & Chen, 2001; Odell, 1988). Parents' educational aspirations for the student positively predicted college attendance in the current study. In fact, for each additional year of education that parents aspired for their children to complete, the likelihood of their children attending college increased 11%. This finding is particularly important because it reveals that the aspirations parents hold for their children's education provide a unique contribution to the outcome of postsecondary education attendance above that of academic variables and SES, which have consistently been found to predict such outcomes.

Interestingly, however, students' own educational expectations did not significantly predict attendance among all students as previously reported by Blackwell and McLaughlin (1999) as well as Chenoweth and Galliher (2004). This could suggest that parents' educational aspirations supersede students' expectations in influencing the likelihood of college attendance. This supports the assertion that parents may have the greatest impact on their students' career goals (Kotrlik & Harrison, 1989; Richards, 2004) and that parents' expectations influence students' career decisions more than any other factor (Yang, 1981). Therefore, when families place an emphasis on education, they

instill in their children the belief that a college education is both important and necessary and, thus, their children are more likely to attend (Chenoweth & Galliher, 2004).

This finding could also be a function of the difference between educational aspirations and educational expectations. In the ELS: 2002 study, students were asked for the highest level of education that they “expected” to attain whereas parents were asked for the highest level of education that they “desired” their student to attain. Aspirations, generally higher than expectations and maintained over time, are typically based on dreams and desires; whereas, expectations tend to decline with age based on the acquisition of knowledge about resources, abilities, and requirements (Hansen & McIntire, 1989). This could mean that the hope and desires that parents hold for their student’s education is a more salient factor than the student’s personal expectations, which account for abilities and resources as they are realized over time.

Although the significance of this variable may imply that students whose parents hold higher educational aspirations will be more likely to attend college, it should also be recognized that students of parents who have lower educational aspirations are thus less likely to attend college. Parents who hold lower aspirations are likely those from lower-income households who realize the barriers that may impede the path to their children’s college education (Bloom, 2007). Further, parents of lower income may be fraught with feelings of potential abandonment and a loss of connection with their children if they wish for them to attain a college education. Students sense such worries and it increases their anxieties about attending college and, in turn, decreases the likelihood of attendance among those students (Bloom, 2007).

*Percent-Free Lunch*

The only school factor that successfully predicted college attendance was the percentage of students receiving free lunch. Each percentage increase in the students receiving free lunch within a school resulted in a 1.1% decreased chance of college attendance. This finding is logical given that, due to the neighborhood districting of our nation's schools, students who attend schools with greater percentages of students receiving free lunches are likely to come from poverty themselves and students of lower SES are less likely to attend college.

The percentage of students receiving free lunch is used often as an indicator of the overall socioeconomic status (SES) level of the families of students within a school. Family SES can be instrumental in shaping academic outcomes such as achievement and attainment (Hansen & McIntire, 1989; Israel et al., 2001; Marjoribanks, 2003; Roscigno & Crowley, 2001; Roscigno et al., 2006). Family decisions related to education often are connected to the availability of resources, including income, family structure, and parental educational attainment. Such resources are mediated through household investments, such as parental expectations, household educational items, and cultural capital (Roscigno & Crowley, 2001), each of which have previously predicted college attendance (Smith et al., 1995). Interestingly, however, total household income was not significant in predicting college attendance in the current study. This implies that school SES provides a unique contribution on the outcome of college attendance above that of family SES. This may be an indirect effect of SES as mediated through school ethos and

educator characteristics as well as the backgrounds and values of other students within the school setting.

Towards the end of their secondary education, students reach a crossroads and must weigh the opportunities and compromises that attending college presents to them (Bloom, 2007). Although students' educational aspirations are quite similar across class lines, "the realities on which they (low and high income students) must base their decision reflect different landscapes" (p. 356), which force low-income students to reconcile their dreams for the future with the realities of today (Bloom, 2007). Unfortunately, for many low-income students, those risks may appear too great.

The risks that low-income students take to attain a postsecondary education do not exist for those of middle and high-income families. Regardless of academic ability, low-income students face far greater financial hurdles when deciding to attend college, which often impede their chances for attendance (Chenoweth & Galliher, 2004). For example, in 2001, the average yearly costs for college were nearly 60% of the annual household income of low-income families while the same costs represented only 5% of the income of high-income families (Gladieux, 2004). As a result, lower-income students will pay more over time for their education as it is often necessary for them to acquire more loans and, additionally, interest and fees (Bloom, 2007). Poor students are aware of the likelihood that they may be unprepared for college and potentially drop out. Thus, some low-income students will not attend college due to a refusal to take out loans as they recognize that not succeeding will leave them in a worse situation (Campaigne & Hossler, 1998; Kane, 1999) of having no degree yet owing money (Bloom, 2007).

There also are several psychological risks that low-income students must take to attend college, including potential injury to one's self-esteem as well as pioneering their own path from poverty into the middle class. For instance, the questions asked of low-income students on the Free Application for Federal Student Aid (FAFSA) and other, "seemingly benign...bureaucratic forms (p. 358)," such as inquiries about net worth of investments and tax deferred pension plans, carry messages which can suggest that low-income students have no place in college (Bloom, 2007). Moreover, Bloom (2007) noted that the FAFSA form has requested information about parents' income even for those whose parents were dead or imprisoned or who lived with other family members or guardians. Unlike their middle class peers, low income students often do not have adults whom they can turn to for help with the complex college application and financial aid process. In fact, many middle-income students rely on their parents to complete aspects of their application and to even schedule interviews for them whereas low-income students often complete their applications alone or with minimal help from a school counselor (Bloom, 2007). These subtle yet harsh messages may explain why many low-income students self-select themselves out of many college applicant pools prior to receiving admission decisions (McDonough, 1997). These findings highlight the need to target schools with high percentages of students receiving free lunch and provide intervention programming to clarify their understanding of the college application and financial aid process and improve their likelihood of attendance.

*Individual, Family, and School Factors Moderated by Place*

There were no significant interactions between place (i.e., rural, urban, and suburban) and the relations among certain individual, family, and school factors and postsecondary education attendance. It is likely that the null results were due to the statistical characteristics of the model, which will be discussed below. Therefore, the null results should not be interpreted to necessarily mean that certain factors are not related to postsecondary attendance differently for students from various places. In fact, modifications to the model, including model trimming, are recommended in future research to further examine how place moderates such relations.

*Individual Characteristics*

In terms of individual characteristics, it was hypothesized that *student's race* would have interacted with place in that, among urban students, Asian, African American, and White students may have been more likely to attend college than Hispanic students. Among rural students, being Asian or White, was hypothesized to positively predict college attendance because students of these races may have been exposed to more resources such as mentoring and social capital that could increase the likelihood of their college attendance. These hypotheses were based on previously reported lower educational aspirations and college application patterns of Hispanic and African American youth (Hurtado et al., 1997; Kao & Tienda, 1998). Given that many suburban students, regardless of race, may have a multitude of home and social resources, race was not hypothesized to significantly predict attendance for those students. *Student's sex* was determined to predict college attendance among

rural and urban students. Among rural students, females were hypothesized to be more likely to attend college, whereas, among urban students, males were hypothesized to be more likely to attend college based on previous research (Cowley et al., 2003; Marjoribanks, 2003; Yan, 2002).

In terms of academic characteristics, one's *plans to take AP exam* was hypothesized to positively predict attendance for rural and urban students only due to the fact that a more rigorous curriculum might introduce students from these places to more knowledge, resources, and mentors. Contrarily, for students from suburban areas who are typically already surrounded by such resources, taking an AP exam might not have made a significantly unique impact on the likelihood of their college attendance. In fact, previous research has indicated that the often limited curriculum provided by rural schools is related to decreased rates of college attendance among rural students (Kampits, 1996; McCracken & Barcines, 1991; Rojewski, 1999). Moreover, among rural students, those who enrolled in college were more likely to have taken a more rigorous curriculum than those who did not (Yan, 2002).

Students' activities outside of the classroom may also predict college attendance differently for students from different places. Participation in *extracurricular activities* was hypothesized to positively predict college attendance among urban youth only. Reid and Moore (2008) reported that extracurricular programs helped urban students to become better prepared for college. Although participation in extracurricular activities may be beneficial to rural and suburban students, among urban youth, such participation may facilitate the development of

social capital by exposing these students to positive role models and keep them from potentially negative role models.

*Employment* was hypothesized to negatively predict college attendance among rural youth. Rural youth have reported expecting to complete their education at a younger age than their urban and suburban counterparts (Cobb et al., 1988). Due to economic hardship within rural communities, rural youth often transition into the workforce and assume adult roles much earlier than urban and suburban youth (Cobb et al., 1989; Crockett & Bingham, 2000; Elder, 1998). Thus, if rural students work more during high school, they may be more likely to assume adult roles, including full-time employment, earlier than urban and suburban students, which may diminish their likelihood of college attendance.

In terms of educational expectations and aspirations, the *student's expectations* were hypothesized to predict attendance for urban and rural students only. Suburban areas, typically characterized by greater resources such as higher family incomes, lower poverty rates, and higher educational attainment, may provide an environment that works to facilitate college attendance among suburban students (Blackwell & McLachlan, 1999); however, rural and urban places may be lacking in such resources. Thus, the educational expectations of rural and urban youth may serve as a factor to resilience within resource impoverished area and, in turn, may have an important role in the outcome of college attendance. Moreover, the lower educational expectations among rural youth have been linked accelerated life time table often due to economic hardship within their communities. So, if situational

circumstances within the lives of rural students require them to have diminished expectations for their educational path, those expectations are likely to determine the decisions rural students make about attending postsecondary education (Davies et al., 2006). Finally, among many urban and rural students, family poverty may lead students to believe that that they cannot afford to attend college and students may then adjust their expectations, which, in turn, will affect decisions related to college attendance.

Students' perceptions of the expectations and desires of their parents and teachers may have a differential impact on the likelihood of college attendance.

*Perception of mom's-* and *perception of dad's desire for the student after high school* were hypothesized to positively predict college attendance among rural students only. Rural parents have been perceived as being less supportive of their children's college education in favor of full-time employment, trade school attendance, or military enlistment than their counterparts (Cobb et al., 1989; Hansen & McIntire, 1989). The findings of other research have suggested that the desires of parents may have a different impact on rural students than non-rural ones. The *perception of favorite teacher's desire for the student after high school* was hypothesized to positively predict college attendance among urban youth only. It was believed that in response to a lack of educated role models within the home and neighborhood settings of some urban youth, these students may seek guidance and support from school figures, such as teachers. Thus, if they perceive that their favorite teacher desires for them to attend college they might be likely to try and fulfill that desire.

Students' attitudes were hypothesized to differentially predict college attendance for students from different places. The variable, *finds classes interesting and challenging*, was hypothesized to predict college attendance among urban students. This relationship was hypothesized because if urban students do not engage in school then they may be likely to succumb to peer pressure from negative role models and friends within urban settings. The variable, *finds getting away from the local area important*, was hypothesized to negatively predict college attendance among rural students only. Additionally, the variable, *finds living close to family and friends important*, was hypothesized to positively predict college attendance among rural students only. Community relationships are highly valued within rural settings and rural residents are often committed to remaining in their same area (Crockett et al., 2000; Howley, 2006). Rural adolescents who desire to attend college often struggle with the necessary decision of leaving their families and communities to seek a higher education (Crockett et al., 2000; Elder et al., 1996; Howley, 2006; Howley et al., 1996; Richards, 2004) a dilemma that is not often faced by their urban and suburban counterparts. Therefore, rural youth who value remaining in their communities may be less likely to attend college.

#### *Family Characteristics*

In terms of family characteristics, it was hypothesized that *total household income* would interact with place and positively predict attendance for only rural students due to the fact that previous researchers have asserted that the characteristics of rural poverty as quite different from those of urban poverty (Khattri et al., 1997).

Therefore, it was believed that total household income would be more likely to impact college attendance for rural students since rural students would be less likely to draw from institutional and community resources that may be available to students in urban and suburban settings (Blackwell & McLachlan, 1999; Chenoweth & Galliher, 2004; Roscigno & Crowley, 2001).

*Parents' educational attainment* was hypothesized to predict college attendance for both rural and urban youth but not suburban youth. Educational attainment is depressed in many rural and urban communities when compared with suburban communities (Roscigno et al., 2006; Roscigno & Crowley, 2001). Parental educational attainment has been found to have a strong influence on college attendance (Blackwell & McLachlan, 1999; Smith et al., 1995). However, unlike rural and urban students, if suburban youth live in a home with lower parental educational attainment, they are more likely to be exposed to other educated role models within their communities.

*Home resources* were hypothesized to positively predict college attendance among rural youth but not among urban or suburban students. Educational resources within the home are influential in students' orientation towards school (Roscigno & Ainsworth-Darnell, 1999; Teachman, 1987). For example, households with magazines, newspapers, and library cards provide resources for learning and emphasize the importance of literacy (Blackwell & McLachlan, 1999). For students, in rural settings, household resources may be particularly important to educational outcomes, such as college attendance, as they often do not have access to social,

cultural, and educational resources that are available in urban and suburban areas (Roscigno & Crowley, 2001; Smith et al., 1995).

*Parents' educational aspirations* for their student were hypothesized to positively predict college attendance for rural students only. Previous research indicated that the effects of parents' educational aspirations or expectations for their students differed based on place. Smith et al. (1995) found that parents' expectations dramatically impacted all students except those in urban areas whereas Blackwell & McLachlan (1999) found that parents' discouragement of college attendance affected the educational attainment of rural boys more than urban boys. *Parental involvement* may serve as an extension of parents' educational aspirations for their children. There was no specific hypothesis for differential relations based on place between *parent involvement* and college attendance. The previous research on the impact of parent's involvement on students' educational outcomes (Cowley et al., 2003; Gandra et al., 2001; Smith et al., 1995; Yan, 2002) is mixed in their assertions of how place moderates that relationship.

#### *School Characteristics*

*School enrollment* was hypothesized to positively predict college attendance for rural students but negatively impact attendance for urban and suburban students. Historically, rural schools have been small and, although small schools have often viewed favorably within the literature (Howley et al., 2000; Irmsher, 1997; Raywid, 1999), some rural school may be too small to offer an adequate variety of courses (Kimber, 2003; Lay, 2007; Rojewski, 1999), particularly more advanced courses that

have been related to higher rates of college attendance (Yan, 2002). However, some urban and suburban schools may have large enrollment sizes, which can result in high student-teacher ratios and high student-counselor ratios (Griffen et al. 2003). Those large ratios might decrease the likelihood of college attendance by reducing opportunities for mentoring and guidance experience. *School mentoring* was hypothesized to predict postsecondary attendance for rural and urban students only. Suburban students may benefit from educated role models within their own families and communities; however, youth in rural and urban settings may only be exposed to such resources within the school setting. Among rural and urban students, mentoring from teachers, counselors, and coaches, may improve the likelihood of college attendance by improving students' attitudes about the importance of education, raising their educational expectations, and informing them about the college application process.

There are a few statistical explanations for the null results. First, the within group variation may have been lacking such that there was not enough variable range with which place could have interacted. For example, gender, perception of mom's desire, perception of dad's desire, and importance of getting away from local area were all dichotomous variables, allowing for only two possible responses and greatly reducing the potential for variability. Additionally, based on the standard deviations (see Table 6) the variability of within group responses for student's educational expectations, parent involvement, home resources, and school mentoring was relatively low. Another possibility for the null results, is that the cell sizes for some variables may have been too

low, which often causes logistic regression to produce large parameter estimates and standard errors (Tabachnick & Fidell, 2007), thus increasing the likelihood of accepting the null hypothesis. Moreover, interactions with a regression analysis can complicate the model without improving the overall prediction and may lead to null results when there are too few cases per cell relative to the number of predictor variables (Tabachnick & Fidell, 2007). Although the overall sample size in the current study was relatively large, the interactions by place may have created cell sizes that were too small relative to the number of predictors in the model, particularly among the rural participants. The outcomes of these interactions should not be interpreted to mean that place does not moderate relations among individual and contextual factors and college attendance. Rather, future research should focus on improving the models by more accurately examining the moderating role of place using non-discrete variables that may be more appropriate for these statistical procedures.

*Factors that Predict Postsecondary Education Attendance among  
Rural, Urban, and Suburban Students*

*Individual Factors*

Among rural students, the two variables that significantly predicted college attendance were GPA and the student's perception of their favorite teacher's educational desires for the student after high school. GPA was positively related to attendance and, with each unit increase in GPA, the likelihood of college attendance improved by 355%. This finding exemplifies the idea that early academic preparation is important to postsecondary education attendance and attainment (Marjoribanks, 2003) given that high

achieving students are more likely attend college (Odell, 1994). The fact that GPA was significant and other academic factors, such as achievement test scores and high school credential, were not may be due to a lack of variability for those factors among rural students. More specifically, the fact that GPA was significant and achievement test scores were not may give credence to the argument that motivation is a major underlying factor in rural students attending college. Although achievement test scores are a reflection of the knowledge a student has acquired over time, it is a one time snapshot of a student's academic performance; however, GPA is a reflection of performance, including ability and motivation over a period of time, which, in this case, was eight semesters. It is important to note that these results must be cautiously interpreted. Logistic regression is not designed to identify causal relationships (Tabachnick & Fidell, 2007) and, thus, should not be inferred as such. It is quite plausible that students who were likely to attend college initially may work hard to achieve a high GPA resulting in a significant relationship between those two factors.

The second variable that predicted college attendance was the student's perception of their favorite teacher's educational desires for them after high school. If the student perceived that their favorite teacher desired for them to do something other than go to college the likelihood of college attendance decreased by 56%. On the contrary, if the student perceived that the teacher wanted them to go to college the likelihood of that student attending college improved by 44%. This is a logical finding provided that teachers' higher expectations have improved students' academic

achievement and decreased their likelihood of dropping out of high school (Roscigno & Crowley, 2001).

As teachers can positively influence academic outcomes, they may serve also as a detriment to them. In the current study, the descriptive statistics indicated that rural students' perceptions of their teachers' expectations were lower than those held by their urban and suburban counterparts. Unfortunately, parallel with parental expectations, teachers' expectations are likely to be depressed in rural locales that typically have a limited labor market opportunity (Roscigno & Crowley, 2001), thus, supporting the notion that the expectations of teachers in rural settings will likely differ from those of students in urban or suburban settings, which have greater economic and job prosperity. For instance, Cobb et al., (1989) revealed that more rural youngsters than urban reported that their teachers and counselors "didn't care" about their postsecondary plans. These lower expectations or messages of indifference may be a reflection of what is demanded and available to the rural students upon completing their education. Interestingly, the finding that perceptions of favorite teacher's desires was only significant among rural students contradict those of Roscigno & Crowley (2001), which reported that teacher expectations often were less important to rural students than to non-rural ones. Although urban students have reported that their teachers encouraged them to attend college (Griffen et al., 2003), given the findings of the current study, such encouragement may not be as important as other individual and contextual factors on the outcome of college attendance.

Among urban students, the variables that significantly predicted postsecondary education attendance were standardized test composite score, GPA, and student's educational aspirations. Standardized test composite scores positively predicted postsecondary attendance and for each single unit increase in the score the likelihood of urban students attending college increased by 5%. Additionally, GPA positively predicted attendance and for each single unit increase in GPA the likelihood of college attendance among urban students increased by 229%. This again supports previous assertions by Marjoribanks (2003) and Odell (1994) that early academic performance is a major factor in college attendance. However, these results must be carefully interpreted; a causal relationship between these academic factors and college attendance should not be inferred, given that logistic regression can only identify non-directional relationships among variables (Tabachnick & Fidell, 2007). Therefore, it is possible that urban students who were likely to attend college initially may work hard to achieve a high GPA and graduate with a high school diploma.

Urban students' educational expectations were positively related to college attendance. For each one year increase in expectations, the likelihood of postsecondary education attendance increased by 23%. Similar to previous findings by Blackwell & McLaughlin (1999), the educational expectations of rural (17.15), urban (17.69), and suburban (17.21) students were similar to one another. The fact that the educational expectations of urban students were slightly higher than those of suburban students may be a reflection of the expectations of teachers and parents, given the other descriptive statistics of this sample. Moreover, the fact that the student's educational expectations

predicted college attendance only for urban students suggests that the student's own desires and expectations for their educational goals may exert a powerful force in a student's path to achieving those goals. However, this finding is contrary to those in the full regression model, which indicated that parents' educational aspirations contributed more than the student's educational expectations. Additional research is needed to further investigate this issue.

Among suburban students, the three variables that significantly predicted postsecondary education attendance were high school credential, GPA, and the importance of living close to family and friends. Having a high school credential other than a diploma, such as a GED or other certificate, decreased the likelihood of college attendance by 73%. GPA positively predicted college attendance and each single unit increase in GPA improved the likelihood of attendance by 210%. The significance of these two variables may provide further evidence that early academic performance is important in predicting college attendance. Again, these results must be cautiously interpreted as they do not imply causation. Similar to urban students, it is plausible that students who were likely to attend college initially may work hard to achieve a high GPA and graduate with a high school diploma.

The third variable that significantly predicted college attendance among suburban students was the importance of living close to family and friends. Feeling that living close to family and friends was not important increased the likelihood of postsecondary education attendance by 121%. These results may reveal that students who are more academically successful and, thus, more likely to attend college may attach less

importance to living in their home community as previously found by Johnson et al. (2005).

This was an interesting finding among suburban youth, given that the struggles of moving from one's community to attend college has only been reported to affect rural students (Howley, 2006; Howley et al., 1996) as they struggle to compromise their desire for higher education with their family and community ties. Among rural students, seeking a college education often requires them to leave their local areas for a period of time (Crockett et al., 2000; Richards, 2004); yet among suburban students it seems that there would be a variety of schools closer to their home area, thus decreasing the sense that attending college requires one to leave home. However, these results may be a function of how "rural" and "urban" have been defined by NCES and thus students who may have been considered "rural" in previous studies may have been considered "suburban" in the ELS: 2002. Moreover, it might be a function of a lack of variability in this variable among rural students. Finally, it could reflect how relational ties are binding for all students; yet again this is an issue that has previously only been explored among rural youth.

#### *Family and School Factors*

There were no family or school variables that significantly predicted college attendance for rural, urban, or suburban students. This suggests that the relationships among individual factors, such as early academic performance, educational expectations, and perception of teacher's desires, are stronger than those among family and school variables and college attendance, for the individual places. It also could indicate that the

significant individual factors are mediating family and school factors, which are thus indirectly related to college attendance. Such a relationship would not have been found in the analyses employed in the current study. Another potential reason for the null results of family and school factors is less variability in those variables, particularly within each place (i.e., rural, urban, and suburban) group.

#### *Limitations of the Study*

In using a national dataset, such as ELS: 2002, certain compromises are made that introduce limitation to the study. First, in using secondary data, the researcher may not have access to the exact data needed to answer the questions of interest, either in terms of variable content or variable type. Therefore, research questions may need to be adjusted to fit the data and thus may not fully explore the phenomena of interest. In the current study, for example, issues related to the influence of financial need on subsequent educational attendance were not addressed in the manner in which the researcher would have liked. Thus, aside from annual household income, the influence of finances on postsecondary attendance was withheld from the study. Additionally, many of the variables of interest for this study were captured in a manner that made it impossible to conceptualize them as continuous data, resulting in reduced variability and small cell sizes for several predictor variables, thus potentially causing misleading null results (Tabachnick & Fidell, 2007). Finally, in utilizing a secondary analysis approach, one cannot control the integrity of the data. For example, in the current study, there were many missing data, which resulted in a reduced sample size and small cell sizes for many

variables. This may have had an impact on the analyses, thus, resulting in the null findings.

Place, as measured in the ELS: 2002 data, is based on school, not home. Thus, students who live in a rural environment but who attend suburban or urban schools, due to private or charter school attendance, may not have been appropriately identified or addressed in the current study. Moreover, the way in which NCES conceptualized “rural,” “urban,” and “suburban” may have differed from previous studies examining issues related to place. This is quite plausible given that the descriptive statistics for the urban students in the sample appeared to be more reflective of suburban students in previous studies.

The logistic regression analysis in the current study was based on a dichotomous outcome of either attending a postsecondary institution or not. However, this type of analysis may not have captured the whole picture regarding postsecondary education attendance. For example, the outcome variable asked participants whether they attended a postsecondary institution at any point within two years of leaving high school. However, this variable did not indicate whether the participant was still enrolled in the institution and, if not, why the individual was no longer enrolled (e.g., money, family, academic difficulty). Questions regarding those issues should certainly be addressed in future studies. Additionally, the predictor variables were not standardized in a manner that would allow for cross-comparisons to examine the relative influence of each variable on the outcome of college attendance. For example, in the current study, a single unit of educational aspirations was one year whereas a single unit of GPA was moving from a

2.0 to a 3.0. The lack of standardization of the predictor variables might lead some to erroneously conclude that GPA exerts the strongest influence on college attendance without considering the relativity of its contribution to that of other variables.

Finally, as with any relational study, causation cannot be inferred. Therefore, although certain variables may have been significantly related to postsecondary attendance, there may be extraneous variables whose influence was not captured in the current study. Given that a path analysis was not used, it cannot be determined whether students did not attend college due to self-selection, meaning that they were accepted but did not choose to attend, or whether they did not attend because they were not accepted or did not apply.

#### *Conclusions and Directions for Future Research*

The current study was quite innovative and groundbreaking. This study employed a comprehensive, ecological systems approach to examining the influence of individual, family, and school factors on postsecondary education attendance using data from a current and nationally representative dataset. Moreover, as previously mentioned, no others studies have examined the influence of place (i.e., rural, urban, and suburban) upon the relationship between individual and contextual variables and postsecondary education attendance.

This study revealed several factors related to college attendance among all students. Historically, a core of factors including academic achievement, parent's educational attainment, parents' educational aspirations, and household income, has been consistently identified as predicting college attendance. Additionally, this study revealed

three factors, extracurricular activities, employment, and parents' educational aspirations for their student, which provided a unique contribution above that of the aforementioned core factors to the outcome of college attendance. These results will be significant to future research examining the relationships among individual and contextual factors and college attendance. They may also be informative to educators aiming to improve the rates of college attendance among their students.

Geographical inequities have been linked with barriers to educational opportunity (Roscigno et al., 2006). Several intervention programs have been implemented to improve college attendance among under represented students; however, the current study revealed that rural students still lag behind their urban and suburban counterparts in college attendance rates. The results revealed a few factors that predict college attendance differently for students from different places, such as the favorite teacher's educational desires for the student after high school as well as attitude about leaving home. These findings are of particular value to educators, parents, and researchers who work with under represented students. Moreover, the results may inform the development and implementation of college attendance intervention programs that are tailored to the needs of students from different places, particularly those from rural settings.

Future research should build upon the findings of this study and improve upon its limitations to further explore the variables that may predict attendance differently for students from different places. Such improvements might include identifying continuous variables within national datasets that will be more robust within a regression model.

Moreover, longitudinal designs, which can capture the developmental trajectory of factors, including aspirations and expectations, will be informative. Additionally, qualitative work, including ethnographies, is warranted to further understand the experiences of first-generation, low-income students who may be pioneering a path to college.

It will also be important to consider the influence of variables that were not considered in the current study. For example, given the enduring importance of SES on academic outcomes, researchers of future studies might consider the influence of class in explaining educational trajectories, including college attendance and attainment. Also, more thoroughly examining variables such as performance in more challenging classes (e.g., AP), matriculation and attrition, and financial aid will be quite informative to this field of work.

As states around our country examine the postsecondary educational attainment of their citizens in order to meet the demands of the national and global economy, policymakers will find the results of this study particularly useful. By providing an understanding of the unique strengths and needs of students from rural and urban settings, the findings of this study may be used to inform the development of policies on higher education and intervention programs, such as the Higher Education Act, in order to eliminate disparities in postsecondary education attendance among rural, urban, and suburban students. A critical mass of citizens with education and training beyond high school is a necessary requisite for the United States to be prosperous in the global economy of the 21<sup>st</sup> century. Improving postsecondary education attendance rates for all

American students, regardless of race, ethnicity, class, or place, will facilitate this challenging objective.

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