FLEEING THE NEST OR STAYING CLOSE? HOW PERCEPTIONS OF FAMILY AND
PLACE SHAPE THE POSTSECONDARY ENROLLMENT OF RURAL MEN AND WOMEN

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ABSTRACT

Charlotte Alice Agger: Fleeing the Nest or Staying Close? How Perceptions of Family and Place
Shape the Postsecondary Enrollment of Rural Men and Women
(Under the direction of Judith Meece)

Despite reporting high educational aspirations, rural youth continue to exhibit lower college

enrollment and completion rates than their urban and suburban and peers (Byun, Meece, & Irvin,

2012b; Meece et al., 2013, 2014; Snyder & Dillow, 2010). For these individuals, low educational

attainment can result in financial, developmental, and health-related consequences in adulthood

(Abel & Deitz, 2014; Baum, Ma, & Payea, 2013). Therefore, in an effort to understand the

influences that drive postsecondary enrollment, and with the aim of improving educational and

developmental outcomes, the focus of this dissertation is upon the family and residential factors that

shape the college enrollment of rural youth.

Data used for this research were sourced from two nationwide studies; the *Rural High*

School Aspirations Study and the Spencer Foundation *Fulfilling Dreams Follow-up Study.* These

data (N =3,915; 51.9% female, 68.4% White) were used to examine how familial proximal

processes directly and indirectly shape the postsecondary enrollment of rural adolescents. Based on

a theoretically-informed conceptual model, two mediation models and two moderated mediation

models were tested within a path analytic framework. Educational aspirations and academic

achievement were proposed as mediators of the relations between students' perceptions of family

and place and postsecondary enrollment. Gender was hypothesized as moderating all pathways.

Consistent with a bioecological model of human development (Bronfenbrenner, 1979), results

provided evidence for adolescents' connections to family (e.g., family responsibility) and place (e.g., positive perceptions of job opportunities), both directly and indirectly (via educational aspirations and academic achievement), as predictors of postsecondary enrollment. Multiple group analyses showed that both mediation models exhibited a better fit when gender was not constrained to be equal across model parameters. There was no evidence of moderated mediation, but one gender-moderated path—the direct path between parental respect and identification and postsecondary enrollment—was conclusive. Results highlight the importance of family and place in the postsecondary trajectories of rural adolescents, as rural students seem to be adjusting their educational aspirations and academic achievement based upon their perceptions of family and place. Further, results fall in line with previous literature (Carr & Kefalas, 2009; Petrin, Schafft, & Meece, 2014), and support a possible "leavers" verses "stayers" dichotomy, where rural girls are more likely to leave the nest to pursue postsecondary education and rural boys are more likely to stay close to their home community.

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LIST OF ABBREVIATIONS AND SYMBOLS

BC	Bias-corrected
CCD	Common Core of Data
CFA	Confirmatory factor analysis
CI	Confidence interval
d	Cohen's measure of sample effect size for comparing two sample means
df	Degrees of freedom
EFA	Exploratory factor analysis
F	F distribution
FIML	Full information maximum likelihood
HLM	Hierarchical linear model(ing)
ICC	Intraclass correlation
M	Mean
MANOVA	Multivariate analysis of variance
MAR	Missing at random
MCAR	Missing completely at random
MGA	Multiple group analysis
MNAR	Missing not completely at random
N/n	Number of cases (total/in a subsample)
NCES	National Center for Education Statistics
ns	Not statistically significant
NSC	National Student Clearinghouse
NRCRES	The National Research Center on Rural Education Support

p	P-value
PSU	Primary Sampling Unit
r	Pearson product-moment correlation coefficient
R^2	Variance explained
RHSA	*Rural High School Aspirations Study*
RHSA-F	The Spencer Foundation *Fulfilling Dreams Follow-up Study*
SD	Standard deviation
SDIRP	Social Development and Intervention Research Program
SE	Standard error
SEM	Structural equation modeling
SSU	Secondary Sampling Units
TIGER	Topographically Integrated and Geographically Encoded Referencing system
WLSMV	Weighted least squares multivariate estimation
±	Plus or minus
α	Cronbach's alpha
π	Pi
ρ	Rho, intraclass correlation coefficient
τ	Tau, higher level variances and covariances (HLM notation)
$\Delta\chi^2$	Chi-square difference test
χ^2	Chi-squared
z	A standardized score; the value of a statistic divided by its standard error

CHAPTER 1: INTRODUCTION

There is no question that all students are deserving of equal educational opportunities. However, despite high educational aspirations, rural youth continue to exhibit lower college enrollment and completion rates when compared with their suburban and urban peers (Byun, Meece, & Irvin, 2012b; Meece et al., 2013, 2014; Snyder & Dillow, 2010). Failing to earn a postsecondary degree creates serious financial and developmental consequences for rural adolescents. Adults holding four-year college degrees earn 98% more per hour on average than their non-degree holding counterparts, and failing to obtain a college degree in today's society reduces lifetime earnings by ~$500,000 (Leonhardt, 2014; Autor, 2014). Aside from increased income, four-year college degrees often allow for secure and flexible jobs, more time spent with family, and health benefits (Baum, Ma, & Payea, 2013). Despite these positive implications, only 42% of young adults in the U.S. currently hold a four-year college degree (Organisation for Economic Co-operation and Development [OECD], 2012). The OECD ranks the U.S. 14th among 37 nations for its population of 25-34 year-olds holding college degrees.

Given the importance of a college degree for well-being—and the relatively low ranking of the U.S. in global education standings—President Barack Obama introduced *The American Graduation Initiative* in 2009 to encourage widespread access to college. This initiative, which expands access to education for students across the nation, emphasizes support for *rural students*—yet rural adolescents receive scant attention in postsecondary education literature when compared with their urban and suburban

counterparts. In an effort to understand the influences that drive postsecondary enrollment, and with the aim of improving educational outcomes and longitudinal prospects, the focus of this study is family and residential factors that shape the college enrollment of rural youth.

This dissertation is an extension of the current body of work on the postsecondary attainment of rural youth. Its investigation is centered upon critical family-related factors, particularly, proximal processes that impact pathways to college. Using a large national dataset collected by the *Rural High School Aspirations Study* (*RHSA*) and the Spencer Foundation *Fulfilling Dreams Follow-up Study* (*RHSA-F*), I explore how students' perceptions of family-related variables shape post-high school trajectories. I draw upon a bioecological model of human development in conceptualizing my dissertation, and emphasize the proximal processes within families that contribute to the educational outcomes of adolescents.

This introductory chapter will provide an overview of recent shifts in educational aspirations and attainment by rural youth over several decades. I present my rationale for concentrating on rural youth and go on to discuss current trends in educational pathways, highlighting the critical role that families play. The guiding theoretical framework will be introduced, and the chapter will conclude with a statement of the problem, research purpose, and contributions made by the study.

Focus on Rural Youth

People living in rural communities make up a sizeable portion of the population; rural areas contain more than 60 million people, or 15-30% of the nation's populace (Brown & Schafft, 2011; U.S. Census Bureau, 2010). National reports indicate that over

10 million students attend rural schools, comprising over 21% of enrolled K-12 students (Provasnik et al., 2007). Providing access to higher education for these students can be challenging (Brown & Schafft, 2011), and the continued disparities in postsecondary education between rural and nonrural youth is an equity issue. Uncovering predictors of postsecondary education enrollment and attainment will aid parents, practitioners, and policymakers in improving the educational outcomes of rural children.

Generally speaking, educational research draws upon definitions informed by the Department of Education, National Center for Education Statistics (NCES), and the U.S. Census Bureau. The Department of Education uses locale codes that fall into categories of *city*, *suburban*, *town* and *rural*. A *rural* designation encompasses places that are fringe, distant, or geographically remote from an urbanized center or urban cluster. In the current study, I classify students as *rural youth* if they are enrolled in schools in particular geographical areas classified as *rural* according to NCES. As described in next section, students attending rural schools face significant challenges.

Educational Attainment of Rural Youth

Comparative studies identify a number of inequities in the educational attainment or rural youth when compared to students who attend urban and suburban schools. Research in the 1980s and 1990s documented disparities in high school graduation rates (e.g., Cobb, McIntire, & Pratt, 1989; Haller & Virkler, 1993; Rojewski, 1999). During these decades research also showed discrepancies in educational aspirations, with rural youth reporting lower aspirations to continue their education beyond high school, compared to suburban and urban youth. Since the 1990s, there has been a significant increase in the number of rural students who aspire to a postsecondary education (Meece

et al., 2013; Snyder & Dillow, 2010). For example, Meece and colleagues (2013) reported 51% of contemporary rural students plan to attain a four-year college degree. A shift in perceived gender roles also seems to be impacting the number of rural students seeking higher education, with adolescent women having significantly higher educational and occupational aspirations than adolescent rural men (Byun et al. 2012a; Elder & Conger, 2000; Meece et al., 2013; Lapan, Tucker, Kim, & Kosciulek, 2003). However, despite these higher aspirations, college enrollment and completion rates are relatively low for rural students when compared to rates for young adults across the nation (Byun et al., 2012b).

There are a number of possible explanations for these educational discrepancies. On a broad level, poverty and geographic isolation have been implicated as potential hindrances to educational attainment among rural youth. Rates of childhood poverty in rural areas have remained high since the 1960s, with numbers peaking in 2012 (U.S. Department of Agriculture [USDA], 2015). It is well established that living in poverty is associated with poorer educational outcomes throughout the course of one's schooling (Johnson & Strange, 2007; McLoyd, 1998; Vernon-Feagans et al., 2010). In addition, the geographic isolation of many rural communities limits the educational resources that both families and schools are able to provide for rural youth. Living at a distance from an urban center can impact families' access to educational resources, such as enrichment activities, libraries, and museums (Nadel & Sagawa, 2002). Schools also play a role in educational discrepancies between rural and nonrural youth. Many rural schools are limited in terms of college counseling programs and Advanced Placement classes, and may have trouble attracting high-quality teachers (Griffin, Hutchins, & Meece, 2010;

Hutchins, Meece, Byun, & Farmer, 2012; Irvin, Meece, Byun, Farmer, & Hutchins, 2011; Lapan, 2004; Provasnik et al., 2007).

The consequences of poverty, locale, and limited resources on the education of rural youth are well documented; however, the role that rural family life plays in students' postsecondary enrollment remains inadequately explored. While recent studies have found that family characteristics play a role in shaping rural students' educational aspirations and their graduation status (Byun, Irvin, & Meece, 2012c; Dyk & Wilson, 1999; Johnson et al., 2005; Meece et al., 2014), none of these studies specifically focused on families. Rather, family life has been included among a range of ecological factors believed to influence the educational aspirations and attainment of rural youth. Existing research on rural youth is also limited because it is outdated and virtually all investigations have been confined to individual geographic areas (e.g., one state). Further, it is unclear how ongoing social and economic changes in rural communities have affected family influences on developmental outcomes.

Economic and social changes in rural communities over the last several decades have likely influenced the dynamics of rural families. With a move away from agricultural, mining, fishing, logging, and extraction industries to more service-oriented work, many rural parents have either lost their jobs or transitioned to working non-standard hours and/or more hours with less pay (Gibbs, Kusmin, & Cromartie, 2005; Mather & Scopilitti, 2004; Vernon-Feagans et al., 2010). These economic changes have likely influenced educational outcomes across development, because they affect the amount of time parents can spend with their children and the education-related resources they are able to provide when molding adolescents' educational aspirations. Family

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income also seems to play a substantial role in the educational progress of rural youth, and poverty rates are much higher for students living in rural areas compared to nonrural areas (Lichter & Johnson, 2007; O'Hare & Savage, 2006). However, it is unclear exactly how contemporary families are preparing their children for the transition to adulthood and what role gender plays in the connections among families, educational aspirations, and postsecondary schooling. Previous research has highlighted the importance of family processes, such as parental educational expectations, youths' perceptions of their attachments to families, and connections to rural life. It is important to revisit this research to determine how these family processes are operating within a contemporary sample of rural youth.

Role of Family in the Educational Attainment of Rural Youth

Both family structure and the influence of family processes shape the educational pathways of rural youth (Byun et al., 2012c; Dyk & Wilson, 1999; Johnson et al., 2005; Meece et al., 2013, 2014). Previous research on parental influence and rural youth has shown that low educational expectations, low parental educational attainment, and impoverished socioeconomic conditions are implicated in the outcome of rural students attending college at lower rates than students raised in suburban areas (Byun et al., 2012b; Provasnik et al., 2007; Roscigno & Crowley, 2001; Roscigno, Tomaskovic-Devey, & Crowley, 2006). Numerous studies have shown that these family-related influences (i.e., parental income, parents' level of education, and parental educational expectations) predict students' college enrollment, persistence, and completion (Bozick, 2007; Byun et al., 2012c; Cabrera & La Nasa, 2001; Goldrick-Rab, 2006). However, the literature is incomprehensive with respect to contemporary rural students, especially

regarding how family processes distinct to rural communities (e.g., perceptions of family responsibility and local job opportunities) differentially impact the postsecondary outcomes of adolescent men and women.

In the current dissertation, educational aspirations and academic achievement are proposed as mediators of family influences on college outcomes. Research findings from education, psychology, and sociology have documented relations between family characteristics and processes and educational aspirations (Byun et al., 2012c; Dyk & Wilson, 1999; Meece et al., 2013, 2014) and between family characteristics and processes and academic achievement (Bleeker & Jacobs, 2004; Dyk & Wilson, 1999; Eccles & Fredericks, 2005). Research has also documented links between educational aspirations and college outcomes (Beal & Crockett, 2010, Mello, 2008; Ou & Reynolds, 2008; Wigfield & Eccles, 2002) and academic achievement in college outcomes (Byun et al., 2012a, b). The current study connects these previous findings in building a conceptual model featuring educational aspirations and academic achievement as mediators between perceptions of family and place and subsequent postsecondary enrollment.

Statement of the Problem

Although rural youth report high postsecondary aspirations, their college enrollment and completion rates are relatively low when compared to rates for metropolitan youth (Byun et al., 2012b). However, despite the large contingent of students in rural areas, existing research on the educational choices and trajectories of rural youth is limited; few studies include large-scale, diverse, and contemporary samples of rural communities. This oversight makes it hard to form generalizable conclusions

about the schooling experiences of rural youth, particularly regarding the factors that predict postsecondary success.

Purpose of Study

The purpose of the current study is to explore how the family and residential perceptions of rural men and women relate to their educational aspirations, academic achievement, and enrollment in postsecondary education. Where previous work on the educational attainment of rural youth has focused on school-related and family structural features, in the current study, I investigate family processes that contribute to rural youths' postsecondary enrollment (Griffin et al., 2011; Irvin et al., 2011; Meece et al., 2013, 2014). Specifically, I explore how perceptions of family responsibility, family respect and identification, parental expectations, rural identity, and perceptions of local job opportunities influence rural youths' educational outcomes. In addition, I examine the moderating role of gender in pathways to postsecondary enrollment. My decision to highlight gender stems from reflections in previous research suggesting that rural men and women may have different orientations towards rural life (Elder, Hagell, Rudkin, & Conger, 1994). These orientations differentially affect the intentions of rural men and women to leave their regions of origin (Conger & Elder, 1994), and shape their decisions about postsecondary education (Chenoweth & Galliher, 2004; Hektner, 1995; Meece et al., 2014).

My dissertation is largely informed by a bioecological theory of human development (Bronfenbrenner 1979, 1989). According to this approach, a developing person lies at the center of multiple ecological layers including the family, school, community, society, and their specific historical period. Interacting with these ecological

strata are distal (context-related) and proximal (relationship-related) layers that influence the developing person. I adopt this theoretical lens for examining how layered contexts of the rural ecology exert influence over rural youths' developmental outcomes. That is, this study focuses specifically on the proximal processes that are distinct to rural families in shaping the postsecondary educational outcomes of rural youth. I also draw on social capital theory (Coleman, 1988). Sociological research has drawn connections between both structural and process attributes of the family and the educational achievement, aspirations, and postsecondary enrollment of rural and nonrural youth (Byun et al., 2012c; Dyk & Wilson, 1999; Israel, Beaulieu, & Hartless, 2001; Kim & Schneider, 2005; Sun, 1999). Building on this work, I investigate how family proximal processes particular to rural locales predict postsecondary outcomes of rural men and women.

Using these two frameworks, I analyze mediation effects by examining how educational aspirations and academic achievement mediate the relations between family-related variables and postsecondary enrollment. I also test for moderating effects of gender in exploring whether gender moderates the proposed meditated pathways among the exogenous family variables, academic achievement, educational aspirations, and postsecondary enrollment (Elder et al., 1994; Johnson, Elder, & Stern, 2005; Petrin, Schafft, & Meece, 2014).

Contributions of the Study

The aim of this dissertation is to contribute to existing literature in four ways. First, I seek to outline the direct and indirect ways that perceptions of family differentially influence the postsecondary enrollment of men and women. Currently, there are few studies that explore the specific ways that family processes influence rural youths'

outcomes, and even fewer that take into account their impact on postsecondary outcomes. More commonly explored in the literature are demographic and structural features of rural families that influence child outcomes (Vernon-Feagans et al., 2010).

Secondly, I will bring more recent, and relevant, data into the discussion. Until this point, research on rural youth has used dated and geographically-confined samples of rural youth. Using an up-to-date sample of rural students is critical for disentangling the drastic effects of contemporary economic events and social change, which are likely to have influenced the number of rural men and women aspiring towards postsecondary education (Byun et al., 2012a; Meece et al., 2013; Schneider & Stevenson, 1999). A third contribution of this dissertation is my focus on gender in investigating whether family processes differentially influence postsecondary behaviors. Lastly, this study makes use of advanced statistical techniques not often employed in the study of rural youth. I use a path analytic framework to test several mediation and moderated mediation models, which will allow for an advanced analysis of the ways that educational aspirations and academic achievement mediate the relations between family variables and postsecondary enrollment among rural men and women.

Summary

In summary, this study relies upon nationwide data from the *Rural High School Aspirations Study* and the Spencer Foundation *Fulfilling Dreams Follow-up Study* to investigate how family influences shape the postsecondary enrollment of contemporary rural men and women. This study is grounded in a bioecological model of human development (Bronfenbrenner, 1979) and also draws upon social capital theory (Coleman, 1988) in exploring how family processes play a role in development. Findings

from this dissertation study will add to our understanding of the interaction between familial proximal processes and rural youths' educational aspirations, academic achievement, and postsecondary outcomes, and how these relations may be moderated by gender. Ultimately, study findings will inform rural schools, communities, and policymakers about the critical role that families play in the long-term educational success of rural youth.

CHAPTER 2: LITERATURE REVIEW

According to the National Center of Educational Statistics (NCES), about one-third of all public schools in the United States are located in rural areas (NCES, 2013), enrolling approximately 12 million students (Johnson, 2012). Despite making up a large proportion of U.S. students, those who attend rural schools are vastly understudied, especially in the postsecondary literature (Arnold, Newman, Gaddy, & Dean, 2005; McGrath, Swisher, Elder, & Conger, 2001). In light of significant economic, social, and demographic changes over the last several decades, and due to an increase in demand for workers with postsecondary degrees, there is a need for more research on rural students' pathways leading to, and through, college.

Arnold et al. (2005), who acknowledge that existing work on rural education is limited, have proposed nine research topics that should be given priority for developing an understanding of education in rural America. Among these topics were *community and parental aspirations and expectations*, with a call for parental aspirations and expectations to be more fully explored. This study seeks to answer this call by focusing on families as a context for rural youth development during a time of significant economic and social change in the U.S. and in rural communities in particular. I begin the chapter by providing a rationale for studying rural youth, discuss trends in educational aspirations and attainment among rural men and women, and outline how variations in educational attainment are approached across disciplines. Next, I present the bioecological model of human development, the guiding theoretical framework for my

dissertation study, and discuss its key components. The chapter concludes with a justification for reexamining the educational attainment of rural youth, and a presentation of the research questions that guide my dissertation study.

Why Study Rural Youth?

It is critical to study rural youth for several reasons: (a) rural youth comprise a large and diverse proportion of students attending schools in the U.S.; (b) rural areas contain distinctive promotive and restrictive characteristics that shape the educational aspirations and behaviors of rural students; and (c) current educational research lacks contemporary, large-scale, diverse samples of rural students, making it hard to form generalizable conclusions about these students.

Rural people represent a large and growing portion of the population (Johnson & Strange, 2007). Although there has been a rapid rise in urbanization in the United States, a significant and sometimes overlooked 19.3% of the population also lives in rural areas (U.S. Census Bureau, 2010). This represents approximately 60 million adults, adolescents, and children who live, work, and attend school in these rural locales.

In addition to population growth, the first decade of the 21st century saw rural areas experiencing new patterns of demographic diversity. In particular, the proportion of racial and ethnic minorities increased, with these groups accounting for 83% of the total growth between 2000 and 2010 (Johnson, 2012). New migration patterns also contributed to the spread of Latino families to Midwest and Southeast regions of the U.S. (Johnson, 2012). Migration has also led to changes in the demographic composition of rural communities. The out-migration of many talented youths and the in-migration of retirement-age adults has significantly aged overall rural populations (Brown & Schafft,

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2011). As a result of these demographic changes, rural communities today have higher

proportions of immigrants, elderly, and poor people (Donato, Tolbert, Nucci, & Kawan,

2007; Johnson, 2012; Lichter, Johnson, & McLaughlin, 1994), shaping the proximal and

distal contexts in which rural students develop.

Regarding the education of rural youth, over 10 million students attended rural

schools in 2004, making up over 21% of enrolled K-12 students (Provasnik et al., 2007).

Rural areas contain 55% of the nation's school districts and 31% of its schools (Provasnik

et al., 2007). By comparison, schools in urban areas (6% of school districts) educate

about 30% of students nationwide.

Locale	Districts	Schools	Students
City	5.9	25.7	30.4
Suburban	19.9	27.8	35.4
Town	18.3	15.2	12.9
Rural	55.9	31.3	21.3
Fringe	11.1	10.6	11.0
Distant	21.8	11.5	7.1
Remote	23.0	9.2	3.2
Total	100.0	100.0	100.0

Cities refer to urbanized areas (densely settled areas with 50,000 or more people), and inside a principal city. Suburban refers to territory outside a principal city, but inside an urbanized area. Town refers to territory inside an urban cluster (densely settled areas with a population of 2,500–49,999). Rural refers to all territory outside urbanized areas and urban clusters. Fringe refers to within 5 miles of an urbanized area or within 2.5 miles of an urban cluster. Distant refers to rural territory that is between 5 and 25 miles distant from an urbanized area or between 2.5 and 10 miles from an urban cluster. Remote refers to rural territory more than 25 miles from an urbanized area and more than 10 miles from an urban cluster. *Source:* Provasnik et al. 2007.

Figure 1. Percent Distribution of School by Locale, Provasnik et al. (2007, p. 8)

The distinct conditions in rural areas, which are largely overlooked in extant

research, have the potential to both promote and hinder rural students' educational

aspirations and postsecondary progress (Farmer et al., 2006a; Farmer et al., 2006b;

Johnson & Strange, 2007; Roscigno & Crowley, 2001). Concerning hindering forces,

poverty and geographic isolation are two of the most salient challenges for rural youth.

Since the 1960s, rates of poverty have remained higher for nonmetropolitan areas than for

metropolitan areas, and these trends hold for childhood poverty. Rural children are more likely to experience severe poverty, sustained over longer periods of time, than their urban counterparts (O'Hare, 2009). Rates of childhood poverty in nonmetropolitan areas reached an all-time high in 2012, with the nonmetropolitan poverty rate hitting 26.2%, more than four percentage points higher than the rate for metropolitan children (USDA, 2015). Poverty has been implicated in stunting the educational progress of youth across stages of education, and geographic isolation can affect access to important community resources such as libraries, early childhood and youth development programs, and extracurricular activities (Nadel & Sagawa, 2002).

Rural areas also contain important assets that contribute to rural youths' educational pathways. The strong ties between families, communities, and schools positively influence rural youths' educational aspirations (Byun et al., 2012a; Byun et al., 2012c; Crockett, Shanahan, & Jackson-Newsom, 2000; Johnson et al., 2005). In addition, rural areas are characterized by deep social connections within families and communities. Many members of rural communities share responsibility for raising children and supporting one another (Dyk & Wilson, 1999; Elder & Conger, 2000; Rojewski, 1999). As a result of growing up under these conditions, many rural youths feel strong integration and thus exhibit strong feelings of attachment and social responsibility (Crockett et al., 2000). For some rural youth, this may translate into pursuing education elsewhere and subsequently returning to their home community to give back after graduation (Petrin et al., 2014).

Another factor motivating the study of rural youth is that, currently, rural students are vastly underrepresented in the literature. Despite the large contingent of students

attending schools in rural areas, there are few studies that examine the schooling

trajectories and experiences of these students. Research on student motivation,

achievement, and postsecondary experiences has been predominantly conducted in urban

and suburban areas where researchers are in closer proximity to schools. Through this

study, I address this gap in educational research and provide more information about the

role of the family in the postsecondary educational attainment of rural youth.

Trends in the Educational Aspirations and Attainment of Rural Men and Women

Using national datasets, researchers have found that students from rural high

schools are less likely to attend postsecondary institutions than their urban and suburban

peers (Byun, Meece, & Irvin, 2012c; Gibbs, 1998; Hu, 2003). Only 17.5% of rural adults

hold college degrees, compared with 31% of urban adults (USDA Economic Research

Service, 2012). Furthermore, rural youths are more likely to enroll in less selective

colleges, delay enrollment, and be intermittently enrolled in college (Byun, Irvin, &

Meece, 2015).

Nevertheless, recent evidence indicates that a large majority of rural youth aspire

to obtain a postsecondary degree (Byun et al., 2012a; Hutchins et al., 2012; Howley,

2006; Meece et al., 2013). The high educational aspirations of rural youth and their lower

postsecondary attainment rates signal a misalignment (Hwang, Agger, Byun & Meece, in

preparation; Meece et al., 2013) and reflect overarching trends documented by Schneider

and Stevenson (1999) wherein young people are increasingly ambitious about their

educational pursuits while remaining overwhelmingly underprepared.

Students' Educational Aspirations and Expectations

It is important to make a distinction between educational aspirations and

educational expectations. Scholars have posited that there is a difference between what individuals aspire to and what they actually expect will happen; that is, what the most likely outcome will be (Gottfredson, 1981; Markus & Nurius, 1986). Beal and Crockett (2010) concluded that rural adolescents' aspirations and expectations had distinct effects on educational attainment. The current study focuses on educational aspirations for two reasons. First, the goal of this dissertation is to extend existing literature, which has focused on educational aspirations (Byun et al., 2012a; Hektner, 1995; Howley, 2006; Irvin et al., 2011; Meece et al., 2013, 2014; Rojewski, 1999). And second, I seek to examine how students' hopes and dreams for college, outside the boundaries of practicality, are shaped by perceptions of family and place.

The academic aspirations of students may be conceptualized according to various theoretical orientations. Drawing on the research of Meece and colleagues (2013, 2014), I conceptualize educational aspirations from a motivation perspective. This motivation perspective, rooted in social cognitive theory, posits that student aspirations as cognitive representations of a goal that organize and direct behaviors (Bandura, 1986; Nurmi, 2004). Aspirations can include educational or occupational hopes or ambitions (Meece et al., 2014) and are important to study for several reasons. First, aspirations organize and direct behaviors in which adolescents engage and the choices they make (Bandura, 1986; Nurmi, 2004). As adolescents develop, they are able to think about their aspirations in more abstract ways and reflect upon their identities (Eccles et al., 2003) in relation to future goals and expectations.

Secondly, aspirations and future-oriented beliefs are important to study because they predict educational (Ou & Reynolds, 2008) and occupational attainment (Armstrong

& Crombie, 2000) and successful transitions into early adulthood (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Beal & Crockett, 2010; Schneider & Stevenson, 1999). Specifically, high school aspirations can predict college enrollment behavior (Armstrong & Crombie, 2000; Bandura et al., 2001; Beal & Crockett, 2010; Nagy, Trautwein, Baumert, Köller, & Garrett, 2006; Ou & Reynolds, 2008; Schneider & Stevenson, 1999). Students who hold high educational aspirations, for example, aspirations to study genetics, are likely to plan and organize their actions and behaviors around these goals and follow-up on these aspirations through educational and occupational choices.

When studying the educational aspirations of rural students, the rural context is an essential consideration. Howley (2006) notes that among the research on rural students' educational aspirations, there is a lack of work that considers the significance of family and place. These factors are essential when studying rural youth, as perceptions of family and place are critical to the aspirations of rural adolescents. Previous research suggests that rural adolescents may lower their educational aspirations to preserve their connections to their family and community (Elder et al., 1996a; Hektner, 1995; Howley, 2006); however, it is not clear if these relations persist in contemporary samples of rural youth.

Gender and Educational Aspirations of Rural Youth

In keeping with nationwide trends, there are apparent gender-related discrepancies in reported levels of educational and occupational aspirations among rural youth. Recent research has shown that young rural women have significantly higher educational and occupational aspirations than young men (Byun et al. 2012a; Elder & Conger, 2000; Meece et al., 2013, 2014; Lapan et al., 2003). However, Chenoweth and Galliher (2004)

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report that girls and boys arrive at their aspirations via different pathways. Information from 242 high school students revealed that family and peer contexts were more important for predicting college aspirations for boys than girls. For girls, they found that academic preparation and obstacles to attending college were more salient. Educational aspirations are highly predictive of subsequent educational attainment of students (Armstrong & Crombie, 2000; Bandura et al., 2001; Beal & Crockett, 2010; Ou & Reynolds, 2008; Schneider & Stevenson, 1999).

Gender and Educational Attainment of Rural Youth

There are very few studies on the college enrollment and attainment of rural youth that underscore gender differences. One study that examined predictors of bachelor's degree attainment among rural youth did not find gender to be a significant predictor (Byun et al., 2012a). Conversely, I expect rural samples to reflect the national trends documenting higher female enrollment in college (Buchmann & DiPrete, 2006) based on rural female students reporting significantly higher educational aspirations than their male peers (Byun et al. 2012a; Elder & Conger, 2000; Meece et al., 2013, 2014; Lapan et al., 2003).

Explorations of Rural Youths' Educational Attainment across Disciplines

Researchers from the fields of education, sociology, and psychology have attempted to explain variations in the schooling patterns of rural youth through different theoretical lenses. The following section will present research on the educational attainment of rural youth from educational, sociological, and psychological perspectives and then go on to discuss the limitations associated with this work.

In the current study, educational attainment is conceptualized as postsecondary enrollment—whether a student has ever enrolled in a postsecondary institution. This outcome variable was chosen because it provides information regarding whether or not rural students enroll in college. More broadly, college enrollment was chosen because enrollment is a critical step along the way to degree conferral.

Research stemming from the field of education has focused on the role of schools (e.g., postsecondary transition programs) and school contexts in the educational attainment of rural youth. This research has found that school characteristics and resources, alongside schooling experiences, affect the educational aspirations and attainment of rural youth (Byun et al., 2012c; Irvin et al., 2011). For example, Irvin et al. (2011) found that college preparatory program attendance, postsecondary preparation activities, and academic self-concept were all associated with academic achievement and educational aspirations for youth attending high and low poverty schools in rural areas. Similarly, Byun et al. (2012c) found that the rigor of the high school curriculum predicted bachelor's degree completion among rural youth.

Education studies have also explored constraints and opportunities associated with attending rural schools. For example, some rural schools do not offer high-quality educational resources, such as college and career planning resources, college counseling, and Advanced Placement classes (Griffin et al., 2010; Irvin et al., 2011). In addition, the intensity of the curriculum seems to be lower in rural schools compared with urban and suburban schools (Byun et al., 2012a). Rural schools also have more trouble recruiting teachers who are qualified to teach advanced courses (Hannum, Irvin, Banks, & Farmer, 2009). Research indicates that this lack of resources could contribute to the discrepancy

between the educational aspirations of rural and nonrural youth (Rojewski, 1999) and detract from postsecondary attainment (Byun et al., 2012a; Hutchins et al., 2012; Lapan, 2004). Despite these constraints, rural schools may also provide protective benefits for youth development, especially for students living in high poverty areas (Byun et al. 2012a; Irvin et al., 2011). Rural schools are classified as having high cohesiveness, positive teacher-student relations, small class and school sizes, and low rates of school violence (Schafft, Alter, & Bridger, 2006; Trejos-Castillo, Vazsonyi, & Jenkins, 2008). Although this body of educational research has provided useful insights about how rural schools both promote and hinder students' aspirations and achievement, it does not fully examine the role of families in the postsecondary outcomes of rural youth.

Sociological research (e.g., Crockett et al., 2000) has used social capital theory as a framework for analysis in investigating how rural, ecological context shapes rural youths' developmental and educational pathways. Social capital is characterized as having both structural and process components, along with the ability to operate across different levels (e.g., family and school) (Israel & Beaulieu, 2004; Smith, Beaulieu, & Seraphine, 1995; see Dika & Singh, 2002 for a review). Included among the process components of social capital are relations among people. Coleman (1988) theorized that these relations fall into three categories: (a) unspoken obligations and expectations among family and community members; (b) channels of information among persons; and (c) norms between the members of the community for monitoring and enforcing positive and negative behaviors and actions. These process components are shaped by structural components, such as family and school size (Coleman, 1988; Smith et al., 1995). Family size can influence the channels of information within the family and the amount of

information a child receives about education. In addition to process and structural components, social capital operates across family and school contexts. Structural and process attributes of family social capital influence the educational achievement, educational and residential aspirations, and postsecondary enrollment of rural and nonrural youth (Byun et al., 2012c; Dyk & Wilson, 1999; Israel et al., 2001; Johnson et al., 2005; Kim & Schneider, 2005; Perna & Titus, 2005; Sun, 1999). In addition, school social capital predicts the educational aspirations of rural youth (Byun et al., 2012c). Social capital can play a pivotal role for youth growing up under challenging circumstances, buffering against living in high-poverty rural locations (Elder & Conger, 2000; Lichter, Cornwell, & Eggebeen, 1993).

Research on the educational attainment of rural youth originating from sociological perspectives is limited. Aside from recent work by Byun and colleagues (2012a, b, c), this research literature draws upon dated samples and does not consider significant changes in gender norms or economic restructuring. Another limitation of prior sociological research is the use of objective measures of family influence, such as family structure (single- vs. two-parent families), number of siblings, parental education levels, and family income. This view can promote an emphasis on deficits (e.g., rural values that do not stress the importance of education) in examining the education of rural youth (Howley, 2006). Along with objective measures, it is also critical to consider youths' perceptions of their family and community.

Research stemming from psychological perspectives emphasizes the role of educational aspirations and motivation in the schooling of rural youth. Meece and colleagues (2013, 2014) studied the individual, family, and school-related predictors of

educational and occupational aspirations of rural youth. Hardré, Sullivan, and Crowson (2009) and Meece et al. (2013, 2014) looked at the importance of self-competence and school valuing in students' school completion and postsecondary plans. While these studies do include important motivational variables, much of the psychological work on rural youth does not tie in educational aspirations and motivation and other perceptions with family predictors and postsecondary behaviors.

Theoretical Framework: The Bioecological Model

The current study is informed by the bioecological model of human development put forth by Bronfenbrenner and colleagues (Bronfenbrenner 1979, 1989; Bronfenbrenner & Evans, 2000). This theory posits that human development involves a dynamic relationship between the developing individual, the ongoing changes in his or her immediate setting, and the ways that the interaction of immediate and broad settings affects the developmental process. According to this theory, the developing child lies at the center of multiple ecological layers including family, school, community, society, and a specific historical period. Both distal, context-related and proximal, relationship-related layers influence the developing child. Bronfenbrenner (1979) conceptualized these successive layers as the microsystem, mesosystem, exosystem, and macrosystem, where each layer represents a new level of the ecological structure made up of interconnections, which either directly or indirectly affect the development of the child. In addition to these layers, the chronosystem is embedded across all systemic levels and represents the influence of the sociohistorical context on development.

The Role of the Microsystem: Family as a Developmental Context for Rural Youths'

Educational Attainment

While distal layers such as the community and societal context play an integral

role in the development of rural youth, Bronfenbrenner and colleagues noted that

proximal processes, such as the relationship between a parent and child, are the most

critical in shaping child development (Bronfenbrenner & Evans, 2000; Vernon-Feagans

et al., 2010). Throughout my dissertation, I focus specifically on the role of these

consequential proximal processes in the familial microsystem and how they predict

educational outcomes in rural youth.

Microsystem. Bronfenbrenner (1994) posits that human development must be

understood through an examination of the whole ecological system surrounding the

developing person. This system includes five organized subsystems starting with the

micro- through the meso-, exo-, macro- and chronosystems. The microsystem

encompasses a collection of activities, social roles, and relations that directly influence

the developing individual. These activities, roles, and relations occur in environments that

contain particular physical, social, and symbolic aspects that affect engagement in a

context, such as family and school environments, or a peer group.

Within the immediate environment of the microsystem, proximal processes work

to promote development. Proximal processes are the so-called "engines" of development

and involve interaction with persons, objects, and symbols (Bronfenbrenner, 1995).

Bronfenbrenner and Morris (1998) state,

[H]uman development takes place through processes of progressively more
complex reciprocal interaction between an active, evolving biopsychological human
organism and the persons, objects, and symbols in its immediate external environment.
To be effective, the interaction must occur on a fairly regular basis over extended periods

of *time*. Such enduring forms of interaction in the immediate environment are referred to as *proximal processes*. (p. 996).

The ways that proximal processes produce and sustain development depend on the structure and features of the microsystem (Bronfenbrenner, 1994). In my dissertation, I focus on the proximal processes that involve persons, or *significant others,* as represented through family influences (Bronfenbrenner, 1995; Mead, 1934). Significant others, such as parents and siblings are significant because their belief systems shape the interactions between developing persons and their environments (Bronfenbrenner, 1995). For example, the value that a father places on education could affect a child's cognitive development through modeling the value of education and touting its power.

The study of proximal processes is also important because there are nuanced differences in the socialization patterns within rural and urban families. In general, rural families tend to be characterized as supportive and cohesive, where values such as family responsibility and commitment are emphasized (Burnell, 2003; Dyk & Wilson, 1999; Elder & Conger, 2000; Rojewski, 1999). Rural mothers tend to be more intrusive and directive compared to urban mothers (Bornstein et al., 2012). In addition, research on chores in rural and urban settings has revealed rural-urban differences in gender-related socialization patterns. White and Brinkerhoff (1981) studied the gender-typing of children's chores and compared children from farm, rural nonfarm and urban families. These researchers found that rural nonfarm families were most likely to assign chores based on gender, but farm families assigned chores regardless of gender.

Bronfenbrenner also emphasized the power of examining *person* characteristics (e.g., age, appearance, or gender) in guiding the course of development and the study of proximal processes (Bronfenbrenner, 1993, 1994, 1995; Bronfenbrenner & Morris,

1998). Referred to as *developmentally instigative characteristics*, Bronfenbrenner noted that it is important to assess how these personal attribute characteristics alter proximal processes. Bronfenbrenner (1993) posited four main types of developmentally instigative characteristics: (a) those that invite or inhibit environmental responses, (b) "selective responsivity," or how individuals react to and explore surroundings, (c) "structuring proclivities," or the processes by which individuals engage in increasingly complex activities, and (d) "directive beliefs," or how individuals regard their agency related to their environment (Bronfenbrenner, 1993). Although a number of instigative characteristics, such as age, race, and temperament, could be considered, my dissertation includes gender as a key personal characteristic that can differentiate and alter proximal processes operating within the family system. As noted earlier, there are significant gender differences in the educational aspirations and attainment of rural youth. In accordance with the bioecological model, this study examines how youth's perceptions of family and place are differentiated by gender, as well as the moderating influence of gender on relations between perceptions and postsecondary enrollment.

Applying the Bioecological Model to the Study of Rural Youth

Several researchers have applied Bronfenbrenner's bioecological model in studying children and adolescents in a rural setting (Chenoweth & Galliher, 2004; Crockett et al., 2000; Cunningham & Francois, 2016; Demi, Coleman-Jensen, & Snyder, 2010; Meece & colleagues, 2013, 2014; Vernon-Feagans et al., 2010). In their work, these researchers emphasized the influences of multiple ecologies such as family and community environments and the cultural milieu.

The family context in rural communities. There is limited empirical research on

rural family life (Crockett et al., 2000). Using a sample of Iowan farm families, Elder and

colleagues conducted some of the earliest work on families living in rural locales. These

researchers found that family relationships were highly interdependent because farm life

demanded an integrated approach, for example, contributing to the daily operation of the

farm (Elder & Conger, 1999). Similarly, King and Elder (1995) noted the emphasis on

intergenerational relationships in rural families. They found that extended families tended

to live close together, which led to elders playing a large role in the lives of their children

and their grandchildren. While some of these findings still hold true, a bevy of new

research on rural families has surfaced that outlines the importance of the family in rural

youths' postsecondary plans (e.g., Byun et al., 2012a, b, c; Hutchins et al., 2012). In the

next section, I present an overview of recent work on how structural and process features

of families play a role in the education of rural men and women. *Figure 2* illustrates the

structural and process features of families operating to shape postsecondary outcomes.
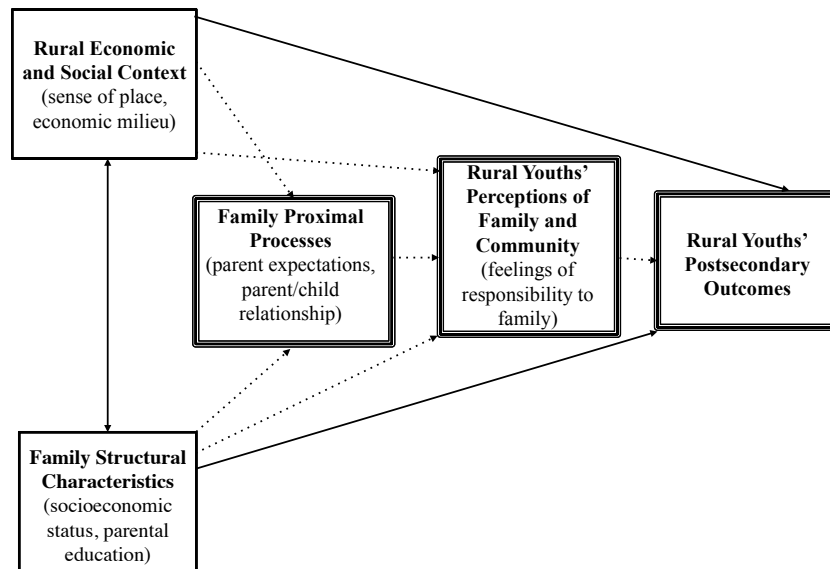
Figure 2. Structural and process features of families operating to shape postsecondary
outcomes, adapted and edited from Vernon-Feagans et al. (2010, p. 165)

Structural Features of Rural Families and Student Educational Attainment

Family composition. Research in the fields of psychology, education, sociology, and economics has shown that structural features of families play an important role in children's development, motivation, and achievement. Compared to urban areas, rural families are more likely to have two parents, and often, more likely to have at least one parent employed (Vernon-Feagans et al., 2010). In general, belonging to a two-parent household is associated with adaptive educational beliefs; students from two-parent families tend to report higher educational aspirations and attainment than youth from single-parent or other non-traditional family types (Byun et al., 2012a, b). Growing up in a two-parent family can also protect against the negative factors associated with being raised in a single-parent home. A recent trend in rural areas is the proliferation of children living with their cohabitating, unmarried parents. This type of family configuration is increasing more than any other family type over the past decade. Researchers argue that this trend may reflect increased economic vulnerability of some rural populations (O'Hare, Manning, Porter, & Lyons, 2009).

Although most rural children do live with two parents, single-parent families are increasingly prevalent, with rates reaching those typically found in urban locales (Dill, 1999). Single parents often have less time and energy to spend with their children, fewer financial resources to draw upon, and less time to participate in school activities (Kendig & Bianchi, 2008; Vernon-Feagans et al., 2010). These circumstances can result in fewer hours dedicated to developing children's motivation and engagement in academic domains (Schneider & Coleman, 1993). However, as Vernon-Feagans and colleagues note (2010), there is not a strong body of literature focused on the role of family structure

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in children's transition to early schooling. Similarly, there is not a strong research base for the role of families in shaping rural youths' transitions to college.

Research suggests that family composition could differentially shape the developmental outcomes of young men and women. Using a national dataset, researchers found that gender (of the parent and child) plays a role in the academic achievement of adolescents belonging to single-parent families (Lee, Kushner, & Cho, 2007). In addition, contrary to expectations, Meece et al. (2014) found that family composition negatively predicted the educational aspirations of rural women, but was not significant for men. The literature on how family composition differentially shapes the outcomes of young men and women is extremely limited, and more research is needed to determine the gender-differentiated effects of family composition on educational outcomes.

Parental educational attainment. Although I do not specifically examine parental educational attainment in my dissertation study, it is an important predictor of students' educational attainment due to its relation to parental expectations and other familial proximal processes (Magnuson, 2003). Parental educational attainment and parents' beliefs about education are well established as predictors of the educational trajectories of children and adolescents (Davis-Kean, 2005; Eccles, 1993). Researchers have also established these connections in rural youth (Byun et al., 2012a, c; Provasnik et al., 2007).

In rural areas many parents do not hold postsecondary degrees (Provasnik et al., 2007; Byun et al., 2012c), making many rural youths first generation college students (FGCS). Compared to non-FGCS, FGCS receive less parental support during the college admission process (Choy, 2001). Even among parents who do value education and

support their child's educational pursuits, many have limited knowledge of college applications and transitions, making it difficult for these parents to support their adolescent's educational plans (Vargas, 2004).

Parental education seems to differentially affect the educational outcomes of rural men and women. Meece et al. (2014) found that parental education positively predicted the educational aspirations of rural men but not rural women. This result is consistent with earlier work by Chenoweth and Galliher (2004), who found that mothers' and fathers' levels of education were significant in predicting adolescent boys' plans for college. However, most of the work on parental education, gender, and education outcomes uses education aspirations as an outcome. Apart from research rooted in expectancy-value theory, few studies focused on rural youth have examined relations between parental education, gender, school achievement, and educational attainment.

Family economic conditions and poverty. During the last two decades, as discussed later, many rural communities have undergone significant economic transformations that have affected communities, parents, and children alike (Elder, 1994; Elder & Conger, 2000; Elder, Eccles, Ardelt, & Lord, 1995; Johnson & Strange, 2007). During declining economic conditions, many rural parents lost their jobs, and increased levels of family poverty followed. In addition to the loss of jobs, changes in the rural economy have also altered the occupational opportunities available to rural parents. Rural parents now work more non-standard hours and more total hours with less pay compared to their urban counterparts (Mather & Scopilitti, 2004; Vernon-Feagans et al., 2010). Working many total, and irregular hours, has consequences for children's development and education. When parents are busy with work they have less time to spend with their

children, help their children with homework, hold conversations about college, and participate in school programs. A longitudinal study by Enchautegui (2013) found that mothers and fathers with nonstandard work schedules spent less time with their children overall, from early childhood until age 18.

Experiencing poverty is also associated with stunting the educational progress of rural youth at a variety of stages in the educational pipeline. Students who attend low-income rural schools are four times less likely to meet Adequate Yearly Progress than other rural youths (Farmer et al., 2006b). Poor rural youths also exhibit the highest dropout rates in the country (Provasnik et al., 2007) and a lower likelihood of college completion compared to their urban or suburban peers (Byun et al., 2012b; Provasnik et al., 2007). The poverty experienced by many rural youths has had detrimental consequences, especially for long-term educational attainment. Poverty also has a differential effect for boys and girls. A body of work by Elder and colleagues shows how boys and girls from early childhood through adolescence respond differently to family-related economic problems (Elder, 1974; Elder & Caspi, 1988; McLoyd, 1989).

Process Features of Rural Families and Student Educational Attainment

As mentioned, research on the structural differences of rural families is more prevalent than work on differences in family processes, especially those processes that might influence the educational trajectories of rural youth (Vernon-Feagans et al., 2010). Despite the lack of research on proximal processes in the family, the didactic interactions that parents have with their children, such as the transmission of knowledge and modeling of beliefs and behaviors, are powerful forces in shaping development and educational outcomes (Coleman, 1988; Dyk & Wilson, 1999; Eccles, 1993; Eccles et al.,

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1983). Consistent with this view, Coleman (1988) also emphasized the importance of family social capital in the form of obligations, expectations, information channels, and norms. He found that as these forms of social capital decrease, the likelihood of school dropout increases, controlling for various forms of human and financial capital (e.g., socioeconomic status).

In my dissertation, I focus on several specific proximal processes within rural families and their relations to students' educational aspirations and college enrollment. These family processes include parents' educational expectations, family responsibility and parent identification, rural identity, and perceptions of the local economy, all of which are further influenced by gender.

Parental educational expectations. A long line of psychological research has relied upon expectancy-value theory to study the role of socializers in the achievement-related choices of students (Eccles et al., 1983). This theory extends Bronfenbrenner's ecological-based framework by applying it to the study of academic choice. Although my dissertation primarily makes use of Bronfenbrenner's model, I also draw upon ideas from expectancy-value theory in conceptualizing how parents shape students' educational outcomes.

Expectancy-value theory emphasizes the role of socializers—parents in particular—in guiding their children's engagement and performance through influencing children's achievement-related self-perceptions and task values (Eccles, 2007). This theory posits that cultural and demographic features of families, as well as features of the child (e.g., gender), influence parents' general beliefs and beliefs about their child (i.e., child-direct beliefs). I borrow from expectancy-value theory in conceptualizing the role

of parents as socializers of children's achievement-related beliefs and behaviors. More specifically, I theorize that parents' general beliefs (e.g., gender role stereotypes) and child-specific beliefs (e.g., expectations for child's achievement) will influence adolescent's perceptions of their parents' beliefs (e.g., educational expectations), and these perceived parental expectations will, in turn, predict adolescents' educational aspirations and subsequent postsecondary enrollment.

Studies using an expectancy-value framework provide support for the proposed patterns of relations. The beliefs that parents hold about their children's competence and success predict children's self-beliefs (e.g., Eccles & Fredricks, 2005; Fredricks & Eccles, 2002) and achievement outcomes (Bleeker & Jacobs, 2004). Numerous studies also document strong relations between children's achievement-related expectations (e.g., expectation for success, performance expectations, and educational expectations) and their subsequent performance and achievement (for review, see Wigfield & Eccles, 2002).

In addition to parent's expectations of success for their children, parents relay explicit and implicit messages to their children about the value of certain tasks. For example, parents may place comparative value on certain activities (sports vs. academics) or particular goals (individualistic goals vs. community goals). These messages and words of encouragement or disapproval shape children's interests and educational aspirations (Tenenbaum & Leaper, 2003).

Recent studies reveal that rural parents tend to exhibit high academic expectations for their children. Twenty percent of rural parents expect their child to obtain two or more years of postsecondary education, and 37% expect their child to complete a bachelor's

degree (Griffin et al., 2011; Provasnik et al., 2007). These high parental expectations heavily influence the college decision-making process (Gándara et al., 2001) and are strong predictors of educational aspirations (Byun et al., 2012c) for both boys and girls (Meece et al., 2013, 2014). Although these studies found that parental expectations predicted educational aspirations for both rural adolescent men and women, rural young women tend to report significantly higher parental expectations for college (see Meece et al., 2014), indicating there may be gender differences in the ways that parental educational expectations affect the educational outcomes of young boys and girls. This is consistent with other research suggesting parents endorse and communicate differential expectations for their sons and daughters (Tiedemann, 2000; Wood, Kaplan, & McLoyd, 2007) and these expectations can influence gender differences in youths' educational expectations. My dissertation extends prior research (Byun et al., 2012c; Meece et al., 2013, 2014) to examine the relations between rural youths' perceptions of parental expectations and their postsecondary enrollment, and how these relations are moderated by gender. Further, I specifically investigate the relations among parental expectations, academic achievement, postsecondary enrollment, and gender, which are largely overlooked in current studies of rural youth.

Family responsibility and parent identification. In rural areas it is quite common for youths to hold a strong sense of family responsibility and identification (Crockett et al., 2000; Elder & Conger, 2000; Hofferth & Iceland, 1998; Johnson et al., 2005; Peters, Wilson, & Peterson, 1986; Wilson & Peterson, 1988). Scholars refer to this strong sense of shared identity as *familism*, a multidimensional construct that encompasses feelings of identification with, and connectedness and loyalty to, family.

Individuals that have a strong sense of familism are deeply connected to their families and often consider the needs of their family over their own needs (Edwards & Barber, 2009). Peters et al. (1986) and Wilson and Peterson (1988) have documented strong feelings of *familism* in Appalachia, where parents instill youth with a sense of their roots, pride in their heritage, and a platform for safe identity exploration. In a study of rural Iowa adolescents, Johnson et al. (2005) found that approximately 75% of high school seniors reported that it was very important to them to live near their parents.

Families play a large role in the college decision-making process for rural youth and feelings of familism can both promote or hinder educational attainment (Bryan & Simmons, 2009; Dyk & Wilson, 1999; Hutchins et al., 2012; Wilson, Peterson, & Wilson, 1993). On one hand, familism is positively associated with students' educational aspirations and expectations (Quian & Blair, 1999; Smith-Maddox, 1999). For example, Fulgini, Yip, and Tseng (2002) found that adolescents who held strong family obligations also placed high value on school when they belonged to cultures where both family and school were valued. In these cultures, school success is a part of an obligation to family and is tied together with forming adolescents' identities. On the other hand, along with promoting academic outcomes, family networks and norms can also stifle educational opportunity and steer residential plans when families place demands on talented youth (Portes, 1998) or when family norms are incongruent with the pursuit of higher education (Rural Poverty Research Center, 2004). For example, a girl growing up in a family where early marriage is the norm may not pursue her educational aspirations and, instead, opt to marry early and have a family. In addition, Johnson et al. (2005) reported that identification with parents was positively related to residential attachment. Rural youth

who respected and admired their parents wanted to live near these family members, and as a consequence, youth from prior generations chose to forgo educational opportunities outside of their rural community to remain close to family.

Rural youth who hold high levels of family responsibility and identity often experience an underlying tension between pursuing higher education (i.e., moving away from home) and staying in one's home community with their families (Hektner, 1995). Hektner (1995) argued that this tension was especially felt by youth who aspired to college, because attending college would mean moving away from family. Although some rural youths do move away from home, many rural youths will establish their lives in close proximity to their families and communities (Petrin et al., 2014). These rural youth likely exhibit strong obligations towards, and involvement with, their family (Wilson & Peterson, 1988).

Gender-related differences are found in rural youths' feelings of family responsibility. Elder and Conger (2000) documented that beginning at a young age, rural boys spend more time participating in joint farming activities with their fathers compared to rural girls. These joint activities foster a sense of responsibility and obligation to family and the family farming business. As a result, as rural boys develop, they are more likely to feel the conflict between the desire to live close to parents verses the desire to leave the area, compared to rural girls (Hektner, 1995). However, most of the research on feelings of family responsibility that considers gender is dated. The current study extends previous work in investigating the mean differences in family responsibility across gender, and how gender moderates the relations between feelings of family responsibility and college outcomes.

Rural identity. Another proximal process within rural families includes the transmission of identity-related support from parents to children. Growing up in a rural family can promote a sense of rural identity that is grounded in connection to place. Rural youths grow up in families and communities that have particularly high levels of social cohesion. Many members of rural communities share responsibility for raising children and consistently provide support to one another (Dyk & Wilson, 1999; Elder & Conger, 2000; Rojewski, 1999). Burnell (2003) notes that growing up in a rural community is marked by, "the importance of connectedness and personal relationships" (p. 105) and a sense of rural identity that grounded in connection to place.

These feelings of strong connectedness and rural identity are unique from feelings of family obligation, but can also lead to difficulties when deciding whether to leave home and family to pursue educational opportunities elsewhere (Burnell, 2003; Corbett, 2007; Farmer et al., 2006a; Hektner, 1995; Howley et al., 1996). Research has indicated that connection to one's home community and family, and levels of rural identity, are critical in shaping aspirations for adulthood, such as residential preferences and where one attends postsecondary schooling (Byun et al., 2012c; Crockett et al. 2000; Dyk & Wilson, 1999; Elder & Conger, 2000; Johnson et al., 2005; Meece et al., 2014; Petrin et al., 2011). Chenoweth and Galliher (2004) examined the connection between localism (i.e., the desire to remain close to their hometown throughout life) and the postsecondary aspirations of rural students in West Virginia. They found that that those who wanted to stay close to their homes and families were less likely to aspire to go to college. Similarly, Hutchins et al. (2012) reported that students with higher reported rural identity were more likely to be work-bound, rather than college-bound. Recent work by Petrin et

al. (2014) noted something slightly contradictory. These researchers found that high-achieving rural students had some of the highest levels of community attachment, and many planned to return home after pursuing higher education outside of their rural home community.

There are documented gender differences in feelings of rural identity. Boys report higher levels of rural identity (i.e., attachment to their rural background and community) and are more likely to want to continue living in their home state (Elder et al., 1994; Meece et al., 2013, 2014). These gender variations in rural identity differentially shape the educational aspirations of rural youth. For example, for young men, rural identity is negatively associated with educational aspirations, whereas for young women, rural identity is not a significant predictor of educational aspirations (Meece et al., 2014). Work by Petrin et al. (2014) has also found that gender may play a role in the relations among rural identity, residential aspirations, and achievement. These researchers found that the effects of local employment opportunities were stronger for high-achieving students than nonacademic students, but only for males. They also found the influence of local employment opportunities was approximately the same among high-achieving males and high-achieving females, but larger for nonacademic females than nonacademic males. From their results, they concluded that there are interactions among gender, perceptions of the rural community, academic achievement, and future aspirations.

The current study extends work by Meece and colleagues to explore whether gender moderates the relations among rural identity, educational aspirations, academic achievement, and a more distal educational outcome, postsecondary enrollment.

Perceptions of local job opportunities. Perceptions of the economic climate are

salient predictors of postsecondary residential plans, even more so than the advice of educators, or the poverty level of a student's school (Petrin et al., 2014). There are many sources of information that shape students' job perceptions; however, parents are critical informants in this process, relaying messages about available jobs and educational opportunities to their children (Dyk & Wilson, 1999). Researchers have found that talking with one's parents in high school about educational opportunities was related to students' subsequent occupational attainment (Dyk & Wilson, 1999; Griffin et al., 2011; Rural and Appalachian Youth and Families Consortium, 1996). The perceptions of job opportunities that rural youth construct from parents shape their plans for the future and, in turn, these perceptions of job opportunities predict later residential plans and educational attainment (Dyk & Wilson, 1999; Petrin et al., 2014).

When adolescents perceive few opportunities in their home communities, they are more likely to explore educational and occupational options away from home. Elder et al. (1996a) examined the conflict regarding attachments to family and community and rural youths' realizations that leaving their home community may be necessary for pursuing long-term aspirations. They found that changes in the residential preferences of rural youths between 8th and 11th grades paralleled changes in their perceptions of opportunities at the local level (Elder et al., 1996a; Johnson et al., 2005). Unfortunately, the rural youths who leave their original communities are well educated and highly skilled (Gibbs & Cromartie, 1994; Mills & Hazarika, 2001; Petrin et al., 2014). This outmigration of skilled rural youth, the so-called "brain drain," can deplete the remaining local population of human capital (Carr & Kefalas, 2009; Petrin et al., 2011). On a positive note, recent research suggests that high-achieving students have similar levels of

community attachment compared to lower-achieving students (Petrin et al., 2014), which might motivate highly-skilled youths to settle in rural areas.

Research on residential aspirations and rural youth shows that men and women often hold different perceptions of their families and home communities, and these perceptions steer developmental choices (Elder et al., 1996a; Johnson et al., 2005; Petrin et al., 2014). Beginning two decades ago, researchers began to report that rural girls have a greater desire to leave, and actually do leave, their home communities at greater rates compared to rural boys (Conger & Elder, 1994; Corbett, 2007). At that time, researchers speculated that this gender-differentiated trend was most likely due to the fact that rural areas offer fewer job opportunities to women than to men (Johnson et al., 2005; Tickamyer & Henderson, 2003). Although there are some jobs for women in rural areas, rural women may feel underprepared for these jobs; Crockett et al. (2000) noted that rural women reported that their schools did not adequately provide them with information about non-traditional jobs. Adolescents aspire to the jobs that they are exposed to, and have access to, within their communities (Ianni, 1989), so it is unsurprising that rural women and men have different perceptions about occupational opportunities in their home communities and rural women may choose to further their education as a way to prepare for a future outside of their home community (Lee, 1984; Little, 2006).

Consistent with this view, boys tend to report more positive perceptions of economic opportunities in their home communities and a higher desire to live in the same home state as adults (Elder et al., 1994; Meece et al., 2013, 2014). However, the recent economic collapse, when many men lost their jobs and women began to enter the labor market, may have shifted rural men's perspectives on opportunities and gender

expectations (Sherman, 2009). In her ethnographic research with a Northern Californian timber community, Sherman (2009) found that men who held traditional values about family relationships faced much stress in the face of changing gender norms and identities and feelings of power loss after the collapse. More research is needed to determine how the collapse has restructured the employment opportunities and gender-related norms and expectations of contemporary rural people.

The aforementioned gender differences in parental educational expectations, family responsibility and parental identification, rural identity, and perceptions of employment opportunities suggest that: (a) there are concrete differences in the ways that contemporary rural men and women perceive the influence of their families and communities; and (b) the different ways that rural men and women perceive their contextual environment may affect their long-term educational and occupational aspirations and plans. Building on research documenting gender differences, I propose a conceptual model where parental educational expectations, family responsibility, parental respect and identification, rural identity, and perceptions of employment opportunities directly and indirectly (via educational aspirations and academic achievement) predict postsecondary enrollment and gender moderates each model path.

The Role of Perceptions and Transitions in Bioecological Model

Along with the emphasis on context within the ecological theory of human development, this theory also emphasizes two additional theoretical concepts I draw on in framing my dissertation study. Namely, the *role of perceptions* and the *role of transitions* in human development.

The role of perceptions. The bioecological model defines human development as a process wherein the developing person obtains a specialized perception of the

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ecological environment and then is able to participate in that environment at levels of the same or greater complexity (Bronfenbrenner, 1979). This definition of human development considers the importance of the role of perceptions in the process of developmental change, as well as the ways that developing perceptions of the environment influence subsequent action. In fact, Bronfenbrenner (1995) noted that there are two types of personal characteristics that shape development. First, there are *resources and liabilities*, which comprise ability, achievement, and temperament (Bronfenbrenner, 1995). Second, as previously mentioned, there are *developmentally instigative characteristics*—attributes of the developing person that reflect the human as an active agent in its environment. These characteristics are guided by conceptions of the environment and are conveyed through beliefs, interests, and goals in relation to people, objects, and symbols. Bronfenbrenner (1988, 1995) argued that the explanatory power of research is enhanced when it includes both beliefs and behaviors.

As children transition into adolescence, they undergo cognitive changes in that allow for more sophisticated thinking and planning about their future. Adolescents enlist their new abstract reasoning, planning, and reflection skills (Eccles et al., 2003) to think about their future goals, aspirations, and expectations (Eccles, Templeton, Barber, & Stone, 2003; Nurmi, 2004). Adolescent perceptions are especially important in education-related research, as perceptions are a key aspect for understanding students' short-term behaviors and longer-term educational and developmental trajectories. Many developmental models of academic motivation and achievement (e.g., Eccles et at. 1983; Eccles & Wigfield, 1995) emphasize the role of youths' perceptions and beliefs in shaping long-term outcomes. Motivation researchers have found that perceptions (e.g.,

motivation and self-concept) mediate the relation between environmental factors and achievement-related outcomes (Marchant, Paulson, & Rothlisberg, 2001; Wood, Kurtz-Costes, & Copping, 2011). Relativizing rural adolescents, Meece and colleagues (2014) found that perceptions of economic hardship predicted educational and occupational attainment (Crockett et al., 2000; Elder & Conger, 2000; Petrin et al., 2014), which supports the notion that contextual perceptions shape the educational trajectories of rural youth.

In my dissertation, I draw on recent research on rural youth, motivation research that has documented the mediating role of perceptions, and other research that has found direct relations between educational expectations and postsecondary attainment (e.g., Beal & Crockett, 2010; Mello, 2008). In doing so, I examine whether self-reported educational aspirations and academic achievement mediate the relations between family and residential perceptions subsequent postsecondary outcomes. Based on this prior research, I posit that family and residential perceptions (e.g., perceptions of local employment opportunities) will be predictive of postsecondary enrollment via the educational aspirations and academic achievement of rural youth (Byun et al., 2012a, b; Beal & Crockett, 2010, Hektner, 1995; Hutchins et al., 2012; Johnson et al., 2005; Schneider & Stevenson, 1999).

The role of transitions. Bronfenbrenner's theory (1979) addresses not only the structure of the ecological environment, but also a temporal dimension, represented by the chronosystem. The chronosystem emphasizes the role of time in the individual's life trajectory or as related to events and historical context (Bronfenbrenner, 1989).

Ecological transitions, and more specifically, school transitions, are one example of an aspect of influence of the chronosystem.

Bronfenbrenner (1979) describes ecological transitions as occurring when there is a change in a person's position in the ecological environment due to a shift in role or setting, or both. These ecological changes occur throughout the lifespan and are a result of both biological and environmental changes experienced by the developing person. The changes represent the process of mutual accommodation and adaptation between the developing individual and their environment, which represents the core of what Bronfenbrenner deems the *ecology of human development* (1979).

In my dissertation, I examine the ways that beliefs and perceptions in high school influence later postsecondary outcomes and, in doing so, I study one of the four major schooling transitions. These major transitions include: (a) transitioning from the home environment to school enrollment; (b) transitioning from elementary school to middle or junior high school; (c) transitioning to high school; and (d) transitioning to college or work. Experiencing a school transition can be disruptive for students, as they may experience changes in their routines and the contexts with which they are familiar (Anderson, Jacobs, Schramm, & Splittgerber, 2000; Blyth, Simmons & Carlton-Ford, 1983). For example, the transition from a small, rural high school to a large, public university could present a student with a (physically) larger school context, more policies and regulations, different norms of behavior, and more competition.

The different social contexts that students encounter are particularly important in students' post-transition adjustment (Bronfenbrenner, 1994). Many researchers have studied the effects of students having to negotiate school transitions across development

and have found declines on a number of indicators, such as grades, school satisfaction, self-efficacy, and self-esteem (Benner, 2011; Blyth et al., 1983; Eccles, Wigfield, Reuman, & Mac Iver, 1987). Although I do not focus specifically on student adjustment within the context of school transitions, it is important to note that while school transitions are generally associated with academic and motivation-related declines, there are very few large-scale studies that examine the transition to postsecondary schooling among rural youth.

A Reexamination of the Educational Attainment of Rural Youth

Bronfenbrenner argues that one cannot study human development without considering both proximal and distal layers influencing a developing person. A number of studies have shown the substantial impact of contextual forces in the form of economic deprivation on children's developmental outcomes (Elder, 1994; Elder, Eccles, Ardelt, & Lord, 1995; McLeod & Shanahan, 1993). Therefore, the drastic demographic, social, and economic changes that have occurred in rural communities over the last several decades are key aspects in studying rural youth (Johnson & Strange, 2007). The following sections will highlight the sweeping economic and social changes that have occurred in rural communities in recent years, changes which prompt the need for research with contemporary samples of rural youth.

Economic and Structural Changes

As previously mentioned, over the last several decades those living in rural areas have experienced drastic changes in their local economies. Whereas people in rural areas used to rely on agriculture, extraction, mining, fishing, and logging economies, now these individuals must find work in other industries, such as the service industry (Crockett et

al., 2000; Elder & Conger, 2000; Friedman & Lichter, 1998; Gibbs et al., 2005). Many employment options have been replaced by less stable work and part-time opportunities with lower pay and more variable hours (Fussell & Furstenberg, 2005; Vernon-Feagans et al., 2010).

In addition to the changing economic bases of rural communities, there has been a simultaneous rise in the necessity of postsecondary degrees (Autor, 2014; Leonhardt, 2014). This shift in demand for higher education has motivated skilled rural youths to aspire to advanced education away from their home communities which can deplete the remaining local population of human capital (Carr & Kefalas, 2009; Petrin et al., 2011).

Social and Societal Changes

Alongside (and often resulting from) economic and structural changes, there has been a destabilization of gender norms and expectations for both women and men in rural areas. As previously mentioned, recent research has documented the many gender-related social progressions occurring across the United States. For example, more women are working outside of the home, and the age of first marriage and entry into parenthood have increased (Furstenberg, 2010; Goldstein & Kenney, 2001; Settersten & Ray, 2010). These trends are also prevalent in rural settings (Sherman, 2009).

Undoubtedly, these social changes have differentially influenced rural men and women, as many rural youths have shifted their educational and vocational aspirations to align with contemporary economic, social, and occupational conditions. Economic trends have especially affected young women, who look to their mothers as examples in pursuing certain educational paths (Powell & Downey, 1997). For instance, a high-achieving woman who otherwise would have been held back due to societal expectations

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(e.g., pressures to help at home and not leave her home community to attend a postsecondary institution) now encounters different messages from society about pursuing higher education. However, it is less clear how these trends have played out in contemporary rural communities and further, whether and how these social trends have influenced the college aspirations and enrollment of rural men and women.

Purpose of Study

The purpose of this dissertation is to explore how perceptions of family and residence shape the postsecondary enrollment of 21st-century rural men and women. In doing so, I use a path analytic framework to test a conceptual model grounded in theoretical and empirical research (see a representation of my conceptual model in *Figure 3*). I investigate whether perceptions of family and residence (e.g., perceptions of parental expectations) predict postsecondary enrollment, and whether educational aspirations and academic achievement mediate these relations. I also explore the moderating influence of gender. Previous work emphasizes the importance of gender in studying the aspirations and attainment of rural youth (see Elder et al., 1994; Johnson et al., 2005; Petrin et al., 2014).

My analytic plan includes using a path analytic framework in M*plus* to test for both mediation and moderation. In conducting mediation analyses, I will refer to *p*-values of the indirect effects and the bootstrapped standard errors (Hayes, 2009; MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004; Williams & MacKinnon, 2008).
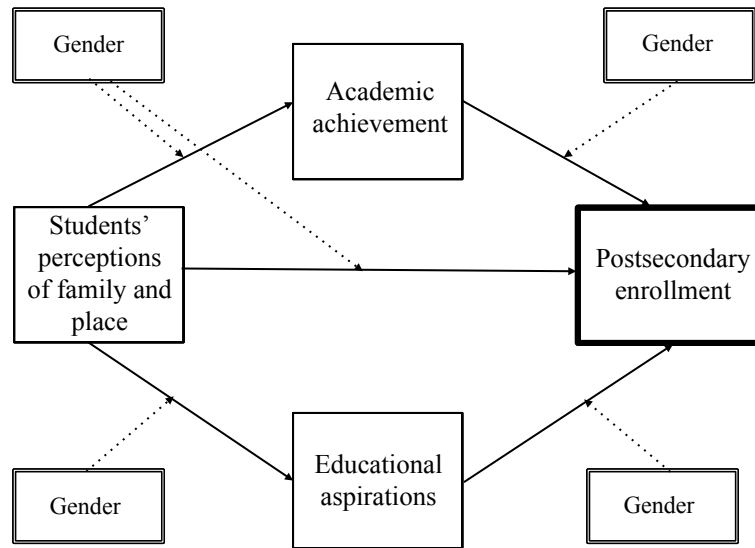
Figure 3. Conceptual model of dissertation study

After testing for mediation, I will use a multiple group analysis approach to test for total effect moderation, where I hypothesize that gender will moderate the indirect paths *and* the direct paths in the model (Kline, 2011).

CHAPTER 3: METHODOLOGY

This chapter includes descriptions of the *Rural High School Aspirations Study* (*RHSA*) and the Spencer Foundation *Fulfilling Dreams Follow-up Study* (*RHSA-F*). Details about study designs, procedures, and participants are provided. I also describe the variables used in the current study and provide an explanation of my analytic plan and research questions. The chapter concludes with a discussion of contributions and limitations of the study.

Rural High School Aspirations Study: Key Findings

The current study used data from the *Rural High School Aspirations Study* (*RHSA*). The *RHSA* study was carried out in collaboration with The National Research Center on Rural Education Support (NRCRES) and the Social Development and Intervention Research Program (SDIRP) at the Center for Developmental Science. The purpose of the *RHSA* study involved studying rural youths' educational, vocational, and residential plans for adulthood. The study included a national sample of 8,754 students, 792 parents, 667 teachers, and 69 administrators from 73 rural and small town schools in 34 states. Data collection for the *RHSA* study took place during the 2007-2008 academic year.

My dissertation builds on several key findings of the *RHSA* study. First, the *RHSA* study found that student participants reported high aspirations for college. Meece et al. (2013, 2014) found that the average educational aspiration of rural men and women included graduating from college (17.3 years of schooling for girls and 16.4 years for

boys). Second, research confirmed significant gender differences in the educational

aspirations of *RHSA* student participants. Contrary to research of the 1980s, a higher

percent of girls compared to boys desired to continue their education beyond high

school[1]. On the other hand, Meece et al. (2014) found that boys were more likely to

perceive economic opportunities in their home communities and report higher attachment

to their rural background and community. Third, consistent with studies of urban youth,

rural youth tend to have misaligned ambitions. Meece and colleagues (2013) reported

only about 40% had aligned educational and occupational aspirations.

Due to the economic recession of 2008, it is possible that many of the *RHSA* study

participants may not have fulfilled their aspirations for college (Hwang et al., in

preparation; Meece, 2012). Important for the current study, and consistent with prior

research (Johnson et al., 2005), the *RHSA* student participants who reported higher levels

of parental respect and identification reported lower levels of educational aspirations

(Hutchins et al., 2012).

Collectively, *RHSA* study findings suggest that a large proportion of rural youth

have high educational aspirations and there are significant gender differences in youths'

aspirations. Furthermore, contemporary rural women and men hold different perceptions

of their home communities, which affect their long-term educational and occupational

plans. In my dissertation, I expanded upon these findings in studying how perceptions of

family and residential contexts relate to the postsecondary trajectories of rural men and

women. This work fills a gap in the literature, as few existing studies include information

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[1] There were also significant ethnic differences in educational aspirations. The sources of these differences are currently under investigation (Irvin, Byun, Meece, Farmer, & Reed, in press). While important, ethnic differences in educational aspirations are not a focus of the dissertation.

on how rural youth experience and perceive economic opportunity, family obligations and expectations, and connections to place (see Byun et al., 2012c; Meece et al., 2014). Further, there are no studies that use a large and contemporary sample of rural youth in looking at how perceptions of family and rural community relate to college enrollment. Prior work by Johnson and colleagues (2005) explored the connection between family and residential aspirations and educational attainment, but data were collected from one rural region (i.e., Iowa) prior to the economic and social changes of the last few decades.

RHSA: **Sample Design.** Data from the original *RHSA* study were collected at 73 rural schools across 34 states nationwide during the 2007-2008 school year. While there are many definitions of rural, for the purposes of this paper, I used the same definitions used by *RHSA* researchers and define rural as those students who attended schools in rural urban-centric locale codes or small town codes. NRCRES researchers utilized the Common Core of Data (CCD), out of the National Center for Education Statistics (NCES), to identify schools for the analysis. Codes were created based on a school's physical location (an address) matched with a Census Bureau database containing geographic information, the Topographically Integrated and Geographically Encoded Referencing system (TIGER). Schools were sampled from more than 100,000 public schools across the U.S. Using the NCES school codes, the researchers selected schools located in small town and rural areas. Eighty-nine percent of the schools were situated in rural urban-centric locale codes (41, 42, and 43) and 11% were situated in small-town codes (31, 32, and 33). Thirty-six schools had 50% or more students who were eligible for free or reduced-price lunch and 15 schools had 50% or more students who self-identified as an ethnic minority.

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Table 1

Characteristics of Schools in RHSA

School Type	Number Schools	School Size	Poverty Status	Percent Minority
Rural Remote	43	32 - 418	0 - 99%	0-95%
Rural Distant	19	81 - 661	18 - 82%	1-99%
Rural Fringe	3	123 - 400	31 - 81%	3-85%
Small Town	8	165 - 1883	16 - 51%	1-56%

Note. Adapted from "Preliminary results of the Rural High School Aspirations Study" by J. L. Meece and T. W. Farmer, 2009, presentation to the Organizations Concerned about Rural Education (OCRE), Washington, DC.

RHSA: Data collection procedures. The current study utilized information from the student and teacher surveys. Regarding data collection, all students in a selected school were asked to participate in the survey; however, only students with parental permission completed the survey. Recruitment and consenting procedures followed the participating school districts' local policies and administrative guidelines. Data collection involved gathering information on students via separate student and teacher instruments. The student instrument consisted of a paper questionnaire, which was administered on school campuses by a team of researchers. Student surveys were group-administered in a common space, such as in the cafeteria or library. A member of the research team administered the survey by reading directions aloud to students and pacing administration while other researchers monitored the room. The survey contained items related to student characteristics, family characteristics, educational, occupational, and residential aspirations, motivation, academic achievement, attitudes regarding school and

participation in school-related activities, and perceptions of the local community and economic conditions.

RHSA: **Instrumentation.** This dissertation used survey items from the student and teacher surveys (described below) and postsecondary follow-up information obtained from the StudentTracker service.

RHSA student questionnaire. The student survey included 50 rating-scale and open-ended items. These items assessed a variety of topics including the students' socioeconomic status, academic development, family and peer relations, aspirations and plans for the future, high school experiences, extracurricular activities, achievement-related motivation, and educational and occupational barriers. The items pertaining to parent expectations, rural identity, parent respect/identification, family responsibility, and perceptions of local job opportunities are used in this dissertation.

RHSA teacher questionnaire. For each student in the original sample a teacher was recruited to provide corresponding information on the student. First-period teachers completed a survey for that student. When teachers indicated they did not know a student well, then the students' second period teacher was recruited to complete the survey. The teacher surveys featured five items to parallel the student survey, and also included additional items on the students' academic progress, behavioral characteristics, support services, and educational and occupational aspirations.

RHSA: **Participants.** The original sample of the *RHSA* study included 8,754 students in grades 9-12 from 73 schools in 34 states nationwide (see Table 1 for school characteristic information). It also featured information from 792 parents, 667 teachers, and 69 administrators, collected through surveys and interviews.

The total student sample included 2,443 (27.9%) 9th-graders; 2,383 (27.3%) 10th-graders; 2,191 (25.1%) 11th-graders; and 1,724 (19.7%) 12th-graders. In addition, 4,488 (51.5%) were female and 4,224 (48.5%) were male students. Students' racial/ethnic background was as follows: 5,514 (64.1%) white; 1,035 (12%) multiracial; 928 (7%) Latino/a; 599 (7%) Black; 311 (3.6%) Native American/Alaska Native; 81 (.9%) Asian; 22 (.3%) Native Hawaiian/Pacific Islander; and 116 (1.3%) other.

The Spencer Foundation *Fulfilling Dreams Follow-up Study*

Data Collection. The current study used data from the original *RHSA* study and the follow-up study, the Spencer Foundation *Fulfilling Dreams Follow-up Study* (*RHSA-F*). With funding from the Spencer Foundation, Meece (2012) obtained follow-up college enrollment and graduation information on the original *RHSA* students. This follow-up data collection occurred in 2013, five years after the 2007-2008 *RHSA* study. Meece (2012) requested follow-up data from the National Student Clearinghouse (NSC), a non-profit and nongovernmental organization and the largest provider of postsecondary transcript information in the country.

The NSC matched student data through a program called StudentTracker. StudentTracker contains information on over 3,600 colleges and universities, which enroll approximately 98% of all students in public and private postsecondary institutions in the U.S. To use the service, the research team sent a formatted data file to the NSC to obtain postsecondary schooling information on the rural students in the *RHSA* sample.
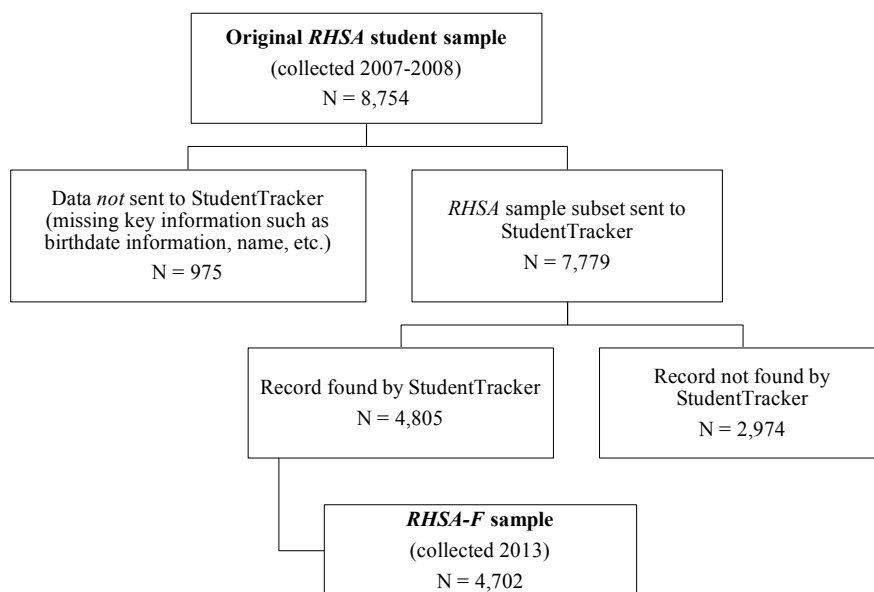
Figure 4. Representation of the original *RHSA* sample and the follow-up sample collected five years after initial data collection

Using student names and birthdates, the NSC matched the high school student data to the students' corresponding postsecondary data, including information on community college enrollment, four-year postsecondary enrollment, college majors, and patterns of college dropout and reenrollment. *Figure 4* displays sample sizes from the original *RHSA* and follow-up study.

After obtaining the data from the NSC, a research team (including the author of this dissertation) examined the two samples (the original sample and the follow-up sample) to ascertain differences between the two groups. Table 2 illustrates differences in the original *RHSA* versus the *RHSA-F* samples.

We investigated students who did not have a postsecondary record returned (i.e., the missing student data). Some of the students without a postsecondary record were not sent to the NSC because they were missing information required by the NSC (e.g., complete names and birth dates).

Table 2

Comparison of Original RHSA and Follow-up Sample (RHSA-F)

	RHSA sample	*RHSA-F* sample
	n (% within sample)	
Total students	8754	4702
Gender		
Male	4224 (48.2)	2027 (43.1)
Female	4488 (51.2)	2670 (56.8)
Missing	46 (.5)	5 (.1)
Race/ethnicity		
White	5653 (64.5)	3302 (70.2)
Black	614 (7)	274 (5.8)
Latino/a	967 (11)	419 (8.9)
Other	1372 (15.7)	666 (14.2)
Missing	152 (1.7)	41 (.9)
Highest level of mother's education		
Did not finish high school	1044 (11.9)	424 (9)
Graduated high school/complete GED	2105 (24)	1146 (24.4)
Some college/did not complete degree	1349 (15.4)	802 (17.1)
Graduated from two-year school	1017 (11.6)	628 (13.4)
Graduated from a four-year institution	1039 (11.9)	705 (15)
Completed master's degree	515 (5.9)	329 (7)
Completed MD/other advanced degree	174 (2)	80 (1.7)
Don't Know	1001 (11.4)	421 (9)
	M (SD)	
Self-reported grades	2.81 (1.636)	2.34 (1.405)
Educational aspirations	3.75 (2.184)	3.76 (2.016)

Note. M = mean, *SD* = standard deviation.

In addition, of all the students that were sent to the NSC, some were found, and some were *not* found by the NSC, which contributed to more missing data. The students who were not found by the NSC might not have attended college after high school or their college could have belonged to the 2% of colleges that does not report information to the NSC. The NSC could not provide information about why certain students were not found.

Current Study

Sample. The current study used data from both the original and the follow-up sample and included 3,915 students. I limited my sample to students who were enrolled in Grade 11 or 12 at the time of the original data collection (i.e., the 2007-2008 academic year) and omitted Grade 9 and 10 students because the follow-up sample was collected in 2013, and I wanted to allow for students who might take several years off before enrolling in college. For example, if a student graduated from ninth grade in 2008 and immediately enrolled in college, she would be a freshman in college in 2012. She would be included in the follow-up sample. However, if she took two years in between high school and college to work, she would not be enrolled in college at the time of data collection (Summer 2013).

When the original *RHSA* data were collected, 56% of the students (n = 2,191) completed the student survey in Grade 11 and 44% (n = 1,724) completed the student survey in Grade 12. Of these students, 31.3% initially enrolled at a two-year institution, 21.7% initially enrolled in a four-year institution, and 46.9% did not enroll in any form of postsecondary institution. The sample included 2,032 (51.9%) female students and 1,867 (47.7%) male students. In addition, the sample was predominantly White 2,636 (68.4%), but also included students from other race/ethnic backgrounds (i.e., 11.1% Latino/a, 7% Black, and 13.4% other race/ethnicity).

Measurement. Variables used in this study are both single item and composite variables and are drawn from the student and teacher surveys from *RHSA*. NRCRES researchers created the composite variables used in my study by forming constructs based on prior theoretical and empirical research (see Byun, Walton, Meece, Irvin, & Hutchins,

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2011). Tables 3 and 4 feature the research from which study constructs originate. In addition, Table 5 shows the correlations, means, and standard deviations of study constructs.

To create the constructs, researchers performed descriptive analyses, tests for missingness and reliability, and then employed Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) with the full original sample. Researchers also tested scales for invariance across gender and race/ethnicity. Reliability coefficients reported in my dissertation refer to my study sample ($n = 3,915$), not the original *RHSA* sample.

Independent variables. The study included five family-related student perceptions. These perceptions were collected using the group-administered student survey. Each measure is described below.

Table 3

Sources of Composite Variables

Measures	Sources
Parent respect and identification	Elder et al., 1996 a, b; Elder & Conger, 2000; Johnson et al., 2005.
Perceived family income & economic hardship	Conger et al., 1999; Elder et al., 1995; Wadsworth & Compas, 2002.
Family responsibility	Adapted from Fuligni & Pedersen, 2002; Fuligni, Tseng & Lam, 1999; Hardway & Fuligni, 2006.
Rural identity	Modified from Phinney, 1992.

Parent respect and identification. This construct was derived from Elder et al. (1996a, b) and concerns how much the adolescent wants to be like, has respect for, and

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enjoys time with their parents. It consisted of 3 items (**s26a, s26b, s26c**) with six-point scales of disagreement to agreement to the statements: "When I grow up, I'd like to be like my parent/guardian (Item 1)"; "I have a lot of respect for my parent/guardian (Item 2)"; and "I really enjoy spending time with my parent/guardian (Item 3)." α = .77.

Perceived parental expectations. Student's view of how disappointed they think their mother/female guardian would be if they didn't graduate from college. And, how disappointed student thinks their father/male guardian would be if they didn't graduate from college. (2 items) (**s28a3, s28b3**). Range of responses for each question was from 1 = not at all disappointed to 6 = very disappointed. α = .85 for the current sample.

Family responsibility. This construct focused on adolescents' beliefs about their feelings of obligation to live close to and support their families. The items were adapted from other measures that assess attitudes toward family responsibility, including scales by Fuligni and Pederson (2002), Fuligni, Tseng, and Lam (1999), and Hardway and Fuligni (2006). Specifically, this measure consisted of six items (**s30a – s30f**) with six-point scales with answer options ranging from not at all important to very important. Items included: "Help support your parents financially in the future (Item 1)"; "Live at home with your parents until you are married (Item 2)"; "Help take care of your brothers and sisters in the future (Item 3)"; "Spend time with your parents even after you no longer live with them (Item 4)"; "Have your parents live with you when they get older (Item 5)"; and "Help take care of grandparents and parents as they grow older (Item 6)." α = .80 for the current sample.

Rural identity. This construct assessed feelings of rural identity among rural youth. This measure was adapted from Phinney's (1992) Multigroup Ethnic Identity

Measure (MEIM). Specifically, this measure consisted of five items (**s43a – s43e**) that corresponded to responses on six-point scales (i.e., not at all like me to a lot like me) to the following statements: "I have a clear sense of my rural background and what it means for me (Item 1)"; "I am happy that I live in a rural community (Item 2)"; "I have a strong sense of belonging to my own rural community (Item 3)"; "I have a lot of pride in my rural background (Item 4)"; "I feel a strong attachment towards my rural background (Item 5)." $\alpha = .92$ for the current sample.

Perceptions of local job opportunities. These items assessed adolescents' views of the local economy and job opportunities. These items were adaptive from Conger, Conger, Matthews, and Elder (1999) and Elder et al. (1995) and included prompts such as: "It is easy to get a good paying job around here (Item 4)"; "A lot of people get benefits like health insurance or vacation time for most jobs in this area (Item 6)"; "There are good jobs in the area for people like me (Item 7)" (**s20d, s20f, s20g**). Participating students completed the seven items (**s20a – s20g**) on a six-point scale with answer options ranging from 1 = "strongly disagree" to 6 = "strongly agree." $\alpha = .69$ for positive perceptions for the current sample.

Control variable. I controlled for socioeconomic status in my analyses to isolate the effects of family variables, educational aspirations, and academic achievement on postsecondary enrollment.

Perceived family income and economic hardship. I used perceived economic hardship (**econ_hardship**) as a control variable in this dissertation. This variable includes adapted items from multiple sources (i.e., Conger et al., 1999; Elder et al., 1995; Wadsworth & Compas, 2002). The scale measured perceived constraints that adolescents

felt relating to difficulty paying bills, struggles with having enough money, etc. Specifically, this measure consisted of 3 items (**s29a-s29c**) with five-point scales of never to all of the time to the following statements: "There is not enough money in my family to pay bills (Item 1)"; "We don't have enough money in my family for things that are important (Item 2)"; and "We don't have enough money to buy things my family needs or wants (Item 3)." α = .89 for this sample.

Table 4

Summary Table of Composite Variables

Measures	Description	α
Parent respect and identification	The extent to which an adolescent wants to be like, has respect for, and enjoys time with their parent (3 items).	.77
Family responsibility	Adolescents' beliefs about their obligations to support and be near their families in the future (6 items).	.80
Rural identity	The extent to which adolescents develop a sense of rural identity commitment (5 items).	.92
Positive perceptions of job opportunities	Students' positive views of the local economy and job opportunities (3 items).	.69
Parental expectations for child's college education	Student's view of how disappointed they think their mother/female and father/male guardian would be if they didn't graduate from college? (2 items).	.85
Teacher/ student grade	Student's view of their grades that year and teacher's view of student's grade that year (2 items)	.79
Perceived family income & economic hardship (control)	The constraints felt by the adolescent relating to difficulty over having enough money to pay bills and have enough money to buy items for the family (3 items).	.89

Mediating variables. The study included two mediating variables to examine the processes by which students' perceptions relate to college enrollment. Each measure is described below.

Educational aspirations. The variable for educational aspirations (**s10_student_aspirations**) was based on the single survey item of "How far in school would you most like to go?" The original given options were 1=Less than high school graduation, 2=High school graduation or GED only, 3=Attend or complete a 2-year school course in a community college, occupational, or trade school, 4=Attend college, but not complete a 4-year degree, 5=Graduate from college, 6=Obtain a Master's degree or equivalent, 7=Obtain a Ph.D., M.D., or other advanced degree, and 8=don't know. The 8=don't know category was removed. Based on previous research (e.g., Blackwell & McLaughlin, 1999), I treated educational aspirations as a continuous variable and recoded it into years of schooling, rather than use the original categories. These new values included 11 = less than high school graduation; 12 = high school diploma or GED only; 14 = attend or complete community college, vocational, or trade school; 15 = attend college but not complete a 4-year degree; 16 = graduate from college; 18 = obtain a Master's degree or equivalent; and 22 = obtain a Ph.D., M.D., or other advanced degree. Previously, Irvin et al. (2011) used this same coding strategy.

Academic achievement. I used two variables to measure academic achievement. First, students indicated their grades with the item, "Which of the following best describes your grades in school this year?" (**s41**) Responses were coded: 1 = Mostly A's to 8 = Below D's. The original scales were reversed (1 = below D's; 8 = Mostly A's). Second, educational achievement was measured by teachers reporting how well they

expected the student to perform (**ts_2**). The teacher question read, "Which of the following best describes the students grades in school?" Responses were 1 = Mostly A's to 8 =Below D's. These were reverse coded and both items were averaged and transformed into a continuous variable (**student_teach_compo**). Prior work using the *RHSA* sample has also used grades as a continuous variable (see Meece et al., 2013, 2014). α = .79 for the current sample.

Moderating variable. The study included gender as a key variable hypothesized to modify direct and indirect relations among independent, mediating, and outcome variables.

     Gender. Students self-identified as being male or female (**s44**). Female students accounted for 51.9% of the sample and males accounted for 47.7%. Gender was used as a moderator to see if and how pathways to postsecondary enrollment varied according to gender.

Dependent variable. The primary dependent variable was students' college enrollment. The data were provided by the National Student Tracker Clearinghouse.

     Postsecondary enrollment. The research team gathered postsecondary enrollment information through formatting and sending our student information file to the NSC. When the file was sent back to us, the data management team created a variable to signify whether or not students had ever enrolled in a postsecondary institution after high school. This variable is dichotomous (**Everenrolled**) and signifies whether students had ever enrolled in a two-year or four-year institution (enrolled in college=1) or did not ever enroll in postsecondary education (0=did not enroll in college).

Analytic Procedures

To investigate my research questions, I created a conceptual model (*Figures 7 and 8*), grounded in theoretical and empirical research on the educational trajectories of rural youth. In this section, I describe the analytical strategies that I use to test the research hypotheses of the study.

Descriptive analyses. Using SPSS 22.2, I conducted descriptive analyses including analyses of means, standard deviations, skewness, and kurtosis. Second, bivariate statistics (i.e., correlation matrices) were conducted and these results are presented in Table 5.[2] I also determined the nesting structure of (a) students across the 73 schools and (b) the 73 schools across 34 states. Since this dataset has a nested data structure (students nested within schools), I calculated the ICCs and used the TYPE=COMPLEX command in my M*plus* analysis to adjust standard errors.

Table 5

Correlations and Descriptive Statistics

	1	2	3	4	5	6	7	8
1. Parent respect								
2. Family responsib.	.43**							
3. Rural identity	.32**	.25**						
4. Job percept.	.18**	.11**	.28**					
5. Parent expect.	.17**	.14**	.11**	.005				
6. Ed. Aspirations	.07**	.04*	.002	-.10**	.43**			
7. Academic ach.	.15*	-.05**	.09**	-.05**	.28**	.42**		
8. Econ. Hardship	-.18**	.06**	-.08**	-.06**	-.12**	-.08**	-.12**	
Mean (SD)	4.3(1.3)	3.5(1.1)	3.5(1.4)	2.9(1.9)	4.6(1.5)	5.1(1.4)	6.2(1.5)	1.8(.9)
Mean men (SD)	4.3(1.3)	3.4(1.1)	3.6(1.4)	3.0(1.1)	4.4(1.6)	4.8(1.4)	5.8(1.6)	1.8(.9)
Mean women (SD)	4.3(1.2)	3.7(1.0)	3.5(1.4)	2.8(1.1)	4.8(1.5)	5.3(1.3)	6.5(1.4)	1.8(.9)

*Correlation is significant at the .05 level
**Correlation is significant at the .01 level

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[2] I acknowledge that the original *RHSA* sample contained students nested in 73 schools. Considering the effects of nesting is important, as nesting violates the assumption of independent observations (Raudenbush & Bryk, 2002). However, I do not conduct tests for nesting effects in my dissertation for two reasons. First, my dependent variable is postsecondary enrollment and it is unclear how students are distributed across postsecondary institutions. Second, I am not interested in relations across levels. That is, I do not examine school or teacher effects on postsecondary enrollment. Instead, I investigate student-level variables and outcomes.

Missing data. An analysis of missing data was conducted to determine the degree

of missing data, and whether data are missing at random (MAR) or missing completely at

random (MCAR). First, I calculated the amount of missing data for each study variable.

These results are displayed in Table 6.

Table 6

Missing Data Information

	% missing	# of items
Parent respect/identification	2.8	3
Parental expectations	3.9	2
Family responsibility	9	6
Rural identity	8.7	5
Positive job perceptions	10.7	3
Economic hardship	6.7	3
Educational aspirations	7.4	1
Academic achievement	1.3	2
Gender	.4	1
Postsecondary enrollment	0	1

Positive perceptions of local job opportunities had the most missing data, with 10.7%

missing. Little's MCAR test was employed to test for MCAR over any variables that

displayed missing values (Little, 1988). Results of Little's MCAR test yielded a $\chi^2 =$

753.906, $df = 355$, $p < .001$. Since we rejected the null hypothesis, there could be data

that are missing not completely at random, and could be missing systematically. To

investigate this missingness I looked to see if there were any patterns in the data.

As shown in *Figure 5*, the first pie chart indicates that all of the variables in the

analysis contain at least one missing value. Then, the center pie chart indicates that there

is complete data for 76.12% of the cases in the dataset. The last pie chart on the right

indicates that 6.247% of all values are missing.

Overall Summary of Missing Values
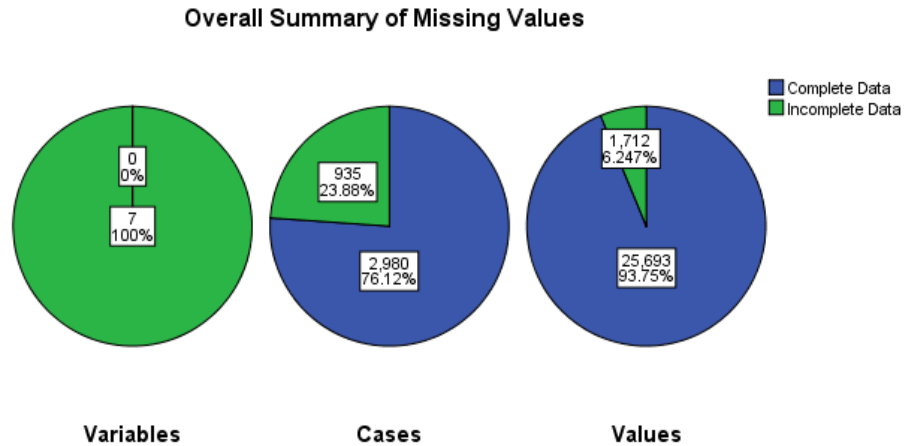
Figure 5. Pie charts summarizing missing values in the dataset

I also looked at visual patterns of the missing data. *Figure 6* shows that patterns of missingness from variables with the least missing values (on the far left) to the pattern of missing values for the variable with the most missing values (on the far right). Positive perception of jobs contained the most amount of missing data at 10.7% and the data that are missing seemed to be lumped together. That is, the visual displays groups of cases with the same patterns of missingness and the patterns are shown according to where (on each variable) the missing values are located.
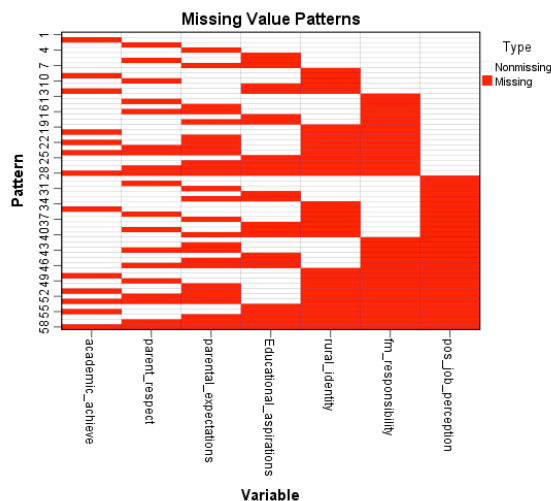
Figure 6. This figure shows patterns of missingness. Variables with the least missing values are on the far left and variables with the most missing values are on the far right.

Since the data did not meet the assumption of MCAR and over 5% of cases are missing, listwise deletion was not used, and instead, I used full information maximum likelihood (FIML) in M*plus* (Aycock, 2005; Graham, 2009; Schlomer, Bauman, & Card, 2010; Tabachnick & Fidell, 2001). FIML is the default option in M*plus* and a model-based method for estimating parameters when there is missing data (Olinsky, Chen, & Harlow, 2003; Muthén & Shedden, 1999) and can be an alternate method to imputing data. With FIML, observed information is utilized to generate the maximum likelihood estimation of model parameters (Enders, 2001). Sets of parameters are applied to the data, with each set of parameters having a different likelihood value (the probability of observing that sample under the conditions of particular parameter estimates). The final parameter estimates are those associated with the highest likelihood values. This technique can provide maximum likelihood estimation for continuous, binary, categorical, or count data (Aycock, 2005). FIML is a sound method for working with large samples and also has advantages over traditional ways of dealing with missing data (Aycock, 2005). Two advantages of FIML include that the imputation and the analysis are simultaneously conducted and that FIML generates precise standard errors through retaining the sample size (Olinsky et al., 2003).

Descriptions of mediation, moderation, and moderated mediation. After generating descriptive statistics, I employed moderated mediation analyses to examine (a) how students' perceptions of family and residence predict the postsecondary enrollment behaviors of rural youth, (b) if academic achievement and educational aspirations mediate these relations, and (c) if these relations are moderated by gender. Moderated mediation is an appropriate analytic technique for my dataset and research questions

because my hypothesized model includes moderation as well as mediation effects. The following sections include a discussion of mediation, moderation, moderated mediation, and a detailed plan for conducting moderated mediation analyses.

Mediation. Mediation occurs when a third variable (M) acts as intermediate in the causal relation between predictor (X) and outcome (Y) variables. Baron and Kenny (1986) define mediation as when an additional variable "accounts for the relation between the predictor and the criterion" (p. 1176). Put another way, in a mediation model the predictor variable causes the mediator, which then causes the outcome variable (MacKinnon, 2008).

Moderation. Moderation occurs when a third variable affects the direction and/or strength between an independent and a dependent variable. This definition comes from Baron and Kenny (1986), who define a moderator as, "a qualitative (e.g., sex or race) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable" (p. 1174).

Moderated mediation analyses. When there is both moderation and mediation, there are two general types of effects; moderation of a mediated effect and mediation of a moderated effect (Baron & Kenny, 1986). The current study examines moderation of a mediated effect, as I am interested in how X (e.g., family responsibility) to M (i.e., educational aspirations) and M to Y (e.g., postsecondary enrollment) differ according to a moderator (i.e., gender). Preacher, Rucker, and Hayes (2007) define moderated mediation as occurring when the mediated relations are contingent on the level of a moderator. In my dissertation I will examine how the conditional indirect effects of perceptions of

family and residence on postsecondary enrollment relations, via educational aspirations and academic achievement, differs in strength by gender. In addition, I hypothesize there to be total effects moderation, where gender moderates the indirect and the direct effect paths (Kline, 2011).

Statistical programs. Data were analyzed using SPSS version 22.0 and M*plus* version 7. I used SPSS to generate descriptive statistics and M*plus* to test for mediation, and then moderated mediation in a path analytic framework. M*plus* is an appropriate statistical program for testing for moderated mediation for the following reasons (a) it allows researchers to test both dichotomous and continuous outcomes, (b) it generates bootstrapped standard errors and confidence intervals for model coefficients, and (c) it utilizes a full information maximum likelihood technique (FIML) in confronting missing data.

Path analysis. For my dissertation, I analyzed relations using a path analytic framework. Path analysis is related to structural equation modeling, but it is also unique because it incorporates observed (as opposed to latent) variables into a structural model. In the path model the estimates of effects are called path coefficients and are treated similar to regression coefficients in multiple regression (Kline, 2011).

Estimation. For testing both mediation and moderated mediation, I used weighted least squares multivariate estimation (WLSMV). Muthén, Muthén, and Asparouhov (2015) note that WLSMV can be an advantageous estimator to use with categorical outcomes. WLSMV can handle a large number of subjects and is associated with computational speed Muthén et al. (2015).

Running models separately. There are several ways to test for moderated mediation in the presence of more than one mediator. In this study, I ran models separately (i.e., the two mediators are in separate models instead of all variables present in the same model). This method is easier to interpret and fits with my research questions, but is also limited in that it will not simultaneously estimate the impacts of both mediators on the outcome variable. For example, if both educational aspirations and academic achievement have unique mediating effects, estimating the models separately will not capture how the variance is distributed in the model when both mediators are present. The full conceptual model is represented in *Figure 7.*
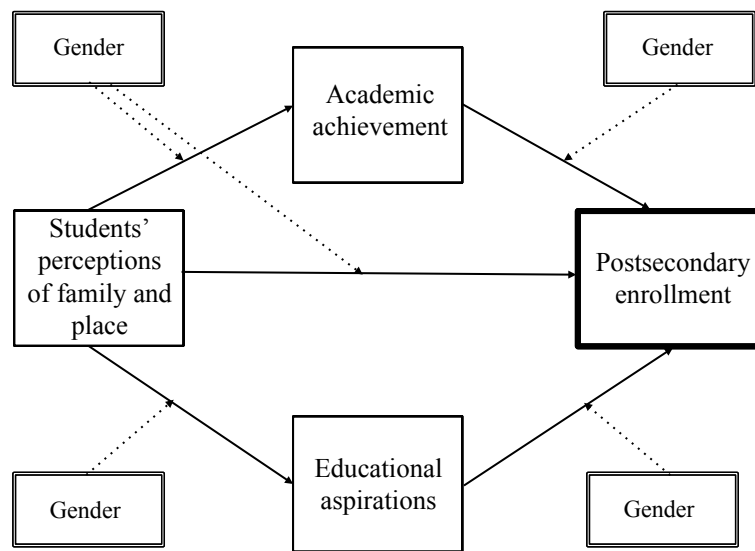
Figure 7. Conceptual model showing the moderated mediation relations. Dotted lines represent gender as a hypothesized moderator and solid lines represent direct and indirect pathways.

Figure 7 includes testing multiple different models, the first model with educational aspirations as a proposed mediator and another model with academic achievement as a mediator.

Testing for Mediation

First, I assessed the conceptual models for significant mediation. To test for mediation, I used M*plus* using the full analytic sample (both boys and girls) and the MODEL INDIRECT (IND) code in M*plus*. I also requested the bias-corrected bootstrapped estimates of the standard errors for the indirect effects (MacKinnon et al., 2004), which yields the least biased confidence intervals, greatest power, and the most accurate Type I error.

Although Baron and Kenny's (1986) causal steps approach has been widely used to test for indirect effects, many researchers have cited problems with this approach (e.g., see MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004) and have developed new methods for testing indirect effects[3]. There are several new methods that test for indirect effects, however a growing number of researchers recommend using a bootstrapping strategy (Hayes, 2009; MacKinnon et al., 2004; Preacher & Hayes, 2004; Williams & MacKinnon, 2008).

Bootstrapping is a resampling method used for estimation and also hypothesis testing. As Preacher et al. (2007) write, "In bootstrapping, the sample is conceptualized as a pseudo-population that represents the broader population from which the sample was derived, and the sampling distribution of any statistic can be generated by calculating the statistic of interest from multiple samples of the data" (p. 190). This bootstrap technique creates an empirical representation of the sampling distribution of the indirect effect by handling the empirical sample as representative of the overall population. Resampling of

---

[3] There is a distinction made in the literature regarding *mediated effects* and *indirect effects*. A mediated effect occurs when there is one mediating variable and when there is the assumption that the original X → Y path is significant. Indirect effects do not make the assumption that there is an initial significant direct relation between X and Y (Preacher & Hayes, 2004).

the empirical sample occurs as a way to imitate the original sampling process. Resampling occurs *k* number of times (e.g., 5000), and bootstrapped confidence intervals (CI) are generated to determine the presence of indirect effects. The null hypothesis (i.e., that there is no indirect effect) is rejected at the α level of significance if zero lies outside of the CI. Stated another way, if zero is not within the CI one can conclude that the indirect effect is significantly different from zero (i.e., with 95% confidence, if researchers use the 95% CI).

MacKinnon and his colleagues (MacKinnon et al., 2004; Williams & MacKinnon, 2008) suggest using the bias-corrected (BC) bootstrap confidence interval method to examine the significance of the mediation effects in path analysis. I will request 1,000 bootstrapped samples and will refer to the 95% confidence intervals (CI) (Muthén, 2014). To determine whether there is an indirect effect, I will refer to the *p*-value of the indirect effect and the 95% bias-corrected confidence intervals (Williams & MacKinnon, 2008). If the 95% CI does not contain the value of zero, the indirect effect is considered statistically significant (Cheong & MacKinnon, 2012).

Testing for Moderated Mediation

After testing for significant mediation, I tested for moderated mediation using a multiple group analysis approach (MGA). In my analyses, I tested for total effect moderation, where an external variable (gender) moderates the indirect paths *and* the direct paths in the model (Kline, 2011). I tested for total effect moderation because I hypothesize that relations in my model operate differently for men and women, based on the findings from previous research on the education of rural adolescents.

Testing for multiple group analysis was carried out in an iterative way (Bowen & Guo, 2012; Byrne, 2012). This iterative process has been applied in recent educational

research (Guo, Parker, Marsh, & Morin, 2015). To start, I tested a baseline model where parameters were allowed to freely vary (where no constraints are specified), then I tested a model where all paths are constrained to be equal, or invariant, across gender. If the freely estimated model was associated with better model fit, I proceeded to constrain the direct and indirect paths in a step-by-step fashion to see if there are any improvements in model fit.

First, I constrained the M → Y path. Then I referred to model fit and either kept it constrained or freed it. Then, I constrained all the X → M paths to be equal. If fit got significantly worse, I tested subsets of parameters (e.g., the X → Y's paths or the X → M paths). I referred to model fit each time a path was constrained. If a set of parameters caused a significant worsening in fit, I iteratively examined which parameters within the subset were variant. I tested one at a time and freed all of the other parameters because the order of the testing could affect the significance of other parameters in the model. *Figure 8* is a representation of the various direct, indirect, and moderating pathways that were tested.
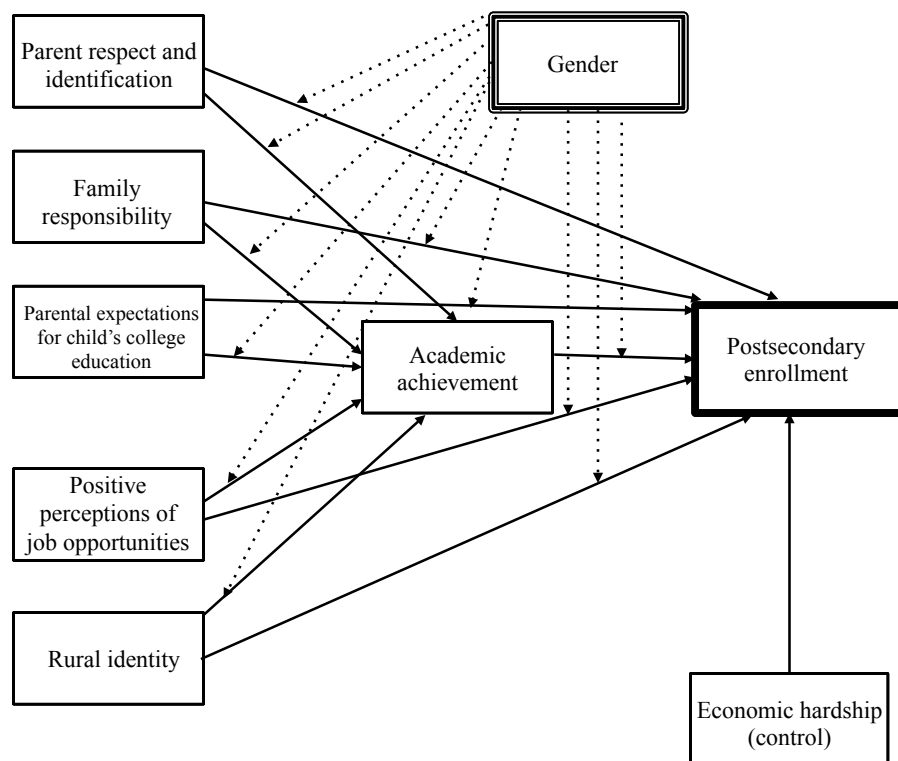
Figure 8. Conceptual model showing the moderated mediation relations. Dotted lines represent hypothesized moderated pathways and solid lines represent direct and indirect pathways.

The expectation was that adding constrains to the model would produce a worse fit in a *statistically significant* way (Bowen & Guo, 2012). During the process of constraining parameters, I referred to the changes in chi-square, using the DIFFTEST option in M*plus.* If the fit of the model, as determined by the change in chi-square, became worse in a statistically significant way, the previous model was retained. If I found that model fit was better when some parameters varied freely across gender, that meant that gender moderated the relations represented by those specific parameters (Bowen & Guo, 2012) and there was evidence of moderated mediation (Preacher et al., 2007).

Model assumptions. There are several model assumptions that come into play when testing for indirect effects. The methods applied in this dissertation are applications of multiple regression and, as such, should adhere to the assumptions and limitations attached to multiple regression (Preacher et al., 2007). There are four core assumptions that justify the use of linear regression. These assumptions include (a) linearity and additivity, (b) statistical independence of errors, (c) homoscedasticity, and (d) normality of the error distribution. I will address these assumptions during initial data analysis.

Summary of Analysis Plan

This study was designed to address limitations of prior research and extend findings from the *Rural High School Aspirations Study* (*RHSA*) (Byun et al., 2012c; Johnson et al., 2005; Meece et al., 2013; 2014). I extended earlier research by exploring how family- and residential perceptions directly and indirectly predict postsecondary enrollment among rural youth. Unlike previous work, I analyzed a nationwide, diverse, and contemporary sample of rural youth. I also used sophisticated analytical techniques, which are not often applied to populations of rural students. In the following section, I provide a summary of my guiding research questions, corresponding hypotheses, and analysis strategies.

Research Questions, Corresponding Hypotheses and Analytic Strategies

1. *Are there significant differences in mean levels of variables (i.e., educational aspirations, academic achievement, perceptions of family and place, and postsecondary enrollment) across gender?*

I hypothesized that there would be significant differences among the mean levels of my predictor variables across gender (Hypothesis 1). I hypothesized that women would perceive significantly higher parental expectations and report higher educational aspirations, and academic achievement. In addition, I hypothesized that men would report

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significantly higher levels of rural identity, family responsibility, and positive perceptions

of local job opportunities. These predicted relations are consistent with prior research

(Chenoweth & Galliher, 2004; Conger & Elder, 1994; Elder et al., 1994; Elder et al.,

1996a; Johnson et al., 2005; Meece et al., 2013; 2014) and these differences were tested

through conducting a multivariate analysis of variance (MANOVA) and calculating

sample effect sizes to compare sample means (Cohen's *d*).

2. *Direct effects[4] (X → Y): What are the direct effects of parent respect/identification, perceived parental expectations, family responsibility, perceptions of local job opportunities, rural identity, and educational aspirations on postsecondary enrollment among rural men and women?*

I hypothesized that there would be direct effects of parent respect and identification

(Hypothesis 2a), family responsibility (Hypothesis 2b), perceived parental expectations

(Hypothesis 2c), rural identity (Hypothesis 2d), perceptions of local job opportunities

(Hypothesis 2e), and educational aspirations (2f) on postsecondary enrollment among

rural youth. These predicted relations are consistent with prior research (Byun et al.,

2012a; Byun et al., 2012b; Elder et al., 1996a; Johnson et al., 2005) and were tested

through conducting mediation analyses in M*plus*.

3. *Direct effects[5] (X → Y): What are the direct effects of parent respect/identification, perceived parental expectations, family responsibility, perceptions of local job opportunities, rural identity, and academic achievement on postsecondary enrollment among rural men and women?*

I hypothesized that there would be direct effects of parent respect and identification

(Hypothesis 3a), family responsibility (Hypothesis 3b), perceived parental expectations

(Hypothesis 3c), rural identity (Hypothesis 3d), perceptions of local job opportunities

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[4] X denotes the independent variable, Y denotes the dependent variable, M denotes the mediator, and W denotes the moderator.

[5] X denotes the independent variable, Y denotes the dependent variable, M denotes the mediator, and W denotes the moderator.

(Hypothesis 3e), and academic achievement (Hypothesis 3f) on postsecondary enrollment among rural youth. These predicted relations are consistent with prior research (Byun et al., 2012a; Byun et al., 2012b; Elder et al., 1996a; Johnson et al., 2005) and were tested through conducting mediation analyses in M*plus*.

4. *Indirect effects* (X → M → Y*): Do educational aspirations mediate the relations between parent respect/identification, perceived parental expectations, family responsibility, perceptions of local job opportunities, rural identity and postsecondary enrollment?*

I hypothesized that educational aspirations would fully mediate the relations between parent respect and identification (Hypothesis 4a), family responsibility (Hypothesis 4b), perceived parental expectations (Hypothesis 4c), rural identity (Hypothesis 4d), and perceptions of local job opportunities (Hypothesis 4e) and postsecondary enrollment among rural youth. These predicted relations are consistent with prior research (Bandura et al., 2001; Beal & Crockett, 2010, Elder et al., 1996a; Hektner, 1995; Hutchins et al., 2012; Johnson et al., 2005; Schneider & Stevenson, 1999) and were tested through conducting mediation analyses in M*plus*.

5. *Indirect effects* (X → M → Y*): Does academic achievement mediate the relations between parent respect/identification, perceived parental expectations, family responsibility, perceptions of local job opportunities, rural identity and postsecondary enrollment?*

I hypothesized that academic achievement would fully mediate the relations between parent respect and identification (Hypothesis 5a), family responsibility (Hypothesis 5b), perceived parental expectations (Hypothesis 5c), rural identity (Hypothesis 5d), and perceptions of local job opportunities (Hypothesis 5e) and postsecondary enrollment among rural youth. These predicted relations are consistent with prior research (Carr &

Kefalas, 2009; Petrin et al., 2014) and were tested through conducting mediation analyses

in M*plus*.

6. *Moderated mediation* (X $\overset{w}{\to}$ M)*: Does gender moderate the effects of parent respect/identification, perceived parental expectations, family responsibility, perceptions of local job opportunities, and rural identity on educational aspirations?*

I hypothesized that gender would moderate the effects of parent respect/identification

(Hypothesis 6a), family responsibility (Hypothesis 6b), perceived parental expectations

(Hypothesis 6c), perceptions of local job opportunities (Hypothesis 6d), and rural identity

(Hypothesis 6e) on educational aspirations such that the mediated relationship would be

weaker for women (compared to men) for rural identity and perceptions of local job

opportunities, but stronger for family-related variables (parent respect and identification,

family responsibility, perceived parental expectations). These predicted relations are

consistent with prior research (Chenoweth & Galliher, 2004; Conger & Elder, 1994;

Elder et al., 1994; Elder et al., 1996a; Meece et al., 2014) and were tested through

conducting multiple group analyses in M*plus*.

7. *Moderated mediation* (X $\overset{w}{\to}$ M): *Does gender moderate the effects of parent respect/identification, perceived parental expectations, family responsibility, perceptions of local job opportunities, and rural identity on academic achievement?*

I hypothesized that gender would moderate the effects of parent respect/identification

(Hypothesis 7a), perceived parental expectations (Hypothesis 7b), family responsibility

(Hypothesis 7c), perceptions of local job opportunities (Hypothesis 7d), and rural identity

(Hypothesis 7e) on academic achievement such that the mediated relationship would be

weaker for women (compared to men) for rural identity and perceptions of local job

opportunities, but stronger for family-related variables (parent respect and identification,

family responsibility, perceived parental expectations). These predicted relations are

consistent with prior research (Chenoweth & Galliher, 2004; Conger & Elder, 1994;

Elder et al., 1994; Johnson et al., 2005; Meece et al., 2013, 2014) and were tested through

conducting multiple group analyses in M*plus.*

8. *Moderated mediation* (M $\xrightarrow{w}$ Y): *Does gender moderate the effects of educational aspirations on postsecondary enrollment?*

I hypothesized that gender would moderate the effects of educational aspirations on

postsecondary enrollment (Hypothesis 8). These predicted relations are consistent with

prior research (Agger & Meece, 2015; Chenoweth & Galliher, 2004; Conger & Elder,

1994; Elder et al., 1996a; Johnston et al., 2005; Meece et al., 2013, 2014) and were tested

through conducting multiple group analyses in M*plus.*

9. *Moderated mediation* (M $\xrightarrow{w}$ Y): *Does gender moderate the effects of academic achievement on postsecondary enrollment?*

I hypothesized that gender would moderate the effects of academic achievement

on postsecondary enrollment (Hypothesis 9). These predicted relations are consistent

with prior research (Agger & Meece, 2015; Chenoweth & Galliher, 2004; Conger &

Elder, 1994; Elder et al., 1996a; Johnson et al., 2005; Meece et al., 2013, 2014) and were

tested through conducting multiple group analyses in M*plus.*

CHAPTER 4: RESULTS

This chapter presents the results of investigating relations among rural students' perceptions of family and place, their academic achievement, educational aspirations, and subsequent postsecondary enrollment. Results are presented in three sections. First, descriptive analyses are presented. Second, mediation model results are described, and third, results from the moderated mediation models are reported, with findings organized according to each hypothesis.

Preliminary Tests and Descriptive Information

Data from the *Rural High School Aspirations Study* (*RHSA*) and the Spencer Foundation *Fulfilling Dreams Follow-up Study* (*RHSA-F*) were examined visually for departures from normality. In addition to visual inspection, study variables were tested for skewness and kurtosis. Skewness is a measure of the asymmetry of the data and kurtosis is a measure of how peaked a distribution is (Kim, 2013). West, Finch, and Curran (1995) contend that an absolute (±) skew value of > 2 and an absolute (±) kurtosis value > 7 indicate a departure from normality. Results are outlined in Table 7.

Table 7

Descriptive Statistics: Skewness and Kurtosis

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Parents' educational expectations	-.94	.04	-.26	.08
Parent respect/identification	-.73	.04	.00	.08
Family responsibility	-.04	.04	-.41	.08
Rural identity	.05	.04	-.90	.08
Local job opportunities	.43	.04	-.25	.08
Academic achievement	-.71	.03	-.08	.08
Educational aspirations	.56	.04	-.20	.08

Postsecondary enrollment	-.27	.03	-1.92	.08

The results featured in Table 7 show that none of the variables exhibited extreme values (West et al., 1995). Histograms of the most skewed and kurtotic variables are featured in *Figures 9 and 10*, even though these variables did not exceed the threshold levels as outlined by West et al. (1995).
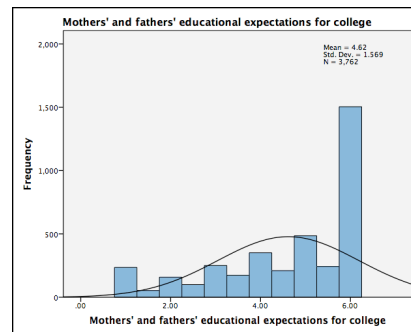
Figure 9. Most skewed variable
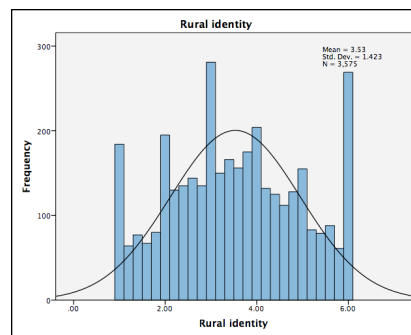
Figure 10. Most kurtotic variable

Demographic information. The data used for the current dissertation included students who were in Grades 11 and 12 at the time of the original data collection. This original data collection period spanned the 2007-2008 school year and included 8,754 students. However, the data were filtered so that students in Grades 9 and 10 were

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omitted from analyses. I chose to only include students who were enrolled in Grade 11 or 12 at the time of the original data collection because students in earlier grades may not have been enrolled in college when the follow-up data collection was carried out. The final sample consisted of 3,915 students.

Of the 3,915 students in the final sample, 56% of the students ($n = 2,191$) completed the student survey in Grade 11 and 44% ($n = 1,724$) completed the student survey in Grade 12. Demographic information for students in the study sample is found in Table 8. The sample was evenly split in terms of gender, with slightly more female students ($n = 2,032$, 51.9%) than male students ($n = 1,867$, 47.7%), and consisted mainly of students who identified as White ($n = 2,591$, 66.2%).

Table 8

Rural Student Demographics

	n	%	*M*	*SD*
Gender				
Male	1,867	47.7		
Female	2,032	51.9		
Race/ethnicity				
White	2,591	66.2		
Black	266	6.8		
Latino/Latina	418	10.7		
Asian	39	1.0		
American Indian or Alaska Native	124	3.2		
Native Hawaiian or Other Pacific Islander	8	0.2		
Other	34	0.9		
Multiracial	374	9.6		
Economic hardship			1.81	.96

Note. M = mean, *SD* = standard deviation.

In addition to collecting demographic information, I calculated means, standard deviations, effect sizes, and correlations for study focal variables. This information is

presented in Tables 9 and 10.

Table 9

Descriptive Statistics for Study Focal Variables

	M (SD)			Range	Cohen's *d*
	Total	*Female* *n=2,032*	*Male* *n=1,867*		
Parent respect/identification	4.33 (1.26)	4.34 (1.25)	4.31 (1.25)	1-6	.02
Parental expectations	4.62 (1.57)	4.79 (1.4)	4.42 (1.64)	1-6	.24
Family responsibility	3.54 (1.08)	3.65 (1.03)	3.42 (1.11)	1-6	.21
Rural identity	3.53 (1.42)	3.49 (1.40)	3.58 (1.44)	1-6	.06
Positive perceptions jobs	2.91 (1.13)	2.82 (1.09)	3.01 (1.15)	1-6	.17
Academic achievement	6.19 (1.52)	6.48 (1.36)	5.86 (1.61)	1-8	.42
Educational aspirations	16.90 (2.71)	17.32 (2.66)	16.42 (2.67)	11-22	.34
Postsecondary enrollment	0.57 (0.49)	0.61 (.48)	0.52 (0.49)	0-1	.19

Note. M = mean, *SD* = standard deviation.

I utilized Cohen's measure of sample effect size for comparing two sample means and found small to medium effect sizes, defined as .20 to .50 according to Cohen (1988), for parental expectations, family responsibility, academic achievement, and educational aspirations.

I also calculated intercorrelations among the focal variables. Leech, Barrett, and Morgan (2015) note that study variables are highly correlated at .50 or .60 and above. Intercorrelations among my study variables did not exceed .50 and, therefore, did not fall into the category of highly correlated (Leech et al., 2015).

However, some of my focal variables were moderately correlated, such as parent respect/identification with family responsibility (r = 0.43), educational aspirations with parental expectations (r = 0.43), and academic achievement with educational aspirations (r = 0.42).

Table 10

Correlations among Study Variables

	1	2	3	4	5	6	7	8
1. Parent respect/identification								
2. Family responsibility	.43**							
3. Rural identity	.32**	.25**						
4. Positive job perceptions	.18**	.11**	.28**					
5. Parent expectations	.17**	.14**	.11**	.00				
6. Educational aspirations	.07**	.04*	.00	-.10**	.43**			
7. Academic achievement	.15*	-.05**	.09**	-.05**	.28**	.42**		
8. Economic hardship	-.18**	.43**	-.07**	-.06**	-.12**	-.06**	-.12**	
9. Postsecondary enrollment	.06**	-.03	.06**	-.05**	.25**	.22**	.29**	-.10**

*Correlation is significant at the .05 level.
**Correlation is significant at the .01 level.

The nesting structure of the data. Before analyses took place, I determined the nested structure of the data. To do this, I first went back and studied the sampling strategy for the original *RHSA* study, as conducted by the original *RHSA* investigators. As discussed in Chapter 3, the sampling strategy included a two-stage cluster sample of rural high school students. High schools were the primary sampling units (PSUs) and students were the secondary sampling units (SSUs). The PSUs were chosen by stratifying the most recent list of nationwide schools containing students in Grades 9 through 12 in locale district codes of 31 to 43. These locale codes were created by the Common Core of Data (CCD) and correspond to the following regions listed in Table 11. The final study contained students from 73 schools across 34 states. Revisiting the original sampling strategy informed how I tested for nesting. That is, since states were not included in the sampling frame, I did not examine how the schools were distributed among states, only how students were nested within schools. It is also important to note that students from the same high school could have been nested in certain colleges or in certain states. This is referred to as cross-classified data structure and it requires a special estimation procedure (Myers & Beretvas, 2006). However, the nature of the data in the current study

did not allow for investigation of this type of nesting because I did not have information

about the state and actual college that students enrolled in; this information was not

provided by StudentTracker.

Table 11

CCD Locale Codes for RHSA Sample

31 - Town, Fringe	Territory inside an urban cluster that is less than or equal to 10 miles from urbanized area
32 - Town, Distant	Territory inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area
33 - Town, Remote	Territory inside an urban cluster that is more than 35 miles from an urbanized area
41 - Rural, Fringe	Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster
42 - Rural, Distant	Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster
43 - Rural, Remote	Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster

To examine how nesting might affect my study, I calculated the intraclass correlation

(ICC) using my dichotomous outcome variable of interest, postsecondary enrollment (i.e.,

ever enrolled in a postsecondary institution). There are several ways to calculate the ICC

for logistic models. I chose a way that holds some advantages over other approaches,

according to Snijders and Bosker (2012). This approach takes the logistic distribution for

the level-one residual that has a variance of $\pi^2/3 = 3.29$ and applies that to a two-level

logistic random intercept model with an intercept variance of τ_0^2. The ICC is calculated

according to the following equation:

$$\rho_I = \frac{\tau_0^2}{\tau_0^2 + \pi^2/3}$$

Using SAS and the PROC GLIMMIX command with the link=logit function, I estimated an unconditional model with the school identification variable (SchoolID) and the outcome variable (Everenrolled). Then I used the equation above to calculate the ICC. I found that 17% of the variance in the outcome variable, whether students ever enrolled in a postsecondary institution, was attributable to the school level. While this number is not trivial and falls above the cut-off of 10% (Lee, 2000) for using Hierarchical Linear Modeling (HLM) with schooling data, I accounted for this nesting issue by using the TYPE=COMPLEX command in M*plus*, which adjusts the standard errors of the estimates to account for clustering. I also argue that using HLM is not required in the current study because my research questions do not focus on cross-level or multi-level relations (Nezlek, 2008). Rather, my research questions (and the data used to answer these questions) are student-level; I do not investigate school or teacher effects on postsecondary outcomes.

Descriptive Results

Research question 1. My first research question was: Are there significant differences in the mean levels of study focal variables across gender? I hypothesized that rural women would report significantly higher parental expectations, higher educational aspirations, and academic achievement. In addition, I hypothesized that men would report significantly higher levels of rural identity, family responsibility, and positive perceptions of local job opportunities.

To answer my first research question, I conducted multivariate analysis of variance (MANOVA). MANOVA procedures were used because they test whether mean differences among groups on a combination of outcome variables are likely to have

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occurred by chance (Tabachnick & Fidell, 2011). The MANOVA resulted in a significant

Pillai's Trace = .07, $F(9) = 24.67$, $p < .001$, partial eta^2 = .07. Follow-up univariate

ANOVA tests indicated significant difference across gender in postsecondary enrollment

($F(1) = 24.62$, $p < .001$), academic achievement ($F(1) = 100.11$, $p < .001$), educational

aspirations ($F(1) = 76.01$, $p < .001$), economic hardship ($F(1) = 4.07$, $p < .05$), parental

expectations ($F(1) = 41.42$, $p < .001$), rural identity ($F(1) = 4.31$, $p < .05$), positive

perceptions of jobs ($F(1) = 17.35$, $p < .001$), and family responsibility ($F(1) = 31.35$, $p <$

.001). Rural female students enrolled in postsecondary education at significantly higher

rates (female $M = .64$, male $M = .55$), and reported higher academic achievement (female

$M = 6.60$, male $M = 6.07$), educational aspirations (female $M = 17.38$, male $M = 16.52$),

economic hardship (female $M = 1.81$, male $M = 1.74$), parental expectations (female $M =$

4.88, male $M = 4.52$) and family responsibility (female $M = 3.63$, male $M = 3.41$). Rural

male students reported significantly higher rural identity (male $M = 3.62$, female $M =$

3.51) and positive job perceptions (male $M = 3.01$, female $M = 2.84$). Standard deviations

for means are found in Table 9.

Based on results, hypothesis one was largely supported. The only finding that was

not congruent with my original hypothesis was that rural male students did not report

significantly higher levels of family responsibility, and instead, rural female students did.

Mediation Results

To answer research questions two through nine, I conducted mediation and

moderated mediation analyses using a path analytic framework in M*plus*. I conducted the

mediation analyses first and used the full analytic sample (both female and male students)

and MODEL INDIRECT (IND) code in M*plus*. I selected weighted least squares

multivariate estimation (WLSMV) and requested 1,000 bootstrapped samples. Because

WLSMV was used and my outcome variable is dichotomous, probit regression

coefficients were generated (Muthén, 2005). In the following sections, I present the two

mediation models separately, Model 1, which included educational aspirations as a

mediator and Model 2, which included academic achievement as a mediator. Research

questions 2 and 4 are related to Model 1 and research questions 3 and 5 are related to

Model 2.

Educational Aspirations Mediation Model (Model 1)

      Research questions 2 and 4. The first model (Model 1) contained educational

aspirations as a mediator and included socioeconomic status and academic achievement

as covariates. Results from this model generated an $R^2 = 0.18$ (for postsecondary

enrollment). Unstandardized model results are presented in Table 12 and standardized

model results are presented in Table 13.

Table 12

Unstandardized Direct, Indirect, Total Effects for Educational Aspirations (Model 1)

	Postsecondary Enrollment			
Predictor and covariate	Direct	Indirect	Total	Confidence Interval (lower 2.5% - upper 2.5%)
Parent respect/identification	0.01	0.00	0.01	-0.007 – 0.000
Parental expectations	0.13***	0.02*	0.15***	**0.003 – 0.030**
Family responsibility	-0.06†	0.00	-0.06	0.000 – 0.010
Rural identity	0.03	0.00	0.03	**-0.007 – -0.001**
Positive job perceptions	-0.05	-0.01†	-0.05	**-0.013 – -0.002**
Covariate				
Economic hardship	-0.07*			
Academic achievement	0.21***			

Note. Bolded confidence intervals do not include zero.
†$p = .05$ *$p < .05$ **$p < .01$ ***$p < .001$

For Model 1, I hypothesized that there would be significant direct effects of parent respect/identification (Hypothesis 2a), family responsibility (Hypothesis 2b), perceived parental expectations (Hypothesis 2c), rural identity (Hypothesis 2d), perceptions of local job opportunities (Hypothesis 2e), and educational aspirations (Hypothesis 2f) on the prediction of postsecondary enrollment. In addition, I hypothesized that educational aspirations would mediate these relations (Hypotheses 4a-e).

Table 13

Standardized Direct, Indirect, Total Effects for Educational Aspirations (Model 1)

	Postsecondary Enrollment			
Predictor and covariate	Direct	Indirect	Total	Confidence Interval (lower 2.5% - upper 2.5%)
Parent respect/identification	0.01	0.00	0.01	-0.008 – 0.000
Parental expectations	0.19***	0.02*	0.21***	**0.005 – 0.043**
Family responsibility	-0.06†	0.00	-0.05	0.000 – 0.009
Rural identity	0.04	0.00	0.04	**-0.009 – -0.001**
Positive perceptions jobs	-0.05	-0.01*	-0.05	**-0.013 – -0.002**
Covariate				
Economic hardship	-0.06*			
Academic achievement	0.29***			

Note. Bolded confidence intervals do not include zero.
†$p = .05$ *$p < .05$ **$p < .01$ ***$p < .001$

I found significant negative direct effects of family responsibility (Hypothesis 2b), a significant positive direct effect of perceived parental expectations (Hypothesis 2c), and a significant positive direct effect of educational aspirations (Hypothesis 2f) on postsecondary enrollment. I did not find significant direct effects of rural identity (Hypothesis 2d) and perceptions of local job opportunities (Hypothesis 2e), on predict postsecondary enrollment.

Model 1 results for indirect effects showed evidence for two significant mediated pathways: one partially mediated path and one fully mediated path (Rucker, Preacher, Tormala, & Petty, 2011). Full (or complete) mediation occurs when researchers find a significant indirect effect and no presence of a significant direct effect. On the other hand, when the direct effect is significant, when controlling for the mediator, researchers report that the mediator partially mediated the relation between X → Y (Rucker et al., 2011).

First, educational aspirations partially mediated the pathway between parental expectations and postsecondary enrollment (Hypothesis 4c). Second, educational aspirations fully mediated the relation between positive job perceptions and postsecondary enrollment (Hypothesis 4e).

Hypotheses for Model 1 were partially supported. I found evidence for direct effects of family responsibility (Hypothesis 2b), perceived parental expectations (Hypothesis 2c), and educational aspirations (Hypothesis 2f) on postsecondary enrollment, but not for the other focal variables. Regarding my mediation hypotheses, I found that educational aspirations partially mediated the pathway between parental expectations and postsecondary enrollment (Hypothesis 4c). I also found that educational aspirations fully mediated the relation between positive job perceptions and postsecondary enrollment (Hypothesis 4e).
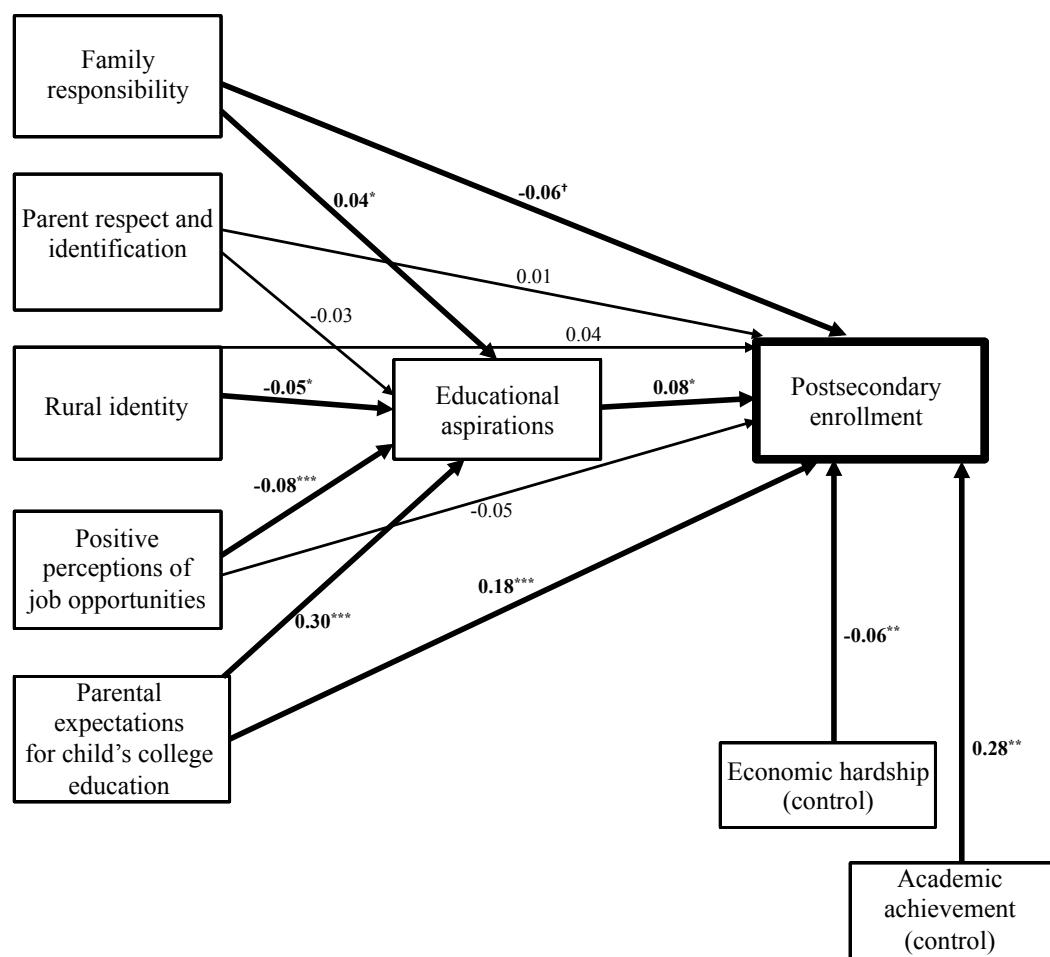
Figure 11. Standardized results for mediation model with educational aspirations as the mediator between family and residential variables and postsecondary enrollment. $^{\dagger}p = .05$ $^{**}p < .01$ $^{***}p < .001$, bolded paths are significant.

Interpreting the probit coefficients. Because my outcome variable is dichotomous and the default estimator in M*plus* for modeling dichotomous variables is WLSMV, the PROBOT link was used, generating probit regression coefficients (Wang & Wang, 2012). Using information from the M*plus* User's Guide (Muthén & Muthén, 2015), I interpreted the meaning of these probit coefficients for the direct paths in my model using the following formula:

$$\text{prob } (y=1) = F \ (\text{-threshold} + b1*x1 + b2*x2 \ ...),$$

where F is the cumulative normal distribution function, the threshold value (the intercept is represented in the threshold) is gathered from M*plus* output by adding MEANSTRUCTURE to the TYPE option of the ANALYSIS command, x1, x2 are predictors, and b1, b2 are the unstandardized probit coefficients (Muthén & Muthén, 2015, p. 494).

In transforming the probit coefficients to probabilities, I used unstandardized coefficients and for the first calculation, held all study variables at their mean level, in order to assess the probability of enrolling in college given that a student reported average levels for the focal variables:

prob (y=1) = F (-threshold + b1*x1 + b2*x2 ...),
= (-1.824 + .007*4.329 + -0.059*3.543 + .132* 4.617 + -.047*2.917
+.033*3.524 +.034*16.9 + -.067*1.814 + .207*6.188)
= F (.319)
=.625

Using the NORMSDIST function in Microsoft Excel (which functions as a z-table), I found the value F(.32) to correspond to a probability of .63. This means that the probability of u=1 (i.e., enrolling in postsecondary education) when all variables in the model are held at their means is .63 (Muthén & Muthén, 2015). In addition, as shown in Table 14, I also calculated probabilities for when study variables were one standard deviation above the mean (and economic hardship was 1 standard deviation below the mean), when everything was one standard deviation below the mean, and when each focal variable was one standard deviation above and below the mean (except for economic hardship, which was included in different fashion, according to the reverse coding of the variable). When study variables were one standard deviation above the

mean the probability of enrollment in a postsecondary institution was .92, and it was .23

when all variables were one standard deviation below the mean. For the unique

contributions of other study variables, please see Table 14.

Table 14

Probit Interpretations for Model 1

Condition	*F* value	Probability of enrollment
At mean	0.32	0.63
Focal variables 1 SD above *M*	1.39	0.92
Focal variables 1 SD below *M*	-0.75	0.23
Parent respect 1 SD above *M*	0.33	0.63
Family responsibility 1 SD above *M*	0.25	0.60
Rural identity 1 SD above *M*	0.39	0.65
Positive job perceptions 1 SD above *M*	0.26	0.60
Parent expectations 1 SD above *M*	0.65	0.74
Educational aspirations 1 SD above *M*	0.57	0.72
Parent respect 1 SD below *M*	0.31	0.62
Family responsibility 1 SD below *M*	0.39	0.65
Rural identity 1 SD below *M*	0.25	0.60
Positive job perceptions 1 SD below *M*	0.38	0.65
Parent expectations 1 SD below *M*	0.00	0.50
Educational aspirations 1 SD below *M*	0.07	0.53

Note. M = mean

Academic Achievement Mediation Model (Model 2)

Research questions 3 and 5. The second mediation model (Model 2) featured

academic achievement as a mediator and socioeconomic status as a covariate. This model

generated an R^2 =0.17 (for postsecondary enrollment). Full model results are presented in

Tables 15 and 16.

In this mediation path model, I hypothesized that the direct effects of parent

respect/identification (Hypothesis 3a), family responsibility (Hypothesis 3b), perceived

parental expectations (Hypothesis 3c), rural identity (Hypothesis 3d), perceptions of local

job opportunities (Hypothesis 3e), and academic achievement (Hypothesis 3f) would

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predict postsecondary enrollment. In addition, I hypothesized that academic achievement

would mediate these relations (Hypotheses 5a-e).

Table 15

Unstandardized Direct, Indirect, Total Effects for Academic Achievement (Model 2)

	Postsecondary Enrollment			
Predictor and covariate	Direct	Indirect	Total	Confidence Interval (lower 2.5% - upper 2.5%)
Parent respect/identification	0.00	0.03***	0.04†	**0.021 – 0.051**
Parental expectations	0.14***	0.05***	0.19***	**0.035 – 0.062**
Family responsibility	-0.05	-0.04***	-0.09**	**-0.060 – -0.029**
Rural identity	0.03	0.02**	0.05	**0.009 – 0.029**
Positive perceptions jobs	-0.05	-0.03**	-0.07	**-0.040 – -0.012**
Covariate				
Economic hardship	-0.08**			

Note. Bolded confidence intervals do not include zero.
†$p = .05$ *$p < .05$ **$p < .01$ ***$p < .001$

Table 16

Standardized Direct, Indirect, Total Effects for Academic Achievement (Model 2)

	Postsecondary Enrollment			
Predictor and covariate	Direct	Indirect	Total	Confidence Interval (lower 2.5% - upper 2.5%)
Parent respect/identification	0.01	0.04***	0.05†	**0.025 – 0.060**
Parental expectations	0.21***	0.07***	0.28***	**0.052 – 0.091**
Family responsibility	-0.05	-0.04***	-0.10**	**-0.062 – -0.030**
Rural identity	0.04	0.02**	0.02**	**0.012 – 0.038**
Positive perceptions jobs	-0.05	-0.03***	-0.08	**-0.042 – -0.013**
Covariate				
Economic hardship	-0.07**			

Note. Bolded confidence intervals do not include zero.
†$p = .05$ *$p < .05$ **$p < .01$ ***$p < .001$

Results from Model 2 showed evidence of two positive direct effects of perceived parental expectations and academic achievement on postsecondary enrollment. In addition, Model 2 showed evidence of five significant indirect effects; four fully mediated pathways and one partially mediated pathway. Academic achievement fully mediated the relations between (a) parent respect and identification, (b) family responsibility, (c) rural identity, (d) and positive job perceptions. In addition, academic achievement partially mediated the relation between parental expectations and postsecondary enrollment. *Figure 12* illustrates standardized results for Model 2, the mediation model with academic achievement as the mediator between family and residential variables and postsecondary enrollment.
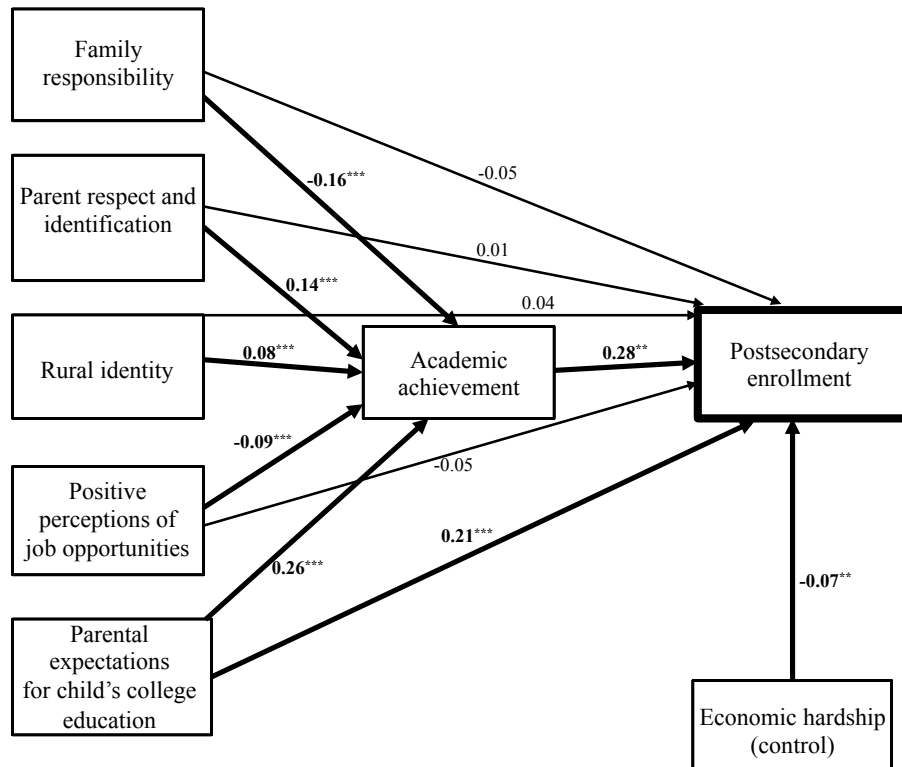

Figure 12. Standardized results for mediation model with academic achievement as the mediator between family and residential variables and postsecondary enrollment.
**$p < .01$ ***$p < .001$, bolded paths are significant.

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Results partially support hypothesized relations. I found direct effects of perceived parental expectations (Hypothesis 3c) and academic achievement (Hypothesis 3f); however, analyses did not support for any other hypothesized direct effects on postsecondary enrollment. Mediation hypotheses were also partially supported. I found that academic achievement fully mediated the relations between parent respect and identification (Hypothesis 5a), family responsibility (Hypothesis 5b), rural identity (Hypothesis 5b), and positive job perceptions (Hypothesis 5e). I also found that academic achievement partially mediated the relation between parental expectations and postsecondary enrollment (Hypothesis 5c).

Interpreting the probit coefficients. For Model 2, with academic achievement as a mediator, I calculated probabilities using the same method as above. For these calculations, I once again included the unstandardized direct effects on postsecondary enrollment and their corresponding mean value (or +/-1 SD value).

Table 17

Probit Interpretations for Model 2

Condition	*F* value	Probability of enrollment
At mean	0.18	0.57
Focal variables 1 SD above *M*	1.01	0.84
Focal variables 1 SD below *M*	-0.65	0.26
Parent respect 1 SD above *M*	0.18	0.57
Family responsibility 1 SD above *M*	0.12	0.54
Rural identity 1 SD above *M*	0.24	0.59
Positive job perceptions 1 SD above *M*	0.11	0.55
Parent expectations 1 SD above *M*	0.53	0.70
Parent respect 1 SD below *M*	0.17	0.57
Family responsibility 1 SD below *M*	0.24	0.59
Rural identity 1 SD below *M*	0.12	0.55
Positive job perceptions 1 SD below *M*	0.24	0.59
Parent expectations 1 SD below *M*	-0.18	0.43

Note. M = mean.

When all variables were held at their mean level the probability of u=1 (i.e., of enrolling in postsecondary education) was .57. I also calculated probabilities for when study variables were one standard deviation above the mean (and economic hardship was one standard deviation below the mean) and when study variables were one standard deviation below the mean. These probabilities are found in Table 17.

Notably, perceived parental expectations seemed to have a large influence over rural youths' enrollment in postsecondary institutions. When parental expectation was held one standard deviation above the mean and other variables were held at their mean levels, the probability of enrollment was 0.70, compared to 0.57, the probability of college enrollment when all variables were held at their mean levels.

Moderated Mediation Results

In testing for moderated mediation, I examined the equivalence of the strength of the paths across gender in my conceptual model. I utilized a multiple group analysis approach and test for total effect moderation, where gender was hypothesized to moderate the indirect paths *and* the direct paths in the model (Kline, 2011). In conducting the multiple group analysis, I took an iterative, step-wise approach (Bowen & Guo, 2012; Byrne, 2012) and used the differences in chi-square to compare the models. Assessing the differences in chi-square is a recommended approach for comparing nested Structural Equation Models (Byrne, 2012; Bollen, 1989).

Steps included the following (and are based on similar analyses by Guo et al., 2015; Levesque, Zuehlke, Stanek, & Ryan, 2004): First, I ran a freely estimated model, which served as the baseline model. Then, I estimated a fully constrained model and set all paths to be equal across gender. Since my freely constrained model was associated

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with better model fit (i.e., for both educational aspirations and academic achievement mediated models), I proceeded to constrain the direct and indirect paths in a step-wise fashion (1. M → Y path, 2. X → M paths, 3. subsets of parameters (e.g., the X → Y's paths) to see if I could generate any improvements in model fit. If a set of parameters caused a significant worsening in fit, I examined which parameters within the subset were variant. The expectation is that adding constraints to the model will produce a worse fit in a *statistically significant* way (Bowen & Guo, 2012), and when this happened I allowed the path to be freely estimated. If I did find that some freely estimated parameters improved model fit, I concluded that gender moderated these paths (Bowen & Guo, 2012) and there was evidence of moderated mediation (Preacher et al., 2007).

During the moderated mediation analyses I used WLSMV to account for my categorical outcome variable. I also accounted for clustering by specifying TYPE=COMPLEX in M*plus*. To compare nested models, I took advantage of the DIFFTEST command in M*plus,* which generates the difference in χ^2 and the corresponding degrees of freedom. Model results for educational aspirations (Model 3) and academic achievement (Model 4) are presented separately.

Moderated Mediation: Educational Aspirations (Model 3)

To conduct the multiple group analyses, I first ran the freely estimated model and found a χ^2 (4, $N = 3,136) = 224.401, p < .001$. Then, I ran a fully constrained model, where all paths were constrained to be equal across gender, χ^2 (17, $N = 3,136) = 213.337, p < .001$.

Since the change in chi-square between the freely estimated model and the constrained model was significant, $(\Delta\chi^2$ (31, $N = 3,136) = 25.406, p < 0.05)$, I rejected the

null hypothesis that freely estimating the two groups does not significantly improve

model fit. This began the iterative process of constraining and testing paths in the model

and comparing these models to the baseline model. First, I tested a model with a

constrained M → Y path. This procedure resulted in a $\Delta\chi^2 (1, N = 3,136) = 2.286, p > 0.05$,

and I proceeded to accept the null hypothesis that adding the extra constraints does not

significantly reduce model fit.

Table 18

Multiple Group Analysis Results for Educational Aspirations Model (Model 3)

Model	χ^2	df	Δdf	$\Delta\chi^2$
Unconstrained model	224.401	4		
C_1: M→Y	226.283	5	1	2.286
C_2: M→Y, $X_{par\ res}$→M	222.281	6	2	2.703
C_3: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M	214.163	7	3	3.291
C_4: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M	212.854	8	4	4.167
C_5: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M	213.307	9	5	5.536
C_6: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{pos\ job}$→M	219.518	10	6	12.241[†]
C_7: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{par\ respect}$→Y	223.319	10	6	14.740[*]
C_8: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y	212.657	10	6	6.423
C_9: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y	212.587	11	7	6.571
C_{10}: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y	209.447	12	8	8.533
C_{11}: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y, $X_{ruralid}$→Y	204.173	13	9	9.273
C_{12}: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y, $X_{ruralid}$→Y, X_{SES}→Y	203.735	14	10	10.257
C_{13}: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y, $X_{ruralid}$→Y, X_{SES}→Y, X_{ach}→Y	199.306	15	11	10.883
C_{14}: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{pos\ job}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y, $X_{ruralid}$→Y, X_{SES}→Y, X_{ach}→Y	205.626	16	12	17.213
All paths constrained	213.337	17	13	25.406[*]

Note. C_n indicates the model includes the following constrained path. All models are compared to the unconstrained model, the baseline model. M=mediator, X=predictor variable, Y=outcome variable. Δdf = the change in degrees of freedom and $\Delta\chi^2$ = the change in χ^2.
[†]$p = .05$ [*]$p < .05$

I then tested a model with parent respect/identification→M and M→Y constrained to be equal, $\Delta\chi^2$ (2, N = 3,136)=2.703, p > 0.05. I accepted the null hypothesis once again and proceeded to test a model with parent respect/identification→M, family responsibility→M and M→Y constrained to be equal across gender. This test resulted in a $\Delta\chi^2$ (3, N = 3,136) = 3.291, p > 0.05.

I then added a constrained path from rural identity→M to the model, and kept parent respect/identification→M, family responsibility→M and M→Y constrained to be equal across gender. This test resulted in a $\Delta\chi^2$ (4, N = 3,136) = 4.617, p > 0.05. Since this test was non-significant, I added a parental expectations→M constraint, keeping rural identity→M, parent respect/identification→M, family responsibility→M and M→Y constrained to be equal across gender, again resulting in a non-significant change, $\Delta\chi2$ (5, N = 3,136) = 5.536, p > 0.05. I then tested a model with positive job perceptions→M, parental expectations→M, rural identity→M, parent respect/identification→M, family responsibility→M and M→Y constrained to be equal across gender which resulted in a $\Delta\chi2$ (6, N = 3,136) = 12.241, p = 0.056. Since the model with positive job perceptions had marginally better fit, I kept positive job perceptions freely estimated and then started to estimate the direct pathways in the model.

I then constrained the direct path of parent respect→Y (keeping parental expectations→M, rural identity→M, parent respect/identification→M, family responsibility→M and M→Y constrained). Parent respect→Y seemed to be moderated by gender as well, $\Delta\chi^2$ (6, N = 3,136) = 14.740, p < 0.05). Since parent respect/identification→Y seemed to be moderated by gender, I freely estimated this path in subsequent models.

Next, a series of direct paths were constrained to be equal across groups one at a time. When the paths from family responsibility→Y ($\Delta\chi^2$ (6, $N = 3{,}136$) = 6.423, $p >$ 0.05), parent expectations→Y ($\Delta\chi^2$ (7, $N = 3{,}136$) = 6.571, $p > 0.05$), positive jobs→Y ($\Delta\chi^2$ (8, $N = 3{,}136$) = 8.533, $p > 0.05$), and rural identity→Y ($\Delta\chi^2$ (9, $N = 3{,}136$) = 9.273, $p >$ 0.05) were constrained to be equal across gender, model fit did not get significantly worse, so I kept each of those paths constrained in the subsequent models.

After the X→Y paths were investigated, I constrained the $X_{positive\ job\ perceptions}$→M path to be equal across gender and entered it back into the model. I found it did not produce a statistically significant worsening of model fit, $\Delta\chi^2$ (10, $N = 3{,}136$) = 10.257, p > 0.05, and therefore, it seemed that gender only moderated the direct path from positive job perceptions to postsecondary enrollment when other direct paths were freely estimated.

Table 19

Standardized/Unstandardized Parameter Paths for Final MGA Model for Educational Aspirations

	Standardized Parameter Estimates		Unstandardized Parameter Estimates	
Path	Female Students	Male Students	Female Students	Male Students
$X_{par\ respect}$→Y	0.08*	-0.06*	0.07*	-0.05*
$X_{fm\ respon}$→Y	-0.06*	-0.06*	-0.06*	-0.06*
$X_{par\ exp}$→Y	0.17***	0.19***	0.13***	0.13***
$X_{pos\ job}$→Y	-0.04	-0.05	-0.05	-0.05
$X_{ruralid}$→Y	0.05	0.05	0.04	0.04
M→Y	0.09***	0.08***	0.04***	0.04***
$X_{par\ res}$→M	-0.03	-0.03	-0.06	-0.06
$X_{fm\ respon}$→M	0.03	0.03	0.07	0.07
$X_{par\ exp}$→M	0.28***	0.33***	0.50***	0.50***
$X_{pos\ job}$→M	-0.07***	-0.07***	-0.16***	-0.16***
$X_{ruralid}$→M	-0.04**	-0.05*	-0.08*	-0.08*

*$p < .05$ **$p < .01$ ***$p < .001$
Note. X represents the predictor variables, M represents the mediating variable (educational aspirations), and Y represents the outcome variable.

Research questions 6 and 8. For research questions 6 and 8, I hypothesized that

gender would moderate the effects of parent respect/identification (Hypothesis 6a),

family responsibility (Hypothesis 6b), perceived parental expectations (Hypothesis 6c),

rural identity (Hypothesis 6d), and perceptions of local job opportunities (Hypothesis 6e)

on educational aspirations ($X \overset{w}{\to} M$). In addition, I hypothesized that gender would

moderate the effect of educational aspirations on postsecondary enrollment ($M \overset{w}{\to} Y$)

(Hypothesis 8).

Model 3 results did not support any of the proposed hypotheses, and instead

showed that only the direct path from parent respect and identification to postsecondary

enrollment was moderated by gender. As reported in Table 19, the standardized

coefficient for rural male students is negative and significant, -.06, and for rural female

students it is positive and significant, 0.08. Given these coefficients, the results suggest

that for rural male students, the direct effect of parental respect and identification lowers

the probability of postsecondary enrollment and for rural female students, the direct

effect of parent respect and identification increases the probability of enrolling in a

postsecondary institution.

Moderated Mediation: Academic Achievement (Model 4)

The same multiple group analysis procedure for testing for moderated mediation

was employed with Model 4. That is, I first ran a freely estimated, baseline model, and

then a fully constrained model. The chi-square difference for these two models $\Delta\chi^2$ (12,

$N = 3{,}139) = 21.83$, $p < 0.05$, indicated that constraining all the paths in the model

resulted in a statistically significant worsening of model fit. Thus, I followed the same

step-wise procedure as I completed for Model 3 for estimating constrained paths and comparing the difference in chi-square (reported in Table 20).

Research questions 7 and 9. I hypothesized that gender would moderate the effects of parent respect/identification (Hypothesis 7a), family responsibility (Hypothesis 7b), perceived parental expectations (Hypothesis 7c), rural identity (Hypothesis 7d), and perceptions of local job opportunities (Hypothesis 7e) on academic achievement ($X \overset{w}{\to}$ M). In addition, I hypothesized that gender would moderate the effects of academic achievement on postsecondary enrollment ($M \overset{w}{\to} Y$) (Hypothesis 9).

Similar to Model 3, my hypotheses were not supported. Results showed that only constraining the direct path from parent respect and identification to postsecondary enrollment ($X_{par\ respect} \to Y$) resulted in a statistically significant worsening of model fit, $\Delta\chi^2$ $(7, N = 3,139) = 16.291$, $p < 0.05$, as showed in Table 20. Therefore, there was evidence that only this direct path was moderated by gender in the model, similar to the results gathered from Model 3.

Table 20

Multiple Group Analysis Results for Academic Achievement Model (Model 4)

Model	χ^2	df	Δdf	$\Delta\chi^2$
Unconstrained model	10.240	2		
C_1: M→Y	10.814	3	1	0.503
C_2: M→Y, $X_{par\ res}$→M	11.198	4	2	0.988
C_3: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M	11.385	5	3	1.466
C_4: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M	12.403	6	4	2.473
C_5: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M	17.387	7	5	7.532
C_6: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{pos\ job}$→M	18.570	8	6	8.855
C_7: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{par\ respect}$→Y	25.924	9	7	16.291[*]
C_8: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y	19.451	10	7	9.885
C_9: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y	19.957	10	8	10.488
C_{10}: M→Y $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y	22.750	11	9	13.430
C_{11}: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y, $X_{ruralid}$→Y	22.844	12	10	13.740
C_{12}: M→Y, $X_{par\ res}$→M, $X_{fm\ respon}$→M, $X_{ruralid}$→M, $X_{par\ exp}$→M, $X_{fm\ respon}$→Y, $X_{par\ exp}$→Y, $X_{pos\ job}$→Y, $X_{ruralid}$→Y, X_{SES}→Y	24.121	13	11	15.087
All paths constrained	30.792	14	12	21.830[*]

Note. C_n indicates the model includes the following constrained path. All models are compared to the unconstrained model, the baseline model. M=mediator, X=predictor variable, Y=outcome variable. Δdf = the change in degrees of freedom and $\Delta\chi^2$ = the change in χ^2.
[†]$p = .05$ [*]$p < .05$

As shown in Table 21, for rural male students, the standardized coefficient is negative and statistically significant, -0.06, and for rural female students, the standardized coefficient is positive and significant, 0.07. Therefore, for rural male students, the direct effect of parental respect and identification lowers the probability of postsecondary enrollment. However, for rural female students, the direct effect of parent respect and identification increased the probability of enrolling in a postsecondary institution.

Table 21

Standardized/Unstandardized Parameters for Final MGA Model for Academic Achievement

Path	Standardized Parameter Estimates		Unstandardized Parameter Estimates	
	Female Students	Male Students	Female Students	Male Students
$X_{par\ respect} \rightarrow Y$	0.07*	-0.06*	0.06*	-0.05*
$X_{fm\ respon} \rightarrow Y$	-0.05*	-0.06*	-0.05*	-0.05*
$X_{par\ exp} \rightarrow Y$	0.20***	0.22***	0.14***	0.14***
$X_{pos\ job} \rightarrow Y$	-0.05	-0.05	-0.05	-0.05
$X_{ruralid} \rightarrow Y$	0.04	0.04	0.03	0.03
$M \rightarrow Y$	0.25***	0.28***	0.19***	0.19***
$X_{par\ res} \rightarrow M$	0.17***	0.15***	0.18***	0.18***
$X_{fm\ respon} \rightarrow M$	-0.18***	-0.17***	-0.24***	-0.24***
$X_{par\ exp} \rightarrow M$	0.24***	0.24***	0.23***	0.23***
$X_{pos\ job} \rightarrow M$	-0.08***	-0.07***	-0.10***	-0.10***
$X_{ruralid} \rightarrow M$	0.09***	0.08	0.09***	0.09***

*$p < .05$ **$p < .01$ ***$p < .001$
Note. X represents the predictor variables, M represents the mediating variable (academic achievement), and Y represents the outcome variable.

Summary of Findings

In summary, results from testing my conceptual model partially supported the hypotheses underlying this study. Evidence gathered from study results suggested that

rural men and women report significantly different perceptions of their family and community context and these perceptions influence postsecondary enrollment directly and indirectly (i.e., via educational aspirations and academic achievement). With the exception of academic achievement and aspirations, the magnitude of the differences were small (Cohen's d = .25 or less). In addition to results showing evidence for significant mediated relations, multiple group analysis results revealed that the two mediation models exhibited better fit when the model was not constrained to be equal across gender. However, through the process of freeing and constraining model parameters and an examination of model fit, I found that only one direct path from parent responsibility and identification to postsecondary enrollment was moderated by gender for both mediation models. The models did not provide support for the hypothesized moderated mediation paths. The next chapter features a discussion of results and implications of the current study.

CHAPTER 5: DISCUSSION

The current study used nationwide data from the *Rural High School Aspirations Study* and the Spencer Foundation *Fulfilling Dreams Follow-up Study* to investigate how perceptions of family and residence shape the postsecondary enrollment of rural men and women. The study was guided by a bioecological model of human development (Bronfenbrenner, 1979), and was also informed by social capital theory (Coleman, 1988). These guiding theories served as the theoretical foundations for testing the hypothesized relations in four separate mediation and moderated mediation models. In this last chapter I discuss the contributions of my dissertation, the significant and nonsignificant findings of the study, study limitations, and implications for future research.

Families as a Developmental Context for Rural Youth

Research in the fields of education, psychology, and sociology has established structural and process features of families as key factors that guide the postsecondary aspirations, enrollment, and attainment of rural youth (e.g., Byun et al., 2012a, b, c; Dyk & Wilson, 1999; Meece et al., 2013, 2014). This dissertation adds to the existing literature through its multidisciplinary investigation of family-related proximal processes, the so-called "engines" of development (Bronfenbrenner, 1995). Proximal processes are characterized by a developing individual's interactions with other persons, objects, and symbols (Bronfenbrenner, 1995). In the current study, proximal processes were conceptualized as *perceptions of family responsibility*, *parental respect and identification*, *rural identity*, *parental expectations*, and *local employment opportunities*.

Analyses explored rural youths' perceptions of these proximal processes within a family context and their relations to college enrollment patterns.

Summary of Major Findings

This study applied a bioecological model of human development to test the interrelations between select family proximal processes, rural adolescents' educational aspirations and academic achievement, and subsequent postsecondary enrollment. Four models were tested. Models 1 and 2 tested for direct and indirect influences (via educational aspirations and academic achievement) of familial perceptions on postsecondary enrollment. Models 3 and 4 tested whether gender moderated the mediated relations. The findings of the study provided partial support for the hypothesized relations in the proposed mediation and gender-moderated mediation models. There was evidence for both direct and indirect effects of family proximal processes on the postsecondary enrollment of rural men and women; however, results showed no evidence for gender-moderated mediation. Significant and nonsignificant results are discussed below, beginning with a presentation of the mean differences across gender for study focal variables.

Gender Differences in Youth's Perceptions of Family and Residence, Educational Aspirations, Academic Achievement, and Postsecondary Enrollment

Rural men tend to report stronger orientations towards the rural lifestyle and more positive perceptions of economic opportunities in their home communities than rural women (Elder et al., 1994; Meece et al., 2013, 2014), who are more likely to want to leave their home communities (Conger & Elder, 1994; Corbett, 2007). Based on these gender differences, I hypothesized that there would be significant differences in how contemporary rural men and women perceive their families and rural communities.

Consistent with existing research, I found that rural female students reported significantly higher perceptions of parental expectations and family responsibility. Rural male students reported significantly higher rural identity and positive perceptions of local employment.

At the outset of the study, in line with previous work, I hypothesized that rural female students would report higher educational aspirations than their male counterparts (Agger & Meece, 2015; Byun et al., 2012a; Chenoweth & Galliher, 2004; Elder & Conger, 2000; Lapan et al., 2003; Meece et al., 2014). Consistent with prior work, I found that rural female students reported significantly higher educational aspirations. In addition, given research documenting the higher success rates of rural female students in formal education compared to rural male students (Corbett, 2007), I expected to find a similar pattern in the current sample. Consistent with work showing the favoring of women in terms of educational outcomes among rural (Corbett, 2007) and nonrural youth (see Agger & Meece, 2015), I found that rural female students exhibited higher academic achievement than rural male students.

Similar to results from Byun and colleagues (2012a, b), this study found that rural women enrolled in postsecondary education at significantly higher rates than rural men. The higher enrollment of rural women in postsecondary education was expected, as it is consistent with current trends. Research on rural students has documented education-related gender disparities in education; female students report significantly higher educational aspirations (Byun et al. 2012a; Elder & Conger, 2000; Meece et al., 2013, 2014; Lapan et al., 2003), report higher levels of postsecondary preparation (Meece et al., 2014) and are more successful in formal education overall (Corbett, 2007) compared to

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their male counterparts. These results mirror national trends in women's rates of postsecondary education (Buchmann & DiPrete, 2006).

Taken together, the mean-level gender differences suggest that after 30 years of research on rural youth, there are still discrepancies in perceptions of family and community among rural men and women. Despite numerous social and economic changes, men continue to report higher levels of rural identity and more positive perceptions of local employment. These differences could reflect the continuation of a gendered employment structure (Corbett, 2007; Sherman, 2009), one where the jobs for men are more delineated in the community and women perceive fewer employment opportunities. However, at the same time, there are interesting gender patterns related to the favoring of rural female students in regard to attachments to family, achievement, and educational aspirations. Given their high reports family responsibility, and coupled with their perceptions of high parental expectations and educational aspirations, it seems that girls may be experiencing heightened tensions between staying and leaving their home communities (Hektner, 1995). With their higher levels of academic achievement, girls also appear to be better prepared than boys for continuing their education into the postsecondary years. Balancing strong feelings of family responsibility with the demands of postsecondary schooling may lead rural female students to encounter difficulties transitioning to college and navigating through college.

Based on the assumption that rural men and women perceive their environments differently, I tested the ways that perceptions of family and residence relate to educational aspirations, academic achievement, and eventual postsecondary enrollment through testing four mediation and gender-moderated mediation models.

The Mediating Role of Educational Aspirations: Model 1 Findings

I designed a complex model to examine the relations among perceptions of family and place, educational aspirations, and postsecondary enrollment. I hypothesized that familial proximal processes would exert direct and indirect—via educational aspirations—influences on the postsecondary enrollment of rural adolescents. Educational aspirations were included in this study as a mediator and a direct influence on postsecondary enrollment because research has highlighted the role of aspirations in shaping adolescents' behaviors and choices (Bandura, 1986; Nurmi, 2004), especially with respect to college enrollment (Armstrong & Crombie, 2000; Bandura et al., 2001; Beal & Crockett, 2010; Ou & Reynolds, 2008; Schneider & Stevenson, 1999). For the purposes of this study, educational aspirations were conceptualized based on social cognitive theory and work by Bandura (1986) and Bandura et al. (2001). Other researchers, such as Meece (2013, 2014) and Irvin et al. (2011), have characterized educational aspirations in a similar fashion.

At the outset of the study, I predicted that there would be significant direct effects of familial proximal processes and that educational aspirations would fully mediate the relations between these processes and postsecondary enrollment. Contrary to my hypotheses, results from Model 1 showed evidence of direct and indirect relations between familial proximal processes and postsecondary enrollment. There were significant direct effects of family responsibility, perceived parental expectations, and educational aspirations on postsecondary enrollment. Regarding indirect relations, the study found that educational aspirations partially mediated the pathway between parental expectations and postsecondary enrollment and fully mediated the relation between

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positive job perceptions and postsecondary enrollment. I discuss the results in more detail below.

Direct effects: Family responsibility. Results from Model 1 showed evidence of a significant and negative direct effect of family responsibility on postsecondary enrollment. Previous research has demonstrated that feelings of familism and responsibility to one's family can either promote or hinder educational attainment (Bryan & Simmons, 2009; Dyk & Wilson, 1999; Hutchins et al., 2012; Wilson, Peterson, & Wilson, 1993). The negative direct effect of family responsibility found in the current study is congruent with research that has found that familism can hinder educational aspirations and plans, particularly when family norms are misaligned with the pursuit of higher education (Rural Poverty Research Center, 2004). The negative association between family responsibility and postsecondary enrollment may also reflect the reality that many rural youths feel a sense of obligation to their families and hold high residential attachment. Approximately 75% of rural high school seniors report that it is very important to them to live near their parents (Johnson et al., 2005). These perceptions were initially documented by Elder and Conger (2000), who found that many rural youth, especially those who grow up in farming families, experience strong intergenerational family ties and engage in many family-based joint activities. These activities represent an important source of social capital for rural youth, thus promoting long-term attachment to family and community, and work-related aspiration (Elder & Conger, 2000).

Study findings are inconsistent with research showing the positive association between familism and students' educational aspirations and expectations (Fulgini, 2002; Quian & Blair, 1999; Smith-Maddox, 1999). Perhaps for rural adolescents, strong

feelings of family responsibility act as a proxy for a particular life course, one in which rural adolescents chose to stay in their home communities, where there are often limited postsecondary opportunities. This finding adds to the literature in establishing a negative link between feelings of family responsibility and the subsequent postsecondary enrollment of rural adolescents.

Indirect effects: Parental expectations and educational aspirations. Study results showed that educational aspirations partially mediated the pathway between parental expectations and postsecondary enrollment. This relation is consistent with previous research. In general, many rural parents report high educational expectations for their children and expect them to complete a bachelor's degree (Griffin et al., 2011; Provasnik et al., 2007). More specifically, research grounded in a bioecological model, expectancy-value theory, and social capital theory has established strong connections between the expectations of parents and students' aspirations and academic success. Using an ecological perspective, Meece and colleagues (2013) found that parental expectations predicted educational aspirations for both rural men and women. Using expectancy-value theory, Eccles (2007) has also highlighted the important role of socializers in shaping the academic beliefs and behaviors of young people. This theoretical framework has also shown that parents' educational expectations and the beliefs parents hold about their children's competence and success predict children's self-beliefs and achievement outcomes (Bleeker & Jacobs, 2004; Neuenschwander, Vida, Garrett, & Eccles, 2007). My research is in line with this work, in that I predicted parental expectations for education would shape adolescents' own beliefs about education, which would then further predict achievement outcomes. My findings are also

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consistent with work rooted in social capital theory; for example, work by Byun et al. (2012c) that uncovered the positive relation between parental expectations and educational aspirations among rural youth.

Study findings regarding parental expectations and educational aspirations contribute to existing literature in several ways. First, this study is a response of sorts to the call by Gaddy and colleagues (2005) for researchers to more fully investigate how *parental aspirations and expectations* play a role in the schooling of rural youth. Second, the findings of this study that concern the role of parental expectations also contribute to contemporary social capital theory. Coleman (1988) theorized that one of the main process components of social capital theory included unspoken obligations and expectations among family members. My study supports this proposition by demonstrating how family social capital in the form of perceived parental expectations both directly and indirectly predicted adolescents' college enrollment behavior. Third, the findings from the current study concerning the relations between parental expectations and educational aspirations also extend recent work on contemporary rural youth. My dissertation extends work by Byun et al. (2012c) to show that not only do parental expectations predict educational aspirations, they directly and indirectly predict the college enrollment of rural youth.

Indirect effects: Positive perceptions of jobs and educational aspirations. Perceptions of available jobs are critical to rural youths making college and career plans. As Hektner (1995) notes, "unlike students in suburbs and cities who can go to college and find professional jobs in their metropolitan areas if they so desire, rural students who want to develop their talents must often leave their communities permanently. And many

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do." (p. 3). Recent work by Meece (2014) has shown that positive perceptions of local job opportunities were negatively associated with educational aspirations. Work by Petrin et al. (2014), addressing this connection, found that perceptions of the economic climate were salient predictors of whether students chose to leave, or stay, in their rural community. This finding was true for both the most academically-oriented students and the students who were less academically-oriented. Perceptions of job opportunities are especially relevant in contemporary research, considering the current restructuring of the economy, the relaxation of traditional gender norms, and the proliferation of postsecondary degrees as employment imperatives.

The findings from this study were consistent with work by Meece et al. (2014) and Petrin et al. (2014). In line with Meece et al. (2014), I found that positive perceptions of local job opportunities were negatively associated with educational aspirations. My findings extend this research, in that educational aspirations are shown to fully mediate the relation between positive perceptions of local job opportunities and postsecondary enrollment. For rural men and women, the findings demonstrate that perceptions of local jobs may lower rural youths' postsecondary enrollment through their relation to youth's educational aspirations.

The Mediating Role of Academic Achievement: Model 2 Findings

I proposed that familial proximal processes would exert direct and indirect (via academic achievement) influences on the postsecondary enrollment of rural adolescents. Academic achievement was included as an additional mediator to see how achievement plays a role in the relations between family proximal processes and students' postsecondary enrollment. The decision to include academic achievement as a mediator

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was grounded in expectancy-value theory, which conceptualizes the role of socializers as key in the achievement-related choices of students (Eccles et al., 1983). Expectancy-value theory is an extension of Bronfenbrenner's ecological-based theory and may be used to illustrate how parents affect students' engagement and performance by molding students' achievement-related self-perceptions and task values (Eccles, 2007).

There was evidence for both direct and indirect relations in Model 2. Results showed evidence of direct effects of perceived parental expectations and academic achievement on postsecondary enrollment. Five significant indirect effects were apparent; four fully mediated pathways and one partially mediated pathway. Academic achievement fully mediated the relations between (a) parent respect and identification, (b) family responsibility, (c) rural identity, and (d) and positive job perceptions and postsecondary enrollment. Academic achievement partially mediated the relation between parental expectations and postsecondary enrollment.

Direct effects: parental expectations and academic achievement. Consistent with prior research, the study found direct effects of academic achievement and parental expectations on postsecondary enrollment. Many studies have shown the importance of academic achievement in predicting postsecondary aspirations and outcomes (Byun et al., 2012a; Eccles, Vida, & Barber, 2004; Meece et al., 2014). Previous work has also documented the relation of parental expectations to the educational aspirations and college completion of rural youth (Byun et al., 2012a, c; Gándara et al., 2001; Irvin et al., 2011; Meece et al., 2014). This study extends those findings to show that academic achievement and parental expectations are positively associated with postsecondary enrollment among rural adolescents.

Indirect effects: Model 2. Study results indicated that parent respect and identification, family responsibility, rural identity, and positive job perceptions all predicted postsecondary enrollment through academic achievement. This finding shows that, for rural adolescents, many familial proximal processes operate through academic achievement in shaping college outcomes. Interestingly, perceived parental expectations had both a direct and indirect positive effect on postsecondary enrollment, emphasizing the direct importance of parents' beliefs on rural youths' long-term educational success. The strong influence of parental expectations is consistent with prior work within rural samples, which showed that parental expectations positively predict educational aspirations and college completion (Byun et al., 2012a, c; Irvin et al., 2011; Meece et al., 2014). It also builds upon this research to show that parental expectations have a positive relation to postsecondary enrollment, highlighting the critical role of family processes and family social capital in long-term educational trajectories of rural youth.

Summary of Findings: How Family and Place Shape the Educational Aspirations, Academic Achievement, and Postsecondary Enrollment of Rural Men and Women

Previous research has shown both family structural and family process components to be important predictors of the academic achievement, and college aspirations and completion of rural youth (Byun et al., 2012a, c; Dyk & Wilson, 1999; Irvin et al., 2011; Israel et al., 2001). This investigation extended beyond previous studies in exploring the predictive power of familial proximal processes that exert direct and indirect influences on the postsecondary enrollment of a nationwide, contemporary sample of rural youth. Notably, attachment to family (e.g., family responsibility) and perceptions of place (e.g., positive job opportunities) were negatively related to postsecondary enrollment. These influences operated directly and indirectly, through

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students' aspirations and achievement. Rural students seem to be adjusting their educational aspirations and academic achievement based upon perceptions of family and place. This study suggests that students with strong connections to family, and those with positive perceptions of employment opportunities in their home communities, are more likely to stay local and forego postsecondary pursuits. Results from the study also indicate that certain family processes, including parental educational expectations, are strong positive predictors of college outcomes and relate to how rural students perform in school as they construct their aspirations towards higher education.

In line with work by Carr and Kefalas (2009) and Petrin et al. (2014), results suggest a possible 'leavers versus stayers' dichotomy that falls along gendered lines. Carr and Kefalas (2009) argued that rural students may be sorted according to their expected academic achievements throughout their adolescence and into early adulthood. Academically-oriented students, they found, were the most likely to leave their rural communities permanently, a trajectory facilitated by the expectations of significant others, such as parents. On the other hand, lower-achieving students were often encouraged to stay in their home communities by their guardians and peers. Results from the current study suggest that this dichotomy holds, and that parents may well be socializing their children to either leave or stay. Further, based on the present results, this socialization process appears to be divided by gender, in that daughters are encouraged to flee the nest, whereas sons are socialized to stay close to home to pursue local career opportunities.

This dissertation adds to previous work by demonstrating that certain patterns of socialization may not be solely based upon academic achievement, as posited by Carr and

Kefalas (2009), but rather that the process of becoming a 'stayer' verses a 'leaver' may also be a function of the perceived employment structures and gender-based opportunities that are available in rural communities. Extant work has consistently documented the gender-differentiated experiences of rural adolescents (Elder & Conger, 2000; Petrin et al., 2011, 2014). Using the same *RHSA* dataset, Petrin and colleagues (2014) noted subtle differences in student, school, and community factors influencing the residential plans of rural female and male adolescents, finding that there were strong regional effects for females that were not evident for males. In the same vein, the findings of this study suggest a continuation of the leavers versus stayers trend, albeit one based on gender and opportunity alongside achievement. These results hint at the ways that parents and adolescents may be responding to the gendered structure of opportunity in rural communities (Corbett, 2007; Sherman, 2009) as a way to prepare for their future educational and occupational pursuits.

Nonsignificant Findings: The Moderating Role of Gender

Given the traditional, gender-based employment structure of rural areas (Corbett, 2007; Sherman, 2009) and considering the differences in postsecondary (Meece et al., 2013, 2014) and residential (Elder et al., 1996a; Johnson et al., 2005; Petrin et al., 2014) aspirations of rural men and women, I hypothesized that gender would moderate the proposed mediation models (Research questions 6-9). Examining the moderating influence of gender was done in accordance with Bronfenbrenner's bioecological model, which assumes that in studying proximal processes, one should also consider *person* characteristics by assessing how developmentally instigative characteristics (e.g., age, appearance, or gender) alter proximal processes (Bronfenbrenner, 1994, 1995;

Bronfenbrenner & Morris, 1998). The current model tested for ways that gender might change the relation among the exogenous family influences, mediating variables, and the postsecondary enrollment outcome variable.

Results of multiple group path analysis showed evidence of moderation, but not moderated mediation. Both Models 3 and 4 exhibited better fit when gender was not constrained to be equal across the model parameters, but upon conducting an iterative multiple group analysis, gender was only found to moderate the direct path from parent responsibility and identification to postsecondary enrollment for both models tested. The standardized coefficient was negative and significant for rural male students and positive and significant for rural female students. This suggests that for rural male students the direct effect of parental respect and identification lowers the probability of postsecondary enrollment, while, for rural female students, the direct effect of parental respect and identification increases the probability of enrolling in a postsecondary institution. This gender-moderated finding may be a reflection of adolescents' varied perceptions of the highly gender-differentiated employment structures in rural areas (Corbett, 2007; Sherman, 2009), as discussed above. For example, for students who come from farming families, girls may have received feedback from parents about finding opportunities outside of their communities, using school a means to do so (Elder & Conger, 2000).

The lack of evidence for moderated mediation is surprising given gender differences in achievement, educational aspirations, and perceptions of the rural community and economy. Still, there are plausible explanations. First, it may be that family proximal processes operate more similarly that I expected for rural men and women in predicting college outcomes. Although I found significant differences in the

mean levels of family variables across gender, the long-term influence of families may not differ by gender. That is, family processes may differentially shape proximal beliefs about schooling by gender, but not differentially predict distal student outcomes, such as college enrollment by gender. This nuanced finding aligns with research illustrating how family influences differentially shape the educational aspirations of rural men and women (Byun et al., 2012c; Chenoweth & Galliher, 2004).

Second, it is possible the use of students' perceptions of their families may have contributed to the nonsignificance. If parental reports were analyzed, results may have been different, as these reports could be a more accurate assessment of family proximal processes. Reports from parents may have provided a more objective viewpoint. More research is needed to examine the strength of familial proximal processes in relation to other predictors of postsecondary enrollment.

Collectively, the nonsignificant moderated mediation findings highlight the importance of understanding how student characteristics do and do not contribute to the relation between family influences and postsecondary enrollment. More research is needed that goes beyond looking at mean differences to examine the ways that gender interacts with individual and family characteristics and processes to predict student developmental outcomes.

Contributions

My analyses contribute to existing literature on rural students and postsecondary outcomes in several ways. Notably, this study explored the postsecondary enrollment of an overlooked population of adolescents, one that is only beginning to receive recognition in the postsecondary literature. Recent work by Byun and colleagues (2012a,

b, c, 2015) using national datasets, has explored the postsecondary enrollment and degree completion of rural youth. My study adds to the burgeoning base of literature on the postsecondary trajectories of rural adolescents by focusing on family influences. Moreover, this research used a contemporary and nationwide sample of rural adolescents with study data collected during a difficult economic period in recent U.S. history. The data for the study provided a detailed glimpse of educational aspirations and postsecondary enrollment of a cohort of rural adolescents. The data used also captured the perceptions of a larger, nationwide sample of rural youth, which allowed me to explore how students across the country, and not limited to a single geographic locale, perceive their families, communities, and education. Another contribution of this research comes from its focus on the role that students' perceptions of families play in shaping the postsecondary enrollment of rural youth. Researchers from sociology, education, and psychology, such as Byun et al. (2012a, b, c, 2015) and Meece et al. (2013, 2014), have examined the educational aspirations and college completion of rural youth without specifically concentrating on the ways that families predict college outcomes. My dissertation used an interdisciplinary approach and extended previous research to specifically hone in on the role of families in shaping postsecondary enrollment of rural men and women. In doing so, I explored the proximal processes within families, such as parental educational expectations. This study also utilized the perceptions of adolescents, rather than objective measures of family, which was a novel strategy. In accordance with a bioecological model of human development, perceptions of the environment were assumed to represent critical elements of development in how they guide subsequent actions. This assumption was based on Bronfenbrenner (1988, 1995), who posited that

the power of research to explain phenomena is enhanced when it includes both beliefs and behaviors. Additionally, although there are exceptions, the majority of work on rural youth does not explicitly focus on gender and how gender may differentiate family and community attachments, educational aspirations, and postsecondary enrollment. Given the numerous economic and social changes of the previous decades, I expected gender to show a strong relation to the college enrollment of rural men and women. This study also used advanced statistical techniques, not often employed in the study of rural youth, to test for mediation and moderated mediation using a path analytic framework. Lastly, this study contributes to the developmental psychology literature by reaffirming the predictive power of parental expectations. Parental expectations are a well-established predictor of educational outcomes in studies using the overall population, and my study shows that parental expectations are strong predictors of educational outcomes for rural youth.

Study Limitations

Although rigorous analytic techniques were employed in this study, it is not without its limitations. The study only employed students' perceptions of family and place and did not incorporate parents' perspectives or objective measures of economic opportunities in rural communities.

Current explorations of rural education (Irvin, Byun, Meece, Reed, & Farmer, in press) have begun to examine ethnicity in relation to aspirations and planning for college. That this study sample was predominantly White did not allow for the consideration of ethnicity as an added layer of complexity. Similarly, I did not include measures for variation in socioeconomic status, nor geographical region (e.g., southeast, northwest, etc.) These social and geographical conditions are likely to shape the postsecondary

behaviors of rural men and women.

This study was also limited by its outcome variable, postsecondary enrollment. The inclusion of other postsecondary outcomes such as college completion or a differentiation between enrollment in a two-year versus four-year institution could strengthen the study by providing additional information on how family processes shape the college outcomes of rural youth. One recent study by Byun, Meece, and Agger (under review) examined the enrollment patterns of rural youth and found that the majority of rural youth take advantage of community colleges somewhere along their postsecondary trajectories, with parental education levels predicting variations in these enrollment patterns.

Several other limitations relate to the limited power of this study in addressing developmental outcomes. The study did not include prior achievement of students, and thus it is possible that students who are not high-achievers in school report a stronger attachment to family and place because they perceive fewer future educational and career opportunities. Further, because other prior indicators and perceptions during early adolescence were not included, it is not clear when perceptions begin to exert an influence on the focal variables of this study. In addition, the models tested in this study were unidirectional, and did not account for potential bidirectional relations, making it unclear how study relations work from a developmental perspective.

The analytic techniques used in the current study are also a limitation. I employed path analysis in testing mediation and moderated mediation models. Using latent variables with Structural Equation Modeling instead may have provided a more sophisticated approach to analyzing the relations between rural students' perceptions and

their college enrollment behaviors. Further, this study used a variable-centered approach, rather than a person-centered approach. In retrospect, a person-centered approach may have allowed for a more nuanced investigation through the inclusion of relations among variables at the individual level, by which individuals could be classified into groups or profiles based on patterns of relations (Bergman, 2001). The lack of moderation effects suggests that future studies must go beyond examining mean level differences to differentiate relations.

As I did not design or conduct the study, but rather employed secondary data analysis, I did not create the measures and scales used in the study. The variables and scales in *RHSA* and the Spencer Foundation *Fulfilling Dreams Follow-up Study* were not necessarily chosen based on their validity in measuring family proximal processes, so may not have been optimal for my purposes. Lastly, as the focus of this study centered on family influences, it did not address school, peer, or socioeconomic contexts that shape college outcomes. Research on rural youth has found that schooling experiences, in particular, can buffer against negative family and community circumstances, such as poverty (Irvin et al., 2011), and help explain unique variances after family variables are considered. Peers also shape the academic and social adjustment of rural adolescents (Hamm, Lambert, Agger, & Farmer, 2013; Hamm, Schmid, Farmer, & Locke, 2011). Higher education literature has also shown that economic capital, or an individual's actual and perceived ability to pay for college, and socioeconomic factors in general, strongly influence college outcomes (Paulsen & St. John, 2002; Rowan-Kenyon, 2007). The socioeconomic variables used as controls in the current study, when examined more

closely, may diminish the influence of family processes on the postsecondary enrollment of rural youth.

Future Directions for Research

Previous investigations have applied Bronfenbrenner's bioecological model to study children and adolescents in rural contexts (Chenoweth & Galliher, 2004; Crockett et al., 2000; Cunningham & Francois, 2016; Meece et al., 2013, 2014; Vernon-Feagans et al., 2010). Results of the current study provide additional support for the utility of the bioecological model as a framework for investigating the educational trajectories of rural youth. The findings from the current investigation have the potential to inform future research in the areas of rural education literature and developmental psychology.

Future research should investigate the moderating influences of ethnicity and socioeconomic status on the relations between family processes and postsecondary outcomes. This research is paramount, as rural areas are experiencing changes in demographic characteristics similar to those occurring on a national level; racial and ethnic minorities are beginning to out-number non-Hispanic Whites (Crockett, Carlo & Temmen, 2015). Very little research has been done that focuses on minority students in rural areas despite the fact that these youths and their families face a variety of challenges, and cumulative risk, while also boasting protective factors (Crockett et al., 2015).

Although this study focused on the family processes that shape the postsecondary enrollment of rural youth, additional research on how families shape educational trajectories of rural youth is needed. Future research should use additional outcome variables that build off of the current study and a wider variety of measures of family

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proximal processes.

In addition, from a methodological standpoint, future research efforts could undertake a person-centered approach to studying the familial processes on rural students' postsecondary outcomes. These analyses would create groups or profiles of students or parents based on their individual-level responses that could then be used to estimate college outcomes. Petrin et al. (2014) took a person-centered approach in examining the contribution of schools and educators to the residential aspirations of rural youth; however more work using person-centered approaches with rural samples is needed.

Conclusion

This study employed nationwide data from the *Rural High School Aspirations Study* and the Spencer Foundation *Fulfilling Dreams Follow-up Study* to examine how familial proximal processes directly and indirectly shape the postsecondary enrollment of rural adolescents. Particular attention was given to the role of gender as a moderator of familial proximal processes in predicting postsecondary outcomes. Grounded in a bioecological model of human development and using a path analytic framework, four mediation and moderated mediation models were tested by which educational aspirations and academic achievement were proposed to mediate the relations between family proximal processes and postsecondary enrollment. In the moderated mediation models, gender was hypothesized to moderate all mediated paths. Findings from this study include evidence that select family proximal processes, such as family responsibility, directly predict rural youths' postsecondary enrollment, and educational aspirations and academic achievement mediate these relations. Evidence of one moderated path was

found, the path between parental respect and identification and postsecondary enrollment.

This study adds to the rural education literature by underscoring the ways in which

families directly and indirectly shape postsecondary behaviors among adolescents.

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