WHAT’S EXPECTED?
ANTICIPATION OF EDUCATION AND SCHOOL AND PEER CONTEXTS
IN A NATIONAL LONGITUDINAL STUDY OF YOUTH

by

Gabriele Plickert

A thesis submitted in conformity with the requirements
For the degree of Doctor of Philosophy
Graduate Department of Sociology
University of Toronto

© Copyright by Gabriele Plickert, 2008
What’s Expected?
Anticipation of Education and School and Peer Contexts
in a National Longitudinal Study of Youth

Gabriele Plickert
Doctor of Philosophy 2008
Department of Sociology, University of Toronto

This dissertation examines the relationships among school structure, climate, and peer networks and adolescents’ college expectations using the first wave of the American National Longitudinal Study of Adolescent Health (Add Health). Hierarchical linear models are applied to examine the direct, intervening, and cross-level interaction effects of school context and peer networks. This dissertation applies perspectives of school socialization and peer social capital to explain the relationship between contextual-level characteristics and youths’ intentions to attend college. With controls for individual-level compositional factors, findings indicate that higher school SES and lower percentages of high school dropouts are positively associated with adolescents’ college expectations. Contingencies of gender provide evidence of moderating effects between school context and expectations, particularly for male adolescents.

With regard to peer networks, adolescents who expect to attend college are more likely to be involved with prosocial and academically goal-oriented peers. Cross-level interactions between school and peer networks reveal that higher SES schools mediate the potential impact of peers on youths’ college expectations. In contrast to previous studies, this dissertation
research indicates that prosocial peer behaviors mediate but do not moderate the effects on adolescents’ own expectations.

The findings of this research suggest that future studies and interventions should continue to explore the multiple effects of social contexts to assess fully the impact of schools and peer networks on adolescents’ educational future outcomes.
ACKNOWLEDGEMENTS

The writing of a dissertation can be a lonely and isolating experience, yet it is not possible without the personal and practical support of various people.

I would like to express my deepest gratitude to my dissertation chair, Dr. John Hagan, for his excellent guidance, advice, and patience throughout this dissertation process. Dr. Hagan continually stimulated my analytical thinking, which greatly influenced the progress of my research. His confidence in me and in this dissertation project has been consistent and encouraging.

I also would like to thank my committee members, Dr. Scott Schieman and Dr. Ronald Gillis. I am grateful for the opportunity of working with Dr. Schieman on various research projects; the experience of this collaboration has become extremely valuable in my own research projects. Dr. Gillis’ pertinent sense of humor and his valuable intellectual critique have guided the course of my doctoral program. I also want to thank my external/internal examiners, Dr. Edward Grabb and Dr. Jeffrey Reitz, who were willing to participate in my defense committee at the last moment. Both Dr. Grabb and Dr. Reitz provided me with excellent comments - their suggestions have certainly strengthened my dissertation.

I am very grateful for the assistance and advice I received from the Add Health staff, especially Joyce Tabor and Jodie Lee. For the valuable statistical advice on multilevel models, and guidance related to using the Add Health data, I sincerely appreciate the comments and suggestions of Dr. Judith Singer, Dr. Philippa Clarke, and Dr. Holly Foster.

Several other individuals, friends, and colleagues were important for the completion of this dissertation. My special thanks go to the Graduate Program Administrator Jeannette Wright, who always had time for my numerous questions and last minute requests throughout the years. She assisted me greatly in navigating and surviving the bureaucratic side of the
doctoral program. I also acknowledge the valuable comments of Dr. Hilary Soderland, Patricia Parker, Lila Stromer, and Gabrielle Ferrales. For his useful formatting suggestions and remarkable patience during the completion of the dissertation, I want to thank my friend Adnan Cavus. Special thanks also to my mother, who has given me in many ways invaluable emotional and financial support over the years of the doctoral program. I also want to thank Laetitia Adeline Plickert, for cheering me up through the good and bad times of this process.

   Ich möchte mich auch sehr bei meinen europäischen Freunden bedanken, insbesondere bei August Walch, Cornelia Gonzales, Dr. Elke Winter, Michael Thiemann, Filip und Andreea Alexandrescu und Torsten Wulff mit Familie. Ihre Briefe, Emails, Telefonate oder Besuche haben mir sehr viel Kraft gegeben, meinen Abschluss in Toronto zu beenden. Vielen Dank für die emotionale Unterstützung!

   Finally, I would like to thank those who both encouraged me and discouraged me in this process, because every one significantly impacted my educational trajectory.
TABLE OF CONTENTS

ABSTRACT ........................................................................................................................................................... II

ACKNOWLEDGEMENTS ................................................................................................................................... IV

TABLE OF CONTENTS ....................................................................................................................................... VI

LIST OF TABLES AND FIGURES .................................................................................................................. VIII

CHAPTER I: INTRODUCTION ............................................................................................................................1

1.1. INTRODUCTION ........................................................................................................................................ 1
1.2. COLLEGE EXPECTATIONS ........................................................................................................................ 4
1.3. MULTI-LEVEL CHARACTERISTICS AND COLLEGE EXPECTATIONS .......................................................... 9
1.4. CHAPTER OUTLINE ................................................................................................................................1 0

CHAPTER II: INDIVIDUAL-LEVEL EFFECTS ON EXPECTATIONS AND ATTAINMENT ................. 12

2.1. INTRODUCTION ...................................................................................................................................... 12
  2.1.1. Family Characteristics ..................................................................................................................... 13
  2.1.2. Characteristics of Adolescents ......................................................................................................... 19
2.2. SUMMARY .............................................................................................................................................. 24

CHAPTER III: CONTEXTUAL-LEVEL EFFECTS MODELS ......................................................................25

3.1. INTRODUCTION ...................................................................................................................................... 25
3.2. CONTEXTUAL-LEVEL EFFECTS MODELS ............................................................................................... 27
  3.2.1. School-Level Models and College Expectations ............................................................................. 29
  3.2.2. Peer Networks and Educational Expectations ................................................................................ 41
3.3. REMAINING METHODOLOGICAL ISSUES ............................................................................................ 51
3.4. RESEARCH QUESTIONS AND HYPOTHESES ............................................................................................ 53
3.5. SUMMARY .............................................................................................................................................. 58

CHAPTER IV: DATA AND MEASUREMENT .................................................................................................60

4.1. INTRODUCTION ...................................................................................................................................... 60
4.2. DATA SOURCE ........................................................................................................................................ 60
  4.2.1. Add Health Research Design and Sample ....................................................................................... 61
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3</td>
<td>ANALYTICAL TECHNIQUES</td>
<td>69</td>
</tr>
<tr>
<td>4.4</td>
<td>RESEARCH DESIGN ISSUES</td>
<td>74</td>
</tr>
<tr>
<td>4.5</td>
<td>MEASURES</td>
<td>76</td>
</tr>
<tr>
<td>4.5.1</td>
<td>Dependent Variables</td>
<td>76</td>
</tr>
<tr>
<td>4.5.2</td>
<td>Individual-Level Independent Measures</td>
<td>78</td>
</tr>
<tr>
<td>4.5.3</td>
<td>School-level Independent Measures</td>
<td>83</td>
</tr>
<tr>
<td>4.5.4</td>
<td>Peer Network Measures</td>
<td>84</td>
</tr>
<tr>
<td>4.6</td>
<td>OTHER METHODOLOGICAL ISSUES</td>
<td>86</td>
</tr>
<tr>
<td>4.6.1</td>
<td>Schools versus Neighborhoods</td>
<td>86</td>
</tr>
<tr>
<td>4.6.2</td>
<td>Selection Effects</td>
<td>87</td>
</tr>
<tr>
<td>4.7</td>
<td>SUMMARY</td>
<td>92</td>
</tr>
<tr>
<td>5.1</td>
<td>INTRODUCTION</td>
<td>93</td>
</tr>
<tr>
<td>5.2</td>
<td>DESCRIPTIVE STATISTICS AND BIVARIATE ASSOCIATIONS</td>
<td>94</td>
</tr>
<tr>
<td>5.3</td>
<td>MAIN EFFECTS</td>
<td>102</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Two-Level Hierarchical Model</td>
<td>102</td>
</tr>
<tr>
<td>5.4</td>
<td>OTHER EFFECTS MODELS</td>
<td>114</td>
</tr>
<tr>
<td>5.4.1</td>
<td>Effects of School on Academically Goal-Oriented Peers</td>
<td>115</td>
</tr>
<tr>
<td>5.4.2</td>
<td>Effects of Peer Networks</td>
<td>119</td>
</tr>
<tr>
<td>5.4.3</td>
<td>Cross-Level Interaction Models</td>
<td>122</td>
</tr>
<tr>
<td>5.5</td>
<td>SUMMARY</td>
<td>131</td>
</tr>
<tr>
<td>6.1</td>
<td>INTRODUCTION</td>
<td>132</td>
</tr>
<tr>
<td>6.2</td>
<td>REVIEW OF FINDINGS</td>
<td>132</td>
</tr>
<tr>
<td>6.3</td>
<td>METHODOLOGICAL ISSUES</td>
<td>135</td>
</tr>
<tr>
<td>6.4</td>
<td>POTENTIAL LIMITATIONS OF THE STUDY</td>
<td>136</td>
</tr>
<tr>
<td>6.5</td>
<td>DIRECTIONS FOR FUTURE RESEARCH</td>
<td>137</td>
</tr>
<tr>
<td>6.6</td>
<td>CONCLUSIONS</td>
<td>141</td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>143</td>
</tr>
<tr>
<td>Appendix</td>
<td></td>
<td>163</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 3.4-1 Conceptualizing School-Level and Peer Network Effects on College Expectations.......................53
Figure 5.2-1 Distribution of Adolescents’ College Expectations by Age and Gender.........................................99
Figure 5.2-2 Distribution of Low and High College Expectations by Gender and Race/Ethnicity .....................101
Figure 5.4.3-1 The Cross-Level Interaction between Gender and Average School SES on Adolescents’ College
        Expectations .....................................................................................................................................129
Figure 5.4.3-2 The Cross-Level Interaction between Gender and School High School Dropout Rate on
        Adolescents’ College Expectations .................................................................................................130
LIST OF TABLES

Table 4.2-1 Summary of Number of Adolescents from In-Home and In-School Surveys, Network Information and Number of Schools by Waves ......................................................................................................68

Table 5.2-1 Correlations among Individual, Peer and School-Level Independent Measures and Dependent Outcomes .............................................................................................................................................96

Table 5.2-2 Descriptive Statistics for the Analysis of College Expectations and Academically Goal-Oriented Peers .....................................................................................................................................................98

Table 5.3.1-1 Binary Hierarchical Linear Model of School-Level Effects Predicting Adolescents’ College Expectations.......................................................................................................................................113

Table 5.4.1-1 Two-Level Hierarchical Linear Model Predicting Exposure to Academically Goal-Oriented Peers ............................................................................................................................................................118

Table 5.4.2-1 Binary HLM Random Intercept Models Predicting Adolescents’ College Expectations............................................................................................................................................................................121

Table 5.4.3-1 Cross-Level Interaction Models of School Characteristics, Gender, and Peer Network Attributes on Adolescents’ College Expectations...................................................................................................127
CHAPTER I: INTRODUCTION

1.1. Introduction

An important and consistent finding in the research on status attainment is that children of higher class backgrounds aspire to higher educational and occupational achievements than children from lower social class backgrounds (Sewell and Shah 1968a; Sewell, Haller, and Ohlendorf 1970; Teachman and Paasch 1998). However, some lower-class individuals aspire to and achieve high-level educational and occupational goals despite the limitations imposed by their lower social class background (Sewell and Shah 1968b). This suggests that either lower class families can socialize their children to high levels of aspirations and achievement, despite their limited resources, or that other influential effects beyond family status (e.g., peers, school, and neighborhood) foster high expectations and achievement.

Early studies of educational expectations and educational attainment typically examined cross-sectional data to assess the influence of an array of individual and family characteristics on educational outcomes (Kandel and Lesser 1969; Sewell and Shah 1968a, 1968b; Sewell, Haller, and Portes 1969; Sewell, Haller, and Ohlendorf 1970; Sewell 1971; Sewell and Hauser 1972; Alwin 1974; Spenner and Featherman 1978; Howell and Frese 1982; Ross and Wu 1995). Within this tradition, two emphases are prominent: One underscores the advantages of having

Recent studies have linked school and neighborhood environments and the social relationships that develop in these environments to children’s or adolescents’ educational development (Pribesh and Downey 1999; Ginther, Haveman, and Wolfe 2000). This implies that educational expectations, achievement, and attainment are subject to influences that extend beyond the effects of individual demographics and family background. Circumstances of disadvantage, such as neighborhood rates of poverty and unemployment, female-headed households, dependence on social assistance, and unstable housing, have been found to affect a range of outcomes, from emotional well-being (Jencks and Mayer 1990; Aneshensel and Sucoff 1996; Wheaton and Clarke 2003), to IQ scores (Turner and Ellen 1997; Ellen and Turner 1997), to academic performance (Duncan 1994; Wilson 1987, 1996), to earnings and unemployment in adulthood (Wilson 1987). However, studies that solely rely on disadvantaged parental or neighborhood circumstances to explain poor child outcomes miss the development of children whose lives are not impaired because other social environments may compensate for the effects of disadvantage.

Not all children born into advantaged circumstances enjoy advantaged situations as adolescents. Likewise, not all children born into disadvantaged circumstances remain
disadvantaged across the life course. Family processes are mediators in the intergenerational transmission of inequality (Parcel and Menaghan 1990). However, what is not clear is the effect of socialization on adolescents in the context of school and peers and the transmission of educational disparities.

Given the early and recent perspectives, my purpose in this dissertation is to delineate more specifically how school characteristics and peer networks affect the development of adolescents’ college expectations over and above individual-level characteristics. In aiming to identify the multiple characteristics related to college expectations I use American survey data, with exceptionally rich contextual school and peer network information, from the National Longitudinal Study of Adolescent Health (Add Health).

To identify and explain the direct and indirect school and peer effects on college expectations, the empirical analysis employs two approaches. First, I test the contextual effects of school on adolescents’ college expectations. Second, I examine the extent to which school characteristics are associated with educationally goal-oriented peer networks. Finally, I investigate the direct and mediating effects of school and peers on college expectations. In doing so, I examine adolescent networks and school composition as intertwined entities rather than as isolated influences. The hierarchical model approach allows for estimating simultaneously the school and peer effects on the specific outcomes.

Sociological studies that examine contextual-level effects on a range of child and adolescent outcomes commonly include theoretical concepts of collective socialization (Wilson 1991, 1996; Ainsworth 2002), collective efficacy (Sampson, Raudenbush, and Earls 1997; Sampson 2004), social capital (Coleman 1988), competition (Meyer 1965; Davis 1966; Mayer
and Jencks 1989), relative deprivation (Mayer and Jencks 1989; Jencks and Mayer 1990), and occupational opportunities (Wilson 1987, 1996; Massey, Gross, and Eggers 1991). While the majority of studies on educational achievement and attainment are concerned with definitive performance measures such as standardized test scores, years of schooling, college attendance, or school dropout (Bryk and Raudenbush 1992; Duncan 1994; Wilson 1987, 1996), this dissertation draws specifically on adolescents’ educational goal orientations, such as college expectations, which are associated with the characteristics of schools and peers. I examine variables that capture the role of collective socialization and social capital to explain the interplay of disadvantaged and advantaged school and peer network effects.

This research has the objective of adding to the existing literature on educational expectations, by providing an understanding about the multiple environments of schools and peers associated with adolescents’ college expectations.

1.2. College Expectations

The status attainment process has been studied extensively as a statement of ambition and occupational intent (Sewell, Haller, and Portes 1969; Duncan, Featherman, and Duncan 1972). The close ties between education and work are of immediate interest as factors in the academic and career planning of adolescents and their parents. Educational aspirations have been called the “strategic center”, explaining a significant part of the relationship between
parents’ own socioeconomic status and their children’s ultimate attainments (Haller and Portes 
1973; Sewell, Haller, and Portes 1969). In contrast, studies on educational expectations identify 
expectations as an important cognitive link between students’ aspirations and students’ ultimate 
achievements (Alexander, Eckland, and Griffin 1975; Dominitz and Manski 1996; Sewell and 
Hauser 1975; Sewell and Shah 1968; Rosenbaum 1980). Further, expectations have been 
described as “…more volatile and susceptible to external influences than aspirations, perhaps 
especially among lower income and minority youth” (Hanson 1994; Kao and Tienda 1998). 
Conceptually, expectations represent a more concrete realistic plan, whereas aspirations 
represent a more abstract, ideological goal. However, research on ambitions commonly 
assumes interchangeable concepts of aspirations and expectations (Sewell and Shah 1968a, 
1968b; Nelson 1972; Marjoribanks 1991), making it difficult to distinguish and examine 
theoretically and methodologically the meaning of youths’ goal-setting.

In order to identify youths’ expectations, I follow a specific outcome approach by 
testing the influences of multiple social contexts on college expectations, which may be more 
sensitive to explaining youth’s future planning. In this way I seek to disentangle what are still 
unclear conclusions regarding adolescents’ development of educational goals.

Hypotheses within the basic attainment model primarily addressed the implications of 
student’s academic performance and student’s social origins (i.e., parents’ socioeconomic 
status) on variations in educational ambitions (Jencks, Crouse, and Mueser 1983; Morgan 
1998). Sewell and others expanded the attainment model by including parents’, teachers’, and 
friends’ encouragement and expectations to explain students’ individual levels of educational

Some studies expanded the early attainment studies, with their main interest in testing individual and family characteristics linked to educational expectations and focused on formations of expectations by including contextual attributes such as of neighborhood or school to examine their effects on students’ aspirations and expectations (Meyer 1970; Sewell and Armer 1966; Turner 1964).

Research on contextual characteristics (e.g., neighborhood or schools) and their link to educational ambitions shows two consistent perspectives: One supports the assumption that individual and family characteristics are of greater importance than characteristics of other social environments for the development of students’ educational aspirations and expectations (Sewell and Armer 1966). The second perspective, which considers the relationship between school and educational expectations, provides evidence for the effects of school, neighborhood, or peer group characteristics on students’ goal setting (Coleman et al. 1966; Meyer 1970; Jencks and Mayer 1990; Thrupp 1997). For example, some studies show that students from high-SES schools have higher expectations than those from low-SES schools, even after controlling for students’ individual socioeconomic status (Meyer 1970; Turner 1964). Further, researchers indicate that low-SES students may potentially achieve higher levels of aspirations and attainment by informal contact with wealthier peers in more affluent schools (Thrupp 1997). This finding implies that students in affluent schools hold cultural norms that value educational attainment and college attendance as desirable and expected goals (Jencks and Mayer 1990). In agreement with these findings are the results of the Coleman Report, which
suggest that the transmission of middle-class norms from affluent white students is beneficial to
minority students and students from disadvantaged backgrounds (Coleman et al. 1966). Thus, these results indicate that the socioeconomic composition of schools significantly affects students’ educational planning, in addition to students’ own family SES.

Overall, the majority of studies on ambition or attainment identify students’ socioeconomic family background, the influence of significant others, and students’ academic ability and experiences as significant recurring factors affecting variation in educational expectations. Although some studies consider school effects on youths’ ambitions and achievement, the literature to date still shows deficiencies in explaining the impact of social contextual effects on the specific outcome of college expectations (Thrupp 1997).

Recent studies of the effect of educational expectations on various levels of post-secondary education focus on changes in expectations across cohorts, and findings show differences in students’ educational expectations by race/ethnicity and gender (Morgan 1996; Reynolds and Pemberton 2001; Reynolds and Burge 2004). For example, concerning racial disparities, research on aspirations and expectations shows that minority students, especially blacks, possess higher educational aspirations and expectations compared to whites of similar socioeconomic status and educational characteristics (Hirschman, Lee, and Emeka 2004; Kao and Tienda 1998). In addition to individual characteristics and racial differences, Frost (2007) explores the relationship between school racial composition and students’ college expectations, suggesting that greater percentages of minority students are related to higher educational expectations for all students. Attending similar schools with greater proportions of minority students fosters similar high levels of expectations for students of all racial backgrounds.
compared to schools with lower percentages of minority students (Frost 2007). However, Frost (2007) indicates that it remains unclear, whether the greater percentage of minority youth in schools essentially increases the likelihood for all races/ethnicities to complete a post-secondary degree or whether more segregated schools are composed of students with more ambitious educational goals.

With regard to gender differences and expectations, Reynolds and Pemberton (2001) provide evidence of higher expectations among high school girls compared to boys, which demonstrates gender-related changes in education and academic performance and further in norms associated with the transition to adulthood. The authors show that college expectations are largely influenced by youth’s prior achievements, teacher quality, and peer group characteristics (Reynolds and Pemberton 2001). However, by identifying the effects of these specific characteristics on college expectations, Reynolds and Pemberton (2001) also make the point that a significant portion of expectations cannot be explained solely by gender, race/ethnicity, family structure, family resources, and county context.

Thus far, research on college expectations still leaves the following questions unanswered: How are college expectations affected during adolescence in the presence of multiple social settings? Does the actual outcome of college expectations diverge or converge by gender when school attributes and peer networks are taken into account? Do socioeconomic or educational characteristics of school and peers matter most for the specific outcome of adolescent college expectations? Do school attributes affect peer network educational orientations?
Building on the arguments of recent studies on expectations, this dissertation proceeds from the premise that the effects of social disparities in family, school, and/or peer networks can be assessed using a hierarchical multi-level approach. This approach assesses whether various social contextual attributes, either directly, or by means of mediation, or moderation affect youth’s college expectations. Past research may not have fully captured the effects of schools and peer networks on youths’ college expectations by applying conventional methodological approaches without considering the effects of concurrent social environments and by examining respondents’ perceptions of their friends’ attitudes and behaviors instead of actual peer responses.

1.3. Multi-Level Characteristics and College Expectations

A variety of interdisciplinary studies have started to analyze the effects of multiple social environments for individuals (Aneshensel and Succoff 1996; Brooks-Gunn et al. 1993; Brooks-Gunn et al. 1997; Elliott et al. 1996; Garner and Raudenbush 1991; Kowaleski-Jones 2000; Leventhal and Brooks-Gunn 2000; Sampson et al. 2002; Sampson 2004; Sampson and Morenoff 1997; Sampson, Raudenbush and Earls 1997). The majority of these studies emphasize urban inequalities to examine the manner in which social and economic disadvantages affect youth. For instance, as specified in integrated multi-level theories, societal processes may lead to disinvestment policies that consequently lead to less social capital and
greater disadvantaged family and contextual circumstances for youth development (Hagan 1994). Multi-level research speaks to the issue of the relationship between variables measured at different hierarchical levels. Further, this approach enables the examination of questions about how a number of individual and group variables affect one particular outcome variable (Hox 1995).

A central purpose of this dissertation is to examine the various aspects of the multi-level model by investigating how affluent or poor school context and/or peers may influence youth’s college expectations.

### 1.4. Chapter Outline

Subsequent chapter are constructed as follows. Chapter two examines the development of the attainment process in the sociological framework. Individual-level characteristics of family and adolescents are reviewed. Chapter three changes the perspective by focusing on contextual-level characteristics relevant to adolescents’ college expectations. Chapter four describes the analytical approach, the selected measures, and the survey data examined in the dissertation; the National Longitudinal Study of Adolescent Health (Add Health). Chapter five presents the results of the two-level hierarchical models, which test the research questions posed in chapter three. Chapter six briefly reviews and assesses the results for adolescents’
college expectations and their goal-oriented peers in comparison to past and current attainment research.
CHAPTER II:
INDIVIDUAL-LEVEL EFFECTS ON EXPECTATIONS AND ATTAINMENT

2.1. Introduction

Studies of educational attainment in the disciplines of sociology, psychology, and education generally report a consistent positive correlation between family economic background and student academic performance (Sewell, Haller, and Ohlendorf 1970; Sewell and Shah 1968; Duncan, Featherman, and Duncan 1972). In particular, familial poverty, family structure, and family resources are found to be connected to academic achievement (Duncan et al. 1998; Entwisle and Hayduk 1982; Chase-Lansdale et al. 1995; McLanahan and Sandefur 1994).

Adolescents’ individual characteristics, gender, race/ethnicity, and intellectual ability have all been significant correlates of the achievement process (Domene and Shapka 2005; Morgan 1996; Reynolds and Pemberton 2001; Rosen and Aneshensel 1978). In addition, other studies of educational achievement or attainment have emphasized child, parent, and teacher expectations as important influences on children’s and youths’ academic performance (Ainsworth 2002; Furstenberg and Hughes 1995; Lee and Bryk 1989). Nevertheless, the
majority of these studies examine expectations as an independent or intervening variable (see, e.g., the review by Meichenbaum, Bowers, and Ross 1969). Given that expectations represent an important cognitive link between aspirations and ultimate educational achievement, focusing specifically on college expectations can illuminate the goal setting of youth, and ultimately help to predict early adult achievement outcomes.

My main objective in this dissertation is to investigate the impact of multiple school-level and peer network characteristics on students’ expectations. It is important, first of all to assess the effects of relevant individual-level controls to establish non-spurious contextual-level effects (Sewell et al. 1969; Sewell et al. 1970). Studies that do not account for individual-level attributes are inadequate for estimating contextual-level effects, because research suggests that individual and family characteristics are strongly associated with contextual-level characteristics. For example, neighborhoods are defined by the individual-level compositions of families (Brooks-Gunn et al. 1997). The following two sections review the literature with respect to family and children/adolescent characteristics associated with educational expectations.

2.1.1. Family Characteristics

The early status attainment literature emphasizes the family as an important agent in generating differences in the educational and occupational achievements of children and
juveniles. For example, Blau and Duncan’s (1967) recursive model of the occupational status attainment of American male adults underscored the importance of a father’s education and occupation as antecedent structural factors, as well as a respondent’s education and first occupation, as intervening factors for predicting respondent’s ultimate status attainment. The model explained 26% of the variance in respondent’s education, 33% of the variance in first occupation, and 43% of the variance in current occupational status. In view of these findings, subsequent research sought to identify other factors in the family environment that were tied to children’s educational achievement, so as to explain the attainment process more completely (Sewell, Haller, and Portes 1969).

To this end, a path model by Sewell and his colleagues (1969) linked socioeconomic status and mental ability to educational and occupational attainment by means of intervening social psychological variables, including academic performance, influence of significant others, and educational and occupational aspirations. By including these additional measures, 47% of the variance in educational attainment and 33% of the variance in occupational attainment were explained. These results provided evidence that the link between family socioeconomic status and academic achievement was indirect. Moreover, a revised study of the educational and early occupational status attainment process by Sewell, Haller and Ohlendorf (1970) found that there was no significant direct path from family socioeconomic status to educational attainment. The mediating effects of mental ability and the influence of significant others’ explained the direct effect of family SES influence on attainment in that analysis.

Sewell and Hauser (1972) further tested causes and consequences of higher education in modeling the status attainment process. Path models revealed that socioeconomic origins are
important for occupational and earnings attainments. By adding cognitive attributes of academic performance, significant others’ influence, post-high school plans, and occupational aspirations, the authors found evidence that socioeconomic status is mediated by these various attributes. Results showed that parental encouragement explained almost half of the variance in educational plans and occupational aspirations. Regarding the outcome of attainment, post-high school education was found to influence significantly youth’s early educational achievement (Sewell and Hauser 1972). Although socioeconomic background was mediated by intervening variables, direct pathways were still found between a father’s occupational status and a son’s attainment. In spite of the direct pathways between a father’s inherited occupational status and a son’s future occupation, the authors argued that results pointed to strong effects of social-psychological influences on attainment, beyond economic influences (Sewell and Hauser 1972).

These earlier findings were expanded through status attainment research that tested the effects of parental expectations and value orientations (Sewell and Shah 1968a), home resources, and family size and structure on children’s attainment (Sewell and Shah 1968b). While parents encourage their children’s schooling and/or educational goals, they also provide educational resources in the home that stimulate children intellectually and thus encourage educational aspirations or expectations. Findings confirm that children from families with greater financial capital (e.g., income, material learning aids) and human capital (e.g., educated parents) are more likely to view college as a realistic option (Coleman 1988; Jencks 1972; Teachman 1987).

For example, Teachman (1987) conducted a national longitudinal study of senior high school students to test the relationship between familial resources and educational attainment,
for the period from 1972 to 1979. The research revealed a positive relationship between educational resources and educational attainment. Results suggested that parents with higher education and income provide greater opportunities and motivation to create educational resources for their children. The study concluded that educational resources played a significant role, particularly during high school (Teachman 1987), but parents’ educational encouragement and expectations were also important for the development of juveniles’ future educational planning. Other studies associate the level of parental education to students’ social capital. This further guides the selection of neighborhood and school choice and, thus, affects children’s educational outcomes. The greater the level of parental social capital, the more it enhances relationships outside the family. That is, parental social capital boosts children’s educational development and planning (Duncan et al. 1998).

Family structure is also associated with a wide range of educational outcomes (Downey, Powell, Steelman, and Pribesh 1999; Guo and VanWey 1999). Research on the relationship between parents’ marital status and children’s attainments indicates that children from two biological-parent-families tend to have better grades than do other children, and are more likely to complete high school and attend college (Cameron and Heckman 1999; Pierret 1999). Thus, family structure may generate individual disadvantages that affect educational progress.

McLanahan and Sandefur (1994) examined four data sets to test the effect of family structure on various educational child outcomes. Their findings showed that high school graduation rates, college enrollment, and college graduation rates are lower for children from single-parent families compared to two-parent families. Further, the authors found that stepchildren from blended families are disadvantaged much like children from single-parent
households, despite the definite benefits of dual-earning parents (i.e., greater resources) (McLanahan and Sandefur 1994).

When interpreting the results of studies on family structure and educational outcomes, some researchers argue that family structure is exogenous, notwithstanding the possibility that unobserved factors may determine both family structure and educational outcomes. For example, parental conflict may lead to parents’ separation or divorce and then to lower educational outcomes for children. Thus, the possible presence of ‘selection effects’ makes the interpretation of the estimated effects of family structure on children’s educational success more problematic (Ginther and Pollak 2002). In view of these possible selection effects, studies have applied various models (e.g., bivariate probit models, nonparametric bounds, or multiple cause models) to estimate the correlation of unobserved characteristics between family structure and child outcomes (Manski, Sandefur, McLanahan, and Powers 1992; McLanahan and Sandefur 1994; Sandefur and Wells 1999).

For example, Ginther and Pollak (2000) examined the relationship between family structure and educational outcomes by acknowledging differences within the family structure. The authors took into account the sibling structure to control for unobserved heterogeneity across families and individuals (Ginther and Pollak 2000). Thus, for children in the same family the educational outcomes of stepchildren and their half-siblings within the same blended family are compared. Employing the National Longitudinal Study of Youth (NLSY) and using panel data methods to control for unobserved heterogeneity across families or individuals, the authors found no significant family structure effects (Ginther and Pollak 2002). Similarly, when examining the effects of half-siblings, results showed no differences in educational
outcomes as a function of family structure. Ginther and Pollak (2002) conclude that the
correlations between family structure and educational outcomes support the assumptions of
selection, which implies that unobserved variables or processes generate both family structure
and children’s educational outcomes.

The divergent conclusions of these prior studies problematize the relationship between
family structure and adolescents’ college expectations. Further, adolescents interact within
various social environments (e.g., school, peers, and neighborhoods) and parental influences
probably play a less dominant role for teenagers than they do for young children who spend
more time with parents (Trusty and Harris 1999).

In sum, the classic attainment model (i.e., the Wisconsin model) established the effect of
family socio-economic background on educational success (Sewell et al. 1969; Sewell et al.
1970). Research then expanded by demonstrating that a wide range of family related influences
played a significant role in determining children’s and adolescents’ educational attainments
(Duncan, Featherman, and Duncan 1972; Sewell and Hauser 1980; Sewell, Hauser, and Wolf
1980). Findings about family background characteristics such as parents’ income, aspirations,
expectations, achievement, and marital status all underscored the intergenerational transmission
of inequality within families (Jencks and Mayer 1990). Although a variety of studies
emphasize the impact of family attributes on students’ educational and occupational success,
individual characteristics such as children’s and adolescents’ demographics (Gorard, Rees, and
Salisbury 1999), as well as educational or behavioral attributes, also have been found to
influence significantly educational and post-high school outcomes (Hanson 1994; Hauser 1969;
The next section describes various individual characteristics relevant to educational or college expectations.

2.1.2. Characteristics of Adolescents

To fully understand the influence of various social environments on students’ expectations, it is also important to account for attributes that may interact with other characteristics in shaping their college expectations. Affluent neighborhoods or schools have been found to have a significant impact on adolescents’ ultimate status outcomes. However, there appears to be an interaction with student’s gender (Katz, Kling, and Liebman 2001; Leventhal and Brooks-Gunn 2000). Findings of early studies examining the relationship between student’s gender and educational attainment show relatively higher expectations and attainment for boys than for girls, implying the influence of gender-related social forces that are experienced in the context of families and schools (Fortner 1970; Herzog 1982; Marini and Greenberger 1978; Rosen and Aneshensel 1978). These early studies provide evidence that males tend to achieve more years of education and are more likely to have completed a college degree than their female counterparts. This trend, however, has diminished over the past decades (Reynolds and Pemberton 2001). More females than males now aspire to attend colleges and attain college degrees (Reisberg 2000). Recent findings suggest that gender differences in parents’ involvement, or the lack of male role models at home, may generate
these disparities between boys and girls (Carter and Wojtkiewicz 2000; Gose 1999). Another potential explanation to these disparate findings for males and females is the possibility that the levels of aspiration of male and female adolescents have distinct trajectories, so that boys have higher aspirations at some ages (e.g., the early high school years), while girls have higher aspirations at other ages (e.g., late high school and post-high school) (Domene and Shapka 2005).

Domene and Shapka (2005) examined trajectories of educational aspirations from early high school through post-high school years for boys and for girls. They found lower starting points of aspirations for boys during early high school compared to girls, but accelerating increases for boys during senior high school, and significant declines for boys during post-high school years. In contrast, girls’ trajectories of educational aspirations are initially lower than boys’ and relatively linear across time. The authors suggest a more stable increasing trend in aspirations for girls and a reversed u-shaped trajectory for boys during adolescence (Domene and Shapka 2005). Further, these findings imply that aspirations do not develop gradually during teenage years and that the development of aspirations differs for males and females. The authors apply a hierarchical growth curve model approach, testing for within- and between-person differences over time. However, results are limited to explanations of individual-level trajectories by gender as they do not consider other possible contextual-level influences (i.e., schools). Overall, studies of gender differences in aspirations or expectations show that gender relates differently to other measures in the status attainment process (Domene and Shapka 2005; Hout and Morgan 1975; Sewell and Shah 1968b). However, why female and male educational expectations develop differently requires further explanation.
Another significant individual-level characteristic examined in the status attainment literature is the impact of race/ethnicity on expectations and academic attainment (Hanson 1994; Sewell, Haller, and Ohlendorf 1970; Sewell, Haller, and Portes 1969). Some studies provide evidence of higher college expectations for whites compared to racial and ethnic minorities (Fordham and Ogbo 1986; Ogbo 1991). In contrast, other studies report that the advantage of higher expectations and attainment among whites disappeared after controlling for familial resources (Trusty and Harris 1999). After taking into account parents’ educational and economic statuses, some findings indicate higher educational aspirations and expectations for minority youth than for white youth (Hanson 1994). In this one study, minority youth at every level of the socioeconomic stratum were found to have higher educational expectations compared to that of whites. On the other hand, Kao and Tienda (1998) found differences among ethnic groups regarding the development of educational aspirations during high school. They showed that high parental socioeconomic status is conducive to high levels of aspiration during the high school years. Yet, because of the typically lower socioeconomic status of black and Hispanic families, educational aspirations were less stable throughout high school for black and Hispanic students when compared to white and Asian students (Kao and Tienda 1998).

In addition to gender and race/ethnicity, individual student’s academic ability (e.g., as measured by academic performance) is essential in the achievement process. Early attainment studies suggested a direct relationship between academic performance and both educational and occupational expectations (Hauser 1969). Other studies also showed that intellectual ability mediates much of the influence of social background characteristics on educational outcomes (Sewell, Haller, and Ohlendorf 1970). Sewell and his colleagues (1970) measured adolescents’
academic performance by youth’s percentile rank and found moderate direct effects of performance on educational outcomes and on occupational aspirations and attainment.

Another important influence contributing to youths’ decision-making is their attachment to parents. Parents play a major role in their children’s and adolescents’ decisions regarding future educational planning. Thus, having a strong relationship with their parents affects adolescents’ appraisal of their self-efficacy, educational expectations, and scholastic achievement overall. Studies show that parents who do not influence their adolescents’ future development will not be successful in cultivating their adolescents’ competencies (Bandura, Barbaranelli, Caprara, Pastorelli 2001). These adolescents will most likely decide not to pursue university or college education due to the inadequate amount of self-efficacy promoted by parents. Instead, they will be more likely to seek an occupational route (e.g., manual labor). Juveniles who do not perceive their parents as emphasizing academic performance often do not believe in the importance of academics and instead set occupational goals below their actual level of achievement.

Consistent with developmental theories, strong family relationships often have a positive effect on adolescent’s self-esteem, which in turn encourages confidence that may positively influence adolescents’ decision-making processes (Barber and Olsen 1997). It is likely that adolescents who experience poor family cohesion and parental care will not learn to engage in the decision-making process competently and thus will show less or no interest in their own educational planning.
It is still unknown how parental resources are essential or marginal for college expectations during adolescence, especially when the presence or absence of resources from other social environments are also taken into account (Furstenberg 1993, Sampson et al. 2002). Ethnographic studies suggest that, in highly uncertain and dangerous environments, adolescents have a reduced chance to succeed or even to live into adulthood (Kotzlowitz 1991). If this is true, one can assume that negative school environments or peer behaviors harm educational expectations. An upbringing in environments that present a constant threat for adolescents is less likely to allow a focus on educational goals. Because this dissertation examines school-level and peer network effects on expectations, controls for individual undesirable behaviors are included, to test for non-spurious contextual-level effects. These behaviors include undesirable behaviors, such as adolescents’ unexcused missing of school and peers’ skipping school.

An extensive education literature shows that the alienation of students contributes to academic problems at the individual and institutional levels, and larger inequalities at the societal level (Coleman 1961; McLeod and Edwards 1995; Stinchcombe 1964). This literature has emphasized the need to consider the social aspects of schooling, including students’ socio-emotional adjustments. Crosnoe, Johnson, and Elder, Jr. (2004) study the effects of intergenerational bonding in school, particularly the student-teacher relationships on academic achievement by gender and race/ethnicity. Results showed that positive student-teacher relationships are associated with better student outcomes across all groups, even after controlling for sociodemographic factors. Further, findings indicated that these relationships serve as a protective resource for Hispanic American girls on achievement and for disciplinary
problems of white girls. However, the significance of these relationships as protective source for boys does not prove to be consistent. Whether these relationships are important for college expectations needs further assessment.

In sum, the various status attainment studies provide evidence of important individual characteristics for differences in educational expectations.

2.2. Summary

The central focus of my dissertation research is the inclusion of multiple social settings in the development of educational expectations, to test their direct or indirect effects on adolescent college expectations in the presence of the established individual-level controls. While individual-level controls (i.e., family or adolescent characteristics) provide an understanding of familial and individual disparities in the educational process, the simultaneous testing of individual and contextual-level effects allows for analyzing differences in multiple environments. In particular, this testing enables a more nuanced analysis of adolescents facing social disparities within their immediate and possibly anomic environments (e.g., disadvantage at home vs. encouragement at school). Thus, chapter three reviews previous studies that have linked contextual-level characteristics of school and peer groups to educational attainment and to a lesser extent to educational expectations.
3.1. Introduction

During the 1970s, studies of educational attainment established that familial and individual characteristics were of considerable importance for the development of educational and occupational outcomes in the attainment process and, to a lesser degree, for college expectations as well (Marini and Greenberger 1978; Meyer 1970; Rosen and Aneshensel 1978; Sewell, Haller, and Ohlendorf 1970; Sewell, Haller, and Portes 1969; Sewell and Shah 1968). Some of these early studies also indicated the need for examining neighborhood status or school composition (Hauser, Sewell, and Alwin 1976; Meyer 1970), yet results were insufficient or incomplete with the result that research on contextual-level effects on educational attainment stagnated.

By the mid-1980s, researchers revisited the status attainment model. After integrating social contextual and individual-level characteristics into their theoretical frameworks, researchers examined their effects on children’s and youths’ educational and post-high school achievement. Further studies have highlighted differences between child and adolescent well-being when taking into consideration, for example, characteristics of neighborhoods or schools. These differences have been found to be salient for adolescents because they spend more time
in environments outside the home (Crane 1991; Duncan 1994). Hence, adolescent’s self-definition and identity revolve significantly around their immediate extra-familial surroundings (Damon and Hart 1988). Typically, youth search for coherency in self-perception, which causes them to adhere to a particular identification, based on the normative environments provided by their neighborhoods, schools, and peers (Erickson 1968; Harter and Fischer 1999).

Sociological research on educational achievement or attainment has emphasized a broad spectrum of individual characteristics and social environments important for children’s and youths’ academic performance (Ainsworth 2002; Furstenberg and Hughes 1995; Lee and Bryk 1989). However, the majority of this research examines expectations as an independent or intervening variable (review by Meichenbaum, Bowers, and Ross 1969). Moreover, both, early and recent studies of achievement have not specified or emphasized the consequences of concurrent school-level and network-based peer characteristics on college expectations. Given that expectations represent an important cognitive link between aspirations and ultimate achievements, this research can yield more detailed information for understanding the variant effects of multiple environments.

Chapter three identifies characteristics of schools and peers that may affect youth’s college expectations and how (or by what mechanism and model forms) these effects occur. I also speak to the issue of gender differences, a topic in need of clarification. In addition, I examine in greater detail methodological issues in the results of past studies. Finally, I draw on theoretical concepts of previous studies in describing the effects of normative environments to examine the factors that youth may confront in schools or peer groups. Chapter three concludes
with my main research questions and hypotheses, which will be examined empirically in chapter five.

### 3.2. Contextual-Level Effects Models

The range of findings from the strength and significance of school-level effects on youth outcomes indicates the continued need to examine *how* schools affect adolescents, and to attend to model specifications. I review the results of studies that examine school-level effects by model type to evaluate the relative impact and consistency of patterns of effects of various school characteristics on the aspirations or expectations of adolescents. In addition, I attend to the mechanisms by which schools and peers exert an influence on youth outcomes. Thus, this section draws on a range of interdisciplinary empirical studies and overviews (Alwin and Otto 1977; Anderson 1982; Corsaro and Eder 1990; Dryler 1999; Fowler and Walberg 1991; Frost 2007; Hallinan and Williams 1990; Hanushek 1997; Lee and Smith 1997; Meyer 1970; Stewart 2008).

Typically, studies that examine school-level characteristics on various adolescent outcomes focus on structural, mediational, and other types of intervening models. For peer effects the majority of studies refer to mediational approaches. My research intends to delineate more specifically *which* characteristics of schools and/or peers affect adolescent college expectations.
The structural model approach often assumes that school factors exert uniformly harmful effects on youth outcomes. Typically, this approach focuses on the relative effects of risk factors. For instance, schools’ socioeconomic status accounts for the overall condition of schools. The structural approaches compare to ‘additive’ models of risk effects. In these models, each characteristic is conceptualized as exerting an independent effect on adolescents’ outcome.

Another type of effects models considers various influences of mediating or other intervening processes. For example, some research investigates how individual subjective dimensions of school potentially mediate the effects of antecedent school conditions on child or adolescent outcomes. Other studies test the mediating effects of individual-level characteristics (e.g., family mechanisms) that transmit school effects. These individual-level characteristics have been distinguished as home and extra-familial processes (Furstenberg et al. 1999).

In addition, some models have examined how school attributes affect youths’ outcomes contingent on other contextual or individual-level characteristics. While structural model approaches emphasize the main effects of school-level characteristics, models that consider intervening effects also take into account the mediation or interaction between school attributes and individual or contextual-level effects. The latter approach conceptualizes effects as contingent upon various other factors (e.g., gender, peer networks, neighborhoods) and yields insight into characteristics that may modify protective or risk conditions. These models are also described as “interaction effects” models, where the effects of school factors vary, depending for instance on individual-level characteristics.
While previous studies examined direct or mediating effects on expectations, in this dissertation I examine all three model types (i.e., direct, mediating, and cross-level interaction models) to evaluate the relative effects of school-level characteristics and peer networks on adolescents’ college expectations. The hierarchical framework applied in this study allows for testing these various effects models.

3.2.1. School-Level Models and College Expectations

The majority of research on schools considers structural and indirect effects to explain school effects on educational aspirations or achievement (Davis 1966; Fowler and Walberg 1991; Frost 2007; Stewart 2008). Commonly, approaches have been applied that regress school mean outcome scores on the school mean of one or more measures. Others have used the aggregates of residuals from individual-level regression models to identify school effects. However, with the advancement of statistical models, Aitkin and Longford (1986) promoted the method of maximum likelihood, with an emphasis on multilevel hierarchical models. In view of this advancement, other researchers have demonstrated various multilevel frameworks to estimate the effects of different school attributes (Goldstein 1987; Hallinger and Murphy 1986; Raudenbush and Bryk 1986). In spite of the variety of school effects that have been studied, research remains inconclusive about the effects of concurrent multiple influences, such as peers and schools on college expectations estimated in multilevel analyzes. Analyzes that consider
peer attributes have explained peer effects separately from the effects of schools or used the latter as mediators. The following section explores the literature on school-level characteristics by examining the variety of structural and indirect effects on adolescents’ educational outcomes.

3.2.1.1. Structural Effects Models and School Characteristics

The structural approach examines the main effects of school characteristics on individual-level outcomes. These models focus on comparing the effects of different school factors or the effects of a combination of factors measured by indices derived from various school characteristics (e.g., school climate). Model specifications vary. For instance, a set of school characteristics is tested for their effects on a range of adolescent outcomes or a school factor is selected as being influential on a specific outcome. The latter specification is of particular interest in this dissertation, in which I examine the specific consequences of school context on the subjective outcome of college expectations and academically goal-oriented peers.¹

Research that examines school measures has identified several important direct associations of school-level achievement, high school socioeconomic status, school size, school

¹ I use the term academically goal-oriented peer networks to refer to the level of academic achievement and college expectations of adolescents’ friends at school. Goal-oriented peers measures peer behaviors by asking peers themselves about their level of academic achievement and college expectations.
type/sector, school cohesion, school crowding, and school resources as important characteristics for adolescents’ educational development (Alwin and Otto 1977; Davis 1966; Dryler 1999; Fowler and Walberg 1991; Frost 2007; Lee and Smith 1997; Mayer and Jencks 1989; Stewart 2008). The variability in adolescent outcomes across various developmental domains can be partitioned into individual, family, school, and neighborhood components. For the purpose of my research I am particularly interested in testing the effects of schools and peers in the presence of individual-level controls on college expectations. Because school context has also been cited as an important source for gendered learning and development, I also examine the association between schools and college expectations by gender. The first part of this review focuses on effects models of schools and the second part, section 3.2.2, on effects models of peers.

To explain school effects on educational achievement, an early study by Davis (1966) tested the role of college achievement (a school measure of students’ academic ability) on students’ career aspirations. This analysis introduced Stouffer’s concept of relative deprivation into the school effects research, which is also known as the ‘frog-pond effect’. Davis’ (1966) findings indicated that students with equal ability had higher career aspirations when students attended colleges in which the average ability level was low. Consequently, lower ability students were more likely to suffer in academically challenging school settings compared to students with higher abilities (Davis 1966). According to the relative deprivation perspective or the ‘frog-pond’ interpretation, high quality schools have more competitive environments, and this lowers individual student performance and aspirations net of individual academic ability, socioeconomic status, and other factors. This means that individuals of average ability fare less
well in more competitive environments, such as in higher ability contexts. It is “better to be a big frog in a small pond than a small frog in a big pond” as examined by Davis (1966).

Subsequent studies revisited the theory of the ‘frog-pond effect’ and findings confirmed that students of comparable academic ability had lower academic self-concepts and educational expectations in schools with a high ability environment than in a low ability context (Marsh 1984, 1987, 1991).

Similar findings provided by Portes and MacLeod (1996) reported the harmful effects of a competitive school environment on disadvantaged students. Competition looks at the effects of winning or losing in a competition for scarce resources. Additional problems are likely to arise when classmates are more heterogeneous (e.g., when the gap between the rich and poor is wider) (Jencks and Mayer 1990). For instance, the distribution of resources generates advantages for some students and disadvantages for others, which results in competition among students (Mayer and Jencks 1989). School crowding (e.g., a high number of students per teacher) may accentuate competition for scarce resources (e.g., limits on the time teacher’s time for each student) and hence may influence students’ educational progress. In spite of these conclusions, the relative merits of assumptions for competition are not clear because few empirical studies have tested the effects of school-level attributes of competition against the reality of child outcomes (Jencks and Mayer 1990).

Alwin and Otto (1977) examined data from three samples representative of youth in schools in the state of Washington between 1964 and 1966. In total, 4,303 high school seniors were included in the analysis to test the additive effects of high school socioeconomic status and school ability on college plans and occupational aspirations. Statistical analyzes involved
the investigation of within-and between-school regression coefficients. Results of structural equation models provided evidence for school-level effects. For instance, school context was found to play a role in students’ choice of peers and choice of curriculum. School SES positively affected friends’ college plans. Further, the effects of school SES on curriculum placement were greater than the effects of gender and individuals’ social background, except for academic ability (Alwin and Otto 1977). In spite of these significant school-level effects, the overall magnitude of such effects was weak.

Another school context commonly tested on academic achievement and student learning is school size or classroom size (Davis and Jordan 1994, Lee and Smith 1997, Stewart 2008). Using three waves of the National Educational Longitudinal Study (NELS: 88), Lee and Smith (1997) employed a hierarchical linear model to test the effects of high school size on students’ achievement trajectories in math and reading. The authors found that high school sizes of 600 to 900 students were optimal for students’ learning in mathematics and reading. School sizes smaller (e.g., less than 300 students) or larger (e.g., more than 2,100 students) than the optimal size were labeled to significantly lower rate of growth in students’ learning (Lee and Smith 1997). School size also mattered for low and high SES schools and for schools with low and high minority concentrations, showing greater educational gains in “ideal” size environments. Drawing from two conflicting perspectives about the impact of school size, Lee and Smith (1997) argued that while large schools allow for more specialized curricula, which further allow for greater individual differences among students, small schools are more likely to offer a core curriculum which benefits all students regardless of their abilities or aspirations with smaller opportunities of differentiation (Lee and Smith 1997). Although results provided evidence of a
direct link between school size and learning, Lee and Smith (1997) suggested that other factors, such as interpersonal relationships among students, may mediate the influence of size on students’ learning.

A recent study by Stewart (2008) tested how school structural characteristics (including the proportion non-White, school size, school poverty, school location, school social problems, and school cohesion) and individual-level measures (including school attachment, school motivation, school involvement, peer attachments, and parental school involvement) influence students’ grade point average (GPA). Stewart (2008) examined a hierarchical multilevel framework using a sample of 11,999 tenth grade students nested in 715 high schools, drawn from the NELS data source. Given the interest in school structural effects, Stewart found that, among the six school predictors that were tested, only school cohesion had a significant association with students’ GPA. Thus, schools with positive relations and trust between teachers and students tend to have higher grade-point averages. All other school-level predictors did not show evidence of effects on students’ GPA (Stewart 2008). The author concluded that greater degrees of cooperation among teachers and administrators and support for students foster higher levels of academic achievement, regardless of the presence or absence of other social problems (Stewart 2008). Although the author reported rather small effects for school cohesion on students’ academic achievement, once the model accounted for individual-level effects, there was a significant effect for school cohesion, which suggests that greater adult attention directly affects students’ educational progress.

Like school size, classroom size has also been found to be directly associated with students’ academic achievement, as well as with overall school connectedness or social
integration (Hanushek 1986; McNeely et al. 2002; Pallas 1987; Pong and Hao 2007).

Classroom environments are viewed as providing academic resources and fostering students’ socialization. In spite of these assumptions, studies of classroom effects provide divergent conclusions. For instance, research shows that large classrooms require a greater amount of disciplinary attention, thus producing learning environments that involve more disciplinary action than academic instruction on the part of teachers (Pallas 1987). In contrast, smaller classrooms encourage student self-management and are more likely to allow students to make their own decision, which improves the overall classroom quality and facilitates students’ academic development. A study by Dryler (1999), using three-level hierarchical models, examined the impact of school and classroom characteristics on the educational choices of young adolescents. Results showed that adolescents’ choices of study field vary between schools and classrooms when individual-level characteristics are controlled. Adolescents’ choices are associated with those of their classmates. Hence, proxies for classroom characteristics (including the number of individuals in the class and gender distribution) did not account for the significant classroom variation. In agreement with these results are findings by McNeely and colleagues (2002), who found no significant effect of classroom size on students’ social integration or learning. Classroom integration may underlie a selection effect, in which students are ‘sorted’ into particular classes depending on students’ individual abilities. That is, low-ability students may tend to be assigned to smaller classes and others to larger classes (McNeely et al. 2002). Overall, the merits of the research concerning classroom effects on student outcomes remain unclear compared to research on school size effects (Hanushek 1986).
Various studies have tested the effects of school sector on an array of educational outcomes, although their influence on student outcomes is still not clear (Coleman and Hoffer 1987; Lee and Bryk 1989; Raudenbush and Bryk 2002). For instance, studies have compared the effect of public and private schools (including Catholic schools) on standardized test scores and the percentage of high school dropouts (Evans and Schwab 1995; Goldhaber 1996; Neal 1997; Sander and Krautmann 1995; Sander 1996, 1997). Some of these analyzes applied various instruments to test for the selection into Catholic schools (e.g., including average tuition levels, religious affiliation, density of Catholic schools in the area, or percentage of Catholics in the county); results provided mixed evidence for the effect of private versus public schools. For example, while Evans and Schwab (1995) and Neal (1997) found increased student achievement, especially for minorities and low achievers, Sander (1996) found no significant effects in Catholic schools.

The structural school effects were tested mostly from their impact on educational achievement. A few studies examine the relationship of such structural characteristics to adolescents’ college expectations or academically goal-oriented peers (Dryler 1999; Frost 20007; Haynie et al. 2006). Therefore, through the consideration of the reviewed school-level characteristics on achievement, I assess the effects of comparable school attributes to test whether these are associated with the subjective measure of college expectations. Moreover, to clarify the processes involved in these effects on college expectations, potential mediating and moderating effects are considered in additional models.
3.2.1.2. Mediation and Other Intervening Effects Models

Structural effects models provide insight into the role of the relative impact of school characteristics on adolescents’ futures. Contextual-level models that examine mediating effects 1) aggregate school-level characteristics as mediators of school structural effects on aggregate outcomes, 2) assess how individual subjective perceptions of schools or peers affect individual-level outcomes, 3) apply multilevel research with aggregate school process mediators and individual-level outcomes, and 4) examine individual-level mediating processes with individual-level outcomes. These approaches differ in the levels of analysis of the mediating variables, the outcomes in question, the statistical approaches employed, and/or the life course periods involved. For example, when studying childhood outcomes the mediating models may include measures of family mechanisms (Klebanov et al. 1997; Furstenberg et al. 1999; Sampson et al. 1997). Other, research on adolescents may focus on the effects of relationships with peers (Rankin and Quane 2002; Elliott et al. 1996; Wilson and Wilson 1992; South, Baumer, and Lutz 2003). Studies of peer effects on adolescent outcomes are more extensively reviewed in section 3.2.2. In this section I review other intervening individual-level and contextual-level characteristics relevant for adolescent outcomes.

A variety of intervening processes of individual-level characteristics influence the structural characteristics of schools on various adolescent outcomes. For example, Ennett et al. (1997) examined trajectories of substance abuse among fifth and sixth graders in the Midwest.
The authors provided evidence of how school-level characteristics (i.e., school safety, school attachment) mediate the relationship between neighborhood attributes (i.e., neighborhood attachment and safety, population mobility, and density) as well as school rates of lifetime substance abuse (i.e., alcohol and cigarettes) (Ennett et al. 1997).

Teitler and Weiss (1996) analyzed the Philadelphia Teen Survey to investigate school norms and attitudes toward sexual initiation and parenting. Results demonstrated that neighborhood characteristics such as income, poverty, proportion of female-headed households, and teen fertility were not associated with neighborhood-level differences in sexual activities among adolescents, once school characteristics were controlled (Teitler and Weiss 1996). These findings indicate the importance of school attributes as potential mediators of neighborhood effects on adolescent outcomes.

A study by Reynolds and colleagues (1992) reported a positive relationship between parental involvement in children’s schools and educational outcomes. The authors found that parental involvement in school promoted educational outcomes and reduced behavior problems. Under the assumptions of collective socialization, students may be adversely affected by negative role models in school; however, parental strategies may limit students’ exposure. These practices may more likely encourage compliance to conventional norms and activities in less affluent contextual circumstances with restricted opportunities. In contrast to parental influences, the influences of peers in school are found to affect youths’ outcomes. Therefore, accounting simultaneously for school-level and peer network characteristics may identify which attributes mediate the association between context and youths’ college expectations (see section 3.2.2 for further examples).
Aside from mediating models, researchers emphasize that influences of school characteristics and outcomes are not unidirectional. Rather, these factors are both dependent and independent (Levin 1970). Also, studies that integrate interaction effects consider a variety of interactions. For example, 1) the differential relationship between school structural conditions and individual sociodemographic characteristics in their effects on youth outcomes, or 2) models that take into account different effects of school structural characteristics and process factors in relation to peer processes associated with youth outcomes, or 3) contingency models that consider whether the effects of school on youth outcomes are different depending on youths’ individual characteristics (e.g., gender, race/ethnicity) (Chase-Lansdale et al. 1997; Leventhal and Brooks-Gunn 2000). In this dissertation I am particularly interested in examining the possible differential effects of gender and exposure to goal-oriented peers on adolescents’ college expectations as research in this area still needs further exploration.

Studies that consider the association between social context and youths’ educational outcomes by gender have produced mixed results (Sewell, Haller, and Ohlendorf 1970; Sewell, Haller, and Portes 1969). Wilson and Wilson (1992) tested school environmental influences on adolescents’ educational aspirations. The authors employed logistic regression models using a subsample of 2,896 high school seniors from the first wave (1985) of the High School and Beyond (HSB) longitudinal study of the National Center for Educational Statistics (NCES). This subsample comprised only white and black seniors. School environment was measured by teachers’ aspirations for adolescents (as perceived by adolescents), teachers’ influence on adolescents’ high school program, factors within the school that interfered with adolescents’ education (e.g., poor teaching), and adolescents’ rating of the school facility (Wilson and
Wilson 1992). The authors tested the effects of school characteristics in the presence of family characteristics (including parents’ aspirations, parents’ educational level, and parents’ monitoring of adolescents’ school performance). Results provided evidence that teachers’ support significantly influenced adolescents’ educational goals. In addition, school environment factors that interfered with adolescents’ education had a negative impact on educational aspirations. School effects differed for boys and girls. Girls’ educational aspirations were more negatively affected by school environments that interfered with their academic progress than was the case for their male counterparts (Wilson and Wilson 1992).

Although, schools have a substantial influence on the socialization of the younger generation in shaping children’s and adolescents’ skills, knowledge, values, behavior, and self-confidence (Dryler 1999), we need to clarify how school-level characteristics affect adolescents’ college expectations (Hauser 1969; Meyer 1970; Alexander and Eckland 1975; Hallinan 1988; Entwisle, Alexander, and Olson 1997) remains to be examined. Some studies suggest that the interactions among contextual-level effects are important for explaining differences in educational performance (Ennet, Flewelling, Lindrooth, and Norton 1997). High socioeconomic status adults in schools provide positive role models for students. Teachers and other school officials in their supervising and monitoring roles promote socially approved behaviors that further enhance students’ educational development. Socialization depends on factors such as role models, monitoring, and cohesion (Billy et al. 2000; Brody et al. 2001). Consequently, for a successful socialization of adolescents, a sufficient proportion of adult role models in schools is important. In particular, the presence of high status adults (educational and socioeconomic) potentially sends messages to adolescents about the returns from high
educational achievements. Further, smaller classes promote greater adult attention, which is positive for individual achievement and the expectations of students.

Social cohesion is another important socialization factor that affects interpersonal relationships in schools. Stronger ties among adolescents who aim for similar educational goals are more likely to promote the desire to go to college. On the other hand, schools with higher dropout rates are associated with poor school environments, while high rates of mobility out of the school tend to lower the educational ties among adolescents and to the school in general.

3.2.2. Peer Networks and Educational Expectations

In this section, I review existing studies of peer relationships and their association with educational youth outcomes. The Coleman Report was one of the most influential studies to examine the beneficial effects of a student body with better educational background and higher educational aspirations, particularly for white students (Coleman et al. 1966:307). This report used data from approximately 600,000 students and teachers across the United States. Results revealed that educational outcomes were primarily affected by students’ individual characteristics, such as adaptation to school and family background. While the report emphasized that individual characteristics superseded school-level characteristics, findings also
confirmed that low-income students experienced greater achievement gains when they attended middle-class schools compared to low-income schools. Further, the report documented that the social composition of a school’s student body is highly associated with students’ achievement, independent of students’ own social background characteristics. Despite these results, there are a number of criticisms that have been made regarding the data used in the report (Equality of Educational Opportunity – EEO) and the applied methodological approach (see Jencks et al. 1972). For instance, most school-level analyses were reduced to correlation-variance matrices where the order of added variables determined the magnitude of correlation coefficients. The Coleman study added family background measures before the school-level variables. This approach may have resulted in the underestimation of school content effects. Overall, the methodological limitations of this report have led to the conclusion that schools do not make a difference in students’ achievement process but that the social context of classmates is important.

Along with the findings in the Coleman Report, various studies concurred that the social class of the student body matters for academic achievement (Jencks et al. 1972; Orfield 1978). For instance, Jencks (1972) examined the same data and his findings revealed that poor sixth graders in schools with poor classmates were negatively affected in their academic progress compared to poor students with affluent classmates. Over the years, research has revisited the effects of classmates and peer relationships on students’ academic outcomes more generally, by employing more complex statistical analyses. Of particular interest are multilevel model approaches that allow for more accurate estimations of school and school-based peer effects (Raudenbush and Bryk 2002; Raudenbush and Willms 1995).
During the 1980s, studies began to examine different aspects of peer relationships and distinguished among the nature of adolescents’ relationships by focusing on close friends and peer-group memberships in school or other settings (Youniss 1980). During adolescence, both relationships with friends and peer-groups seem to be more important than relationships with parents (Csikszentmihalyi and Larson 1984). While peers provide adolescents with a sense of belonging to a particular group (O’Brien and Bierman 1988), the nature of adolescents’ friendships and their acceptance by peers are not always closely associated (McGuire and Weisz 1982). Compared to the significant amount of research linking peer relations to various youth outcomes (e.g., delinquent behaviors academic achievement and attainment), only a few studies (Kiuru 2007; McDill and Coleman 1965) have examined the effects of peer networks on educational expectations.

Educational expectations are an important aspect within the attainment process, because they influence adolescents’ subsequent educational and occupational trajectories (Lent et al. 1994) and have long-term impacts on youths’ overall life-course (Klaczynski and Reese 1991). Planning one’s education involves several successive phases, including setting an educational goal, constructing plans for its attainment, executing those plans, and finally, evaluating goal attainment. These issues become increasingly important for individuals during adolescence (Eccles et al. 2004). Simultaneously, juveniles start spending significantly more of their time in peer groups (Brown 1990; Rubin et al. 1998). Thus, aside from parents and teachers, peers play an important role in the development of adolescents’ educational expectations and future planning (e.g., Parsons et al. 1982). Adolescents may discuss their future decisions with their peers and in turn peers may become an important source of information for adolescents’ future
decisions (Malmberg 1996). Moreover, adolescents may conform with their peers’ decisions concerning future education, especially when they are uncertain of their own plans. Peers are also likely to provide feedback on adolescent expectations, when such future decisions are discussed in peer groups. On the other hand, youth may also be saddled with peer relationships that generate potential disengaging behavior, including the loss of interest in school and involvement in gangs (Brooks-Gunn, Duncan et al. 1993).

Research that considers peer group effects on adolescents’ expectations and academic achievement typically reveals important differences in friendship experiences by social class, gender, developmental disparities, and age. For example, McDill and Coleman (1965) analyzed data collected from 612 students at six Midwestern U.S. high schools to examine the effects of family socioeconomic status and adolescent peer relationships on trends in youth’s college plans. Employing multivariate techniques, McDill and Coleman (1965) found that the importance of social status related for college plans depended on peers’ affluence rather than on parents’ educational background. Moreover, the authors suggested that those high school students who belonged to high status cliques with a majority of members planning to attend college were socialized to do the same. In contrast, high school students who affiliated with members of low status cliques, and who placed a lower value on college education, were influenced negatively in their college plans (McDill and Coleman 1965).

Considerable diversity exists in the experience and basis of friendships for males and females. For instance, Youniss and Smollar (1985) found that female friends were more likely to engage in intimate disclosure, sharing their problems, feelings, fears, and doubts with their close friends. In contrast, young males were less likely to engage in intimate disclosure, with
only 40% of close male friendships engaged in high degrees of mutual intimacy (Youniss and Smollar 1985).

Kiuru and colleagues (2007) examined the role of peer groups in adolescents’ educational expectations (i.e., short- and long-term) and adjustment (i.e., problem behaviors and educational achievement) of three hundred and ninety-four ninth-graders in Finland. The results showed that both girls’ and boys’ peer groups were similar with respect to problem behavior. However, for other aspects of adjustment the results showed differences between girls and boys. The members of girls’ peer groups were similar in terms of academic achievement, educational planning, and negative attitudes toward school, whereas boys’ peer groups did not show these similarities.

Overall, girls’ peer groups tend to have more intimate and tightly connected than those of boys (Benenson 1990; Urberg et al. 1995). Thus, more discussion and self-disclosure are established in girls’ peer relations (e.g., Buhrmester 1990; Crockett et al. 1984; Kiuru 2007; Larson and Richards 1991), including greater likelihood of similarity in attitudes of their schooling (Kiuru et al. 2007). Boys’ peer group similarities have been found extensively in the area of problem behavior. This may be because boys spend their time in less cohesive peer groups. As a result, visible behaviors may be more important for peer selection for boys, and attract more attention from peers compared to attitudinal factors, such as self-esteem and attitudes towards school (Kiuru et al. 2007).

In view of adolescents’ educational expectations, studies show that adolescents with high self-esteem typically report high educational expectations (Saunders et al. 2004), when compared to those with problem behaviors and low self-esteem (e.g., Saunders et al. 2004).
Besides individual adolescent characteristics, school-related individual-level factors, such as high academic achievement and positive attitudes towards school, are directly related to high educational expectations (e.g., Carpenter and Fleishman 1987). In contrast, higher levels of problem behavior are associated with lower academic achievement, and correspondingly lower educational expectations (Reitzes and Mutran 1980). Studies of peer groups and behavioral attributes show that adolescents resemble their friends in terms of grades and academic involvement (e.g., Epstein 1983), as well as their behaviors (e.g., Kandel 1978; Mounts and Steinberg 1995). Because academic outcomes and behavioral attributes are associated with adolescents’ educational expectations, and because the former often are shared by group members, one explanation is that the effect of behavior in adolescents’ educational expectations operates mainly at the level of peer groups. For example, in peer groups where members show relatively low levels of academic achievement and high levels of problem behavior, the likelihood of the formation of common group norms of low educational expectations will be higher than in groups with high levels of achievement and low levels of problem behavior, regardless of adolescent’s own achievement level or behavior. The formation of such group norms and shared educational expectations may originate in discussions, negotiations, and feedback provided in peer groups. Focusing on the possible effects of school-based peer networks on adolescents’ college expectations raises the question of which characteristics of friends matter most in this relationship. In searching for a plausible explanation for the complexity of the relationships between peers effects and college expectations, I examine theoretical perspectives of socialization and social capital.
Based on the socialization perspective, it can be argued that relationships with friends offer an extension of the assumptions of collective socialization. From this perspective, friends potentially limit or foster individual behavior to match the norms, expectations, and behaviors of the group. Thus, relationships with friends can have consequences for individual members and for the group of friends as a whole. Social influence occurs when people compare themselves with others to ascertain whether or not their own behavior is appropriate (Turner 1991). As children move into adolescence and strive to create an integrated self-image apart from their parents, friends and peer-groups provide young adolescents with significant social comparison (Sherif and Sherif 1966). This may be because social proximity encourages conformity, or conversely, adolescents’ non conformity to expectations or demands of a friend causes a loss of that friendship. Moreover, adolescents value best friends as a source of reciprocal intimacy, in which friendships are characterized by understanding, acceptance, mutual advice, and self-disclosure. Thus, close friends provide adolescents with an opportunity for developing greater self-knowledge through a process of mutual reflection. Because parents become less important as advisors or authorities during adolescence, most of the “mutual reflection” comes from adolescents’ friends, with whom problems, fears, and doubts are shared (Youniss and Smollar 1985).

Research on the effects of friendship frequently considers the degree of relationships between friends and adolescents from the perspective of influence by including attributes of similarity that affect youth attitudes and behaviors (Ide, Parkerson, Haertel, and Walberg 1981). For example, from the perspective of peer influence, criminologists found that adolescents who have delinquent friends are more likely to become delinquent (Haynie 2002). Other studies
found similarities between friends and adolescents in grades, educational aspirations, church attendance, or the use of drugs (Ide et al. 1981; Kandel 1978). Overall, these explanations of direct peer influence and similarities have received mixed empirical support for a range of behaviors (Dornbusch 1989).

Instead of influencing or changing the behaviors in response to friends, Kandel (1978) argued that similarity is often a basis for friendship selection in the first place. For example, youths’ close friends typically share similarities with their friends in age, sex, and race/ethnicity. Because friends cannot influence adolescents’ demographic characteristics, similarity on these characteristics is attributed to selection rather than influence. Further, adolescents may also select friends on the grounds of similarities in attitudes and behaviors.

Recent research suggests that adolescents perceive themselves to be accepted by their friends without having to modify their behaviors (Harter and Fischer 1999; Lightfoot 1997; Bearman and Bruckner 2001). For instance, Call and Mortimer (2001) found that friends provide “arenas of comfort,” helping adolescents to make transitions and cope with stress. Similarly, friends may exercise only moderate pressure to adopt new behaviors. Thus, instead of changing their behaviors in response to friends, adolescents have a stronger tendency to select others whom they believe will have similar or desirable attributes (Dornbusch 1989; Matsueda and Anderson 1998). Regarding school, college plans, and achievement, Epstein (1983) found that older adolescents tend to share more similarities than younger adolescents. These similarities are assumed to be the result of more selectivity in choosing friends.

In order to assess friends’ influence or adolescents’ self-selection into friendships through youths’ characteristics, longitudinal data are needed. Although the Add Health survey
currently includes of three waves of data, the network data are only collected for wave one. Thus, causal inferences cannot be determined from these data. However, peer effects can be estimated in hierarchical models, with adolescents and peers nested in schools to examine the strength of effects between peers and schools in the socialization of adolescents.

Portes (1998) and Coleman (1990) offer another perspective in their idea of social capital, which is defined as potential growth through access to resources via social relations with others. Based on this perspective, friends provide important resources in the form of support and acceptance for adolescents (Eder 1985; Collins and Laursen 1999; Kenneth et al. 2005; Rubin, Bukowski, and Parker 1998). Support and acceptance are valuable because they contribute to a positive self-image and the development of a strong self-identity (Brown 1990). Further, Youniss and Smollar (1985) found that youths’ friendship choices that stem from popularity can transform into friendships of mutual intimacy and trust during adolescence. Moreover, popularity can lead to status within the adolescent network, which in itself is rewarding (Eder 1985; Eckert 1989). Thus, it is advantageous for adolescents to pursue friendships for affective and psychological rewards. Aside from friends’ affective and psychological support, adolescents may also pursue friendships that provide help with homework (Fuchs, Fuchs, and Kazdan 1999; Hartup 1989; Mastropieri et al. 2001; Waltemeyer and Balfanz 2002). Chubb and Moe (1990) regard peer friendship at school to be a critical link between families and schools, because “through their peers, students are influenced by the families of other students in a school.” The connections and communications between peers and adolescents foster social capital since they create possible network connections among sets of individuals (Hallinan and Sorenson 1985; Harris et al. 2002; Morgan and Sorenson 1999).
Thus, the concept of social capital implies the important impact of group membership (Hofferth, Boisjoly, and Duncan 1999; Kenneth et al. 2005).

Since adolescents spend more time with friends, peer groups have been identified as one of the most important influences on individual educational achievement. Hence, peer group theory assumes that the prospects for adolescent school success will vary depending on the peer group with whom adolescents most often are in contact (Coleman et al. 1966; Hallinan and Sorenson 1985). The pursuit of social capital through friendship relations is particularly important during adolescence. In their search for sensible or supportive friendships, adolescents are affected by the resources they acquire through their network of friends.

Although a significant amount of research exists on educational attainment, less is known about the role that friendships play in the formation of college expectations (Hallinan and Williams 1990). The findings for the effect of peers on educational outcomes, in particular educational expectations, are inconclusive for various reasons. A variety of cross-sectional and longitudinal studies have examined adolescents’ perceptions of their friends’ similarity (e.g., Brook et al. 1989; Chassin et al. 1986; Ennet and Bauman 1991; Hirschmann et al. 1984; Jenkins 1996). However, self-reports may not yield accurate information about how far adolescents resemble their peers (Maxwell 2002). To my knowledge, no prior study has examined the effects of a range of school-level characteristics and school-based peer networks on adolescents’ college expectations. Only few studies, in the areas of criminology (Haynie, Silver, and Teasdale 2006; Kreager 2007) or mental health (Ueno 2005) have investigated the behaviors of peer networks as mediators among neighborhood or school context on adolescent behavior or attitudes.
Therefore, the purpose of this dissertation is to provide an important contribution to the literature, and expand on previous research in two ways. First, peer networks are defined more precisely as youths’ egocentric friendship networks and measured with network data on friendship nominations that link adolescents within schools. An adolescent’s friendship network consists of all adolescents whom the respondent directly nominated as friends, including those adolescents who directly nominated the respondent as a friend. Second, the behavioral and structural characteristics of the personal network are directly measured through information given by all members of the friendship network, rather than by simply relying on the perceptions of the respondents. If we consider the significance of peer relations during adolescence, it is also important to investigate how exposure to peer behaviors affects adolescents’ college expectations. To date, no prior studies have explicitly used direct network-based measures of peer behaviors to examine how peer networks influence the association between schools and adolescents’ college expectations. Filling these gaps will be an important contribution to research in the sociology of education.

3.3. Remaining Methodological Issues

The review of literature in the previous sections has revealed significant variation in the measurement of school-level effects and peer characteristics, and in the types of analyses employed.
Previous studies of educational expectations or achievement typically employed repeated measure analyses of variance, or single-level multivariate regression techniques (Sewell, Haller, and Ohlendorf 1970; Herzog 1982; Wilson and Wilson 1992). These approaches have various limitations. Primarily, these techniques do not allow for the possibility that contextual effects may act differently on individuals, depending on such personal attributes as gender or race. To facilitate a better estimation of contextual-level effects in the presence of individual-level variations, I apply a multi-level approach that allows for the simultaneous estimation of effects at the micro-level (i.e., adolescent) and various school effects operating at the macro-level. This approach enables the identification of both within-and between-school/peer effects, while also allowing for the decomposition of the variance at each level (Guo and Zhao 2000). More specifically, I examine a hierarchical multilevel model approach with a binary outcome, which does not decompose the variance at each level and a hierarchical two-level model with a continuous outcome, which provides the variances at each level. Further differences between these models are discussed in section 4.3.

Studies of adolescents commonly acknowledge that schools matter for youths’ well-being and educational development (Goodman, Huang, Wade, and Kahn 2003). However, the strength of relationship between school and peer groups effects and expectations need further exploration to reveal the sequential path of effects on college expectations. By integrating simultaneously school-level attributes and school based peer networks, the analytical model used here is more consistent with the complexity of the real life situations affecting adolescents. The school characteristics reviewed in section 3.2.1, and the peer networks reviewed in section 3.2.2, are interconnected and their effects on individuals overlap. Thus, the analytical approach
applied in this dissertation facilitates the testing of both, the beneficial and the harmful effects that school-level factors and peer influences have on adolescents’ goal setting.

3.4. Research Questions and Hypotheses

As discussed in sections 3.2.1 and 3.2.2, research on schools and peers reveals the continuing need to explore how social contextual characteristics affect youths’ development (Aneshensel and Succoff 1996; Boyle and Lipman 1998; Brooks-Gunn et al. 1997; Cook et al. 1997; Duncan and Aber 1997; McLeod and Edwards 1995; Leventhal and Brooks-Gunn 2000). Thus, I pose a number of research questions and hypotheses regarding adolescents’ college expectations and academically goal-oriented peers.

Figure 3.4-1 Conceptualizing School-Level and Peer Network Effects on College Expectations
Figure 3.4-1 depicts the interconnections linking collective socialization and social capital of school and peer networks and ultimately to adolescents’ college expectations. School-level characteristics may affect college expectations directly (→) or indirectly (---→) through the characteristics of peer networks or other individual-level characteristics. I first consider the effects of school-level characteristics discussed in section 3.2.1. I then examine potential differences in expectations by gender. Finally, I assess the effects of school-based peer networks, as an important context within the socialization process.

Examining the direct effects of school-level characteristics on expectations, I pose the following questions: Do college expectations vary across schools? If so, which school-level characteristics matter most for adolescents’ college expectations? Also, are these school-level characteristics contingent on gender? Building on research by Frost (2007), and using school-level data on the effects of educational expectations, my research first investigates whether the variance of the outcome in question can be decomposed into between-individual and between-school variability^2. Significant between-school variability would suggest a statistically significant intra-class correlation for college expectations.

Various studies have identified school socioeconomic status as being directly associated with students’ educational achievement (Bryk and Raudenbush 1992; Kahlenberg 2001). In particular, successful socialization within schools is associated with adults who promote and encourage adolescents’ future goals and overall educational advancement. Therefore, taking into account the positive effects of school characteristics on educational achievement, I propose

---

2 Compared to hierarchical linear models with a continuous outcome, binary hierarchical level models present only the variance between schools. Thus, they do not allow for the decomposition of ‘between-individual’ variability.
that the SES of schools is positively associated with adolescents’ college expectations [Hypothesis 1].

In addition, higher educational achievement and college expectations are associated with schools that offer more educational resources and opportunities. For instance, small classrooms offer greater opportunities for one-on-one teacher attention (including monitoring), which significantly contributes to students’ learning (Lee and Smith 1997). In contrast, school environments with fewer educational resources may give negative messages to adolescents about the relative costs and benefits of educational achievement and thus, negatively affect adolescents’ college expectations. Therefore, my second hypothesis is as follows: As a proxy of resource availability and opportunity, I predict that high levels of school quality (i.e., smaller classrooms and lower percentages of high school dropouts) are directly associated with adolescents’ college expectations. Overall, these selected school factors have been linked to schools’ socioeconomic status and thus their effects on adolescents’ expectations are tested simultaneously with school SES.

Schools are important in adolescents’ successful socialization. The impact of school characteristics on students’ learning or expectations has also been identified as being contingent on gender (Wilson and Wilson 1992). For instance, educational environments that interfere with adolescents’ education also reduce educational expectations and this pattern differs for boys and girls. In particular, the learning curve among girls was most affected by negative school environments. A recent study by Kiuru and colleagues (2007) found higher educational expectations for girls because of greater influences by their immediate environments. Studies of educational aspirations or expectations indicate that effects are contingent on gender;
however, there is no consensus about the gendered effects by school-level characteristics (Domene and Shapka 2005; Hout and Morgan 1975; Katz et al. 2001). In consideration of these inconclusive findings, I hypothesize that school status and school quality affect college expectations and their influences are more likely contingent on gender [Hypothesis 3].

While schools have been identified as having a substantial influence on the socialization of youths’ knowledge, values, and behaviors (Dryler 1999), the joint effects of schools and of network-based peer behaviors on college expectations has not been fully examined (Entwisle et al. 1997). Before I test the exposure to peer networks as a mediator of the association between school and adolescents’ college expectations, I apply a supplementary analysis that examines the effect of school-level characteristics on academically goal-oriented peers. Hypothesis 4 states: School-level characteristics are associated with exposure to academically goal-oriented peers.

For the successful socialization of students in schools, positive personal connections between students and adults (e.g., teachers) facilitate adolescents’ educational success. In addition to these adults, adolescents also form personal connections in schools with friends and peers. Hence, friends and peer networks, with their individual positive or negative behaviors can affect adolescents’ development. For instance, the Coleman (1988) report suggests that social capital manifests itself not only in the structure of social groups and networks but also in the quality of relationships they provide. Thus, social capital is evident in obligations and expectations, information channels, and social norms (Kao 2004). Under these assumptions, positive relationships with friends are important because they give comfort, support, and acceptance to adolescents (Collins and Laursen 1999; Eder 1985). Provision of these resources
potentially promotes a positive self-image, educational development, and educational progress. In particular, the exposure to prosocial peers may have mediating effects on the relationship between school resource scarcity (which here refers to low SES, high dropout rate) and college expectations. Since there are no previous studies that have used peer exposure as mediator of the association between school context and college expectations my fifth hypothesis states: Peer exposure will mediate some part of the association between school-level characteristics and adolescents’ college expectations [Hypothesis 5].

In addition to the mediating effects of peer exposure on college expectations I further examine the association of school-level effects on youth’s college expectations, taking into consideration contingencies of network-based peer behaviors. Because adolescents spend more time with friends, peer networks have been identified as a significant influence on individuals’ educational development. As a result, adolescents’ school success may vary depending on the type of peer group behavior (Hallinan and Sorenson 1985). In view of the pursuit of social capital through peer network relations, I hypothesize: The effect of school characteristics on college expectations is contingent on exposure to peer network behaviors [Hypothesis 6]. Thus, I expect to find significant interactions between network-based peer behaviors and schools’ structure and organization. In other words, academically goal-oriented peers may lift youths’ college expectations. Because affluent schools facilitate the development of conventional friendship formations and foster stronger ties among adolescents with similar educational goals, it is likely that prosocial peer behaviors will be most effective in such environments. In contrast, negative peer behavior may harmfully influence youths’ college expectations, especially in schools with higher high dropout rates.
In view of the socialization perspective associated with the social capital assumptions I examine the direct and mediating effects of peers on college expectations. I also consider cross-level interactions of schools, peers, and individual-level characteristics relevant for college expectations. To my knowledge no prior studies have tested 1) the mediating effects of exposure to academically goal-oriented peers and 2) cross-level interactions on college expectations. Thus, filling these gaps will be an important contribution of this dissertation research. To understand fully the socializing processes associated with adolescents’ college expectations it is important to account for the multiple social environments, including the variety and direction of effects, to explain the potential disparities in youths’ future goals.

3.5. Summary

This dissertation addresses how school effects and peer effects influence the college expectations of adolescents. This chapter reviewed studies of school and peer effects and how these factors influence adolescent educational outcomes. Structural, mediational, and interactive models were discussed. Research questions and main hypotheses emphasize the direct, mediating, and cross-level interaction effects. By applying improved model approaches, means that this study seeks to extend our understanding of how multiple characteristics within social settings outside the home (i.e., school and peers) can affect adolescents’ educational expectations. I also consider how the findings may vary by adolescent’s gender. By focusing
particularly on college expectation in the first part of the analysis, this study intends to contribute to the interdisciplinary research on school effects and network-based peers in the presence of individual-level controls on adolescents.
CHAPTER IV:
DATA AND MEASUREMENT

4.1. Introduction

This chapter describes the sampling design and characteristics of the data, which come from the National Longitudinal Study of Adolescent Health (Add Health). Moreover, I also discuss the rationale behind the choice of analytical techniques used to examine college expectations and goal-oriented peer networks are discussed in detail. In addition, this chapter describes the measures applied in the analyses to operationalize college expectations and goal-oriented peers, the contextual-level measures of school and peer-network characteristics, as well as the individual-level control measures.

4.2. Data Source

In order to test the hypotheses stated in chapter three, I use data from the American National Longitudinal Study of Adolescent Health (Add Health), which is a national school –
based survey. The Add Health Study was developed by the principal investigator, Richard J. Udry, of the Carolina Population Center at the University of North Carolina at Chapel Hill. The primary objective of the study was to allow the examination of the influences of various social contexts (especially families, schools, and neighborhoods) on adolescents’ health and risk behaviors. In addition, the third wave of this survey included follow-up interviews that provide an opportunity for investigating the meaning of adolescence for health and well-being outcomes in young adulthood.

Although in this dissertation I examine an educational outcome, the uniqueness and richness of the contextual-level and peer-network measures available in the Add Health survey make these data most suitable for my research. To my knowledge, there are no similar data currently available that allow for the analysis of school-level and true peer networks effects on adolescent outcomes.

The following section describes the design and sample in further detail.

4.2.1. Add Health Research Design and Sample

By employing a systematic sampling approach and implicit stratification, the Add Health data research design ensures national representativeness with respect to region, urbanicity, ethnicity, school type, and size. The original sampling frame includes 80 high schools and 52 associated middle (feeder) schools in communities across the United States,
which are stratified for representativeness by census region (i.e., Northeast, Midwest, South, and West), urbanism (i.e., urban, suburban, and rural), school type (i.e., public vs. private), race/ethnicity, and school size (i.e., 125 and fewer, 126 to 350, 351 to 775, and 776 or more students). The sample of high schools and feeder schools represents all high schools in the United States. Thus, the adolescents sampled from these schools provide a nationally representative sample of the high school population in which schools are the cluster identifier or primary sampling unit (PSU).

Administrators of these 132 schools were surveyed about the characteristics of their schools. Individuals in grades 7 through 12 who attended these schools were eligible for selection into the panels of the In-School Questionnaire (1994-1995), the Wave I In-Home Questionnaire (1995), the Wave II In-Home Questionnaire (1996), and the Wave III In-Home Questionnaire (2001-2002). First, adolescents who were part of the selected schools in the sample completed the In-School Questionnaire. Subsequently, samples of adolescents in the school rosters and those who completed the In-School Questionnaire were selected for the in-home data collection segment (see also Udry and Bearman 1998).

Wave I In-School Questionnaire. The first stage of data collection involves 90,118 in-school questionnaires of seventh to twelfth grade students (approximately 80 percent of those listed on school rosters). Surveys of adolescents were self-administered over a one-hour time period. Parents were notified in advance about when the surveys would take place and provided with the option to tell their children to refuse or to participate. No makeup surveys were given for children not in school on the day of administration.
From rosters provided by schools, a “core” sample of 12,105 adolescents was selected so as to be nationally representative of adolescents, who were in grades 7 to 12 and who were enrolled in junior and high schools in the United States in 1995. One limitation of a school-based survey such as the present one is that adolescents not in school for some reason (e.g., dropouts) are not taken into consideration. In addition, several over-samples of special populations were conducted. These include high SES African American, Chinese, Cuban, Puerto Rican, disabled, and genetically related adolescent siblings. Finally, a number of schools were designated as “saturated” schools, in which all adolescents at these schools were contacted. Thus, this survey provides the researcher with rich social network data.

Wave I In-Home Questionnaire. The second stage of the sampling procedure involved an in-home sample of 27,000 adolescents consisting of a core sample from each community plus selected special oversampling (i.e., by racial attributes or physical disability). The eligibility for oversampling was determined by an adolescent’s responses to the in-school questionnaire. Thus, adolescents had the chance to qualify for more than one sample. The first wave was conducted in adolescents’ homes between April and December of 1995. In addition, parents of all Wave I adolescents were also asked to participate, providing information about themselves, their family and relationships, their children, the child's school and neighborhood, and their family economic resources. The national representative sample for which sample weights are available consists of 18,924 in-home responses.
Wave II In-Home Questionnaire. The second wave of the in-home survey was conducted between April and August of 1996. The sample was drawn primarily from the pool of respondents in Wave I. Thus, the Wave II sample consists of 14,738 adolescent responses with 13,570 responses for which sample weights are available. The core respondents who were in grade 12 in Wave I were not interviewed in Wave II, as most had graduated and would be difficult to locate. No parent interviews are available for Wave II.

Wave III In-Home Questionnaire. The Wave III response rate was 77.4 percent and includes respondents located and re-interviewed from August 2001 through April 2001 (Udry 2003). The Wave III follow-up information contains 14,979 respondents from the original Wave I. Further, 218 respondents from pretest data, who were interviewed in April 2001, were added, providing a total of 15,197 respondents in Wave III. Most interviews were conducted in homes, but some of the interviews took place in school settings, workplaces, and other public settings. Respondents who lived outside the United States, or who were in the military and deployed oversees at the time of the interview process, were omitted from Wave III. The respondents were between 18 and 26 years old in Wave III.

Network Data. The clustered design of the Add Health data allowed for the collection of extensive social network information. Social networks facilitate a direct link between individuals and the social structure in which they are embedded. Thus, for adolescents, the network of peers and friends provides one significant social context. The Add Health data surveyed network data from all students who attended each participating school; therefore, individual-level and school-level networks can be studied. While this design allows for

---

3 Participants of Wave II and III are not included in the analysis in this dissertation. However, for consistency in the availability of longitudinal panels, I include the description in this section here.
examining more extensively the structure of the extended friendship network each respondent is
part of, it also allows for the analysis of the overall social structure of the respondent’s
particular school (for detailed description, see the Add Health Network Variables Code Book).

The network measures come from responses to the friendship nominations of the Add
Health in-school questionnaire. These identify network characteristics at the person-level
context. The friendship section of the Add Health in-school questionnaire includes
respondents’ information on five male and five female friend nominations from the roster of all
students enrolled in the respondent’s school and in the feeder school. Once students nominated
their friends, each of their friends received an identification number in the questionnaire. In the
event that a nominated friend was not included in the initial roster, students were asked to
identify if 1) the friend went to the school; 2) the friend went to the feeder school; or 3) the
friend did not go to either the respondent’s school or the feeder school.

Non-identifiable respondent’s nominations, or names that were not on the rosters’
completed questionnaire, were excluded from the network information. Thus, valid nomination
data were only considered for those respondents whose names appeared on the school roster
(e.g., uniquely nominatable) and those whose names did not appear on the school roster (e.g.,
uniquely non-nominatable). For the construction of friendship network data, all friendship
nominations that included uniquely nominatable and the uniquely non-nominatable respondents
were included in one of the four nomination categories: 1) Nominations of friends whose names
appeared on the respondent’s school roster and who also completed the in-school questionnaire,
2) Nominations of friends whose name appeared on the roster of the respondent’s feeder school
and who also completed an in-school questionnaire, 3) Nominations of friends identified by the
respondent with a special code, and 4) Nominations of friends whose names appeared on one of the school rosters but who did not fill out the questionnaire.

Because nominated school friends also took the in-school interview, characteristics of respondents’ peer networks can be constructed by linking friends' data from the in-school questionnaire and constructing variables based on friends' actual responses. Only 15 percent of all respondent’s friends did not attend either their school or their feeder school and only 8 percent of all friendship nominations were individuals whose names did not appear on the school rosters. The information for these individuals was not included in the construction of the network measures. Only information for the senders and receivers of friendship nominations who were uniquely identifiable and who completed the in-school questionnaire was included in the network data. Overall, schools in which fifty percent of the students completed the in-school questionnaire were used to calculate the network measures available in the Add Health data.

*School-level Information*. School context information was collected from the administrator questionnaires (usually principals) selected from all 132 schools, with unequal probability of selection. Administrators of these schools were asked to describe the characteristics of their school. Thus, school contextual information was available on school policies, the provision of health services, school type and sector, classes, various teacher characteristics, and other school climates.

---

4 The special code included: a) 9999 for friends who attended the respondent’s school but whose names were not on the school roster, b) 8888 for friends attending the sister school but whose names were not on the school roster, and c) 7777 for friends who did not attend the respondent’s school or sister school.
In sum, my analyses include all adolescents who participated in Wave I and for whom parent and network information was also available. Constructing models, I take advantage of the contextual nature of the data, drawing on school-level characteristics, network structures, intervening processes, and other control variables, including adolescent outcomes from Wave I (see also Table 4.2.-1).

I employ the design features of the Add Health data with HLM to generate adjusted standard errors and estimates that are nationally representative and unbiased (Chantala and Tabor 1999). Further detail about the variable descriptions is given in section 4.5.
Table 4.2-1 Summary of Number of Adolescents from In-Home and In-School Surveys, Network Information and Number of Schools by Waves

<table>
<thead>
<tr>
<th>Add Health Survey Type</th>
<th>Wave I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of In-Home Respondents</td>
<td>Respondents Ages: 11 – 18 years old</td>
</tr>
<tr>
<td></td>
<td>Number of Responses: overall 20,745, nationally representative sample 18,924</td>
</tr>
<tr>
<td></td>
<td>Grades: 7th to 12th</td>
</tr>
<tr>
<td></td>
<td>Time Frame: April to December 1995</td>
</tr>
<tr>
<td>Number of Parent Questionnaires</td>
<td>Number of Responses: 17,700</td>
</tr>
<tr>
<td></td>
<td>Time Frame: April to December 1995</td>
</tr>
<tr>
<td>Number of Schools</td>
<td>132 schools selected with unequal probability of selection</td>
</tr>
<tr>
<td>Number of In-School Respondents</td>
<td>Number of Responses: 90,118, nationally representative sample 83,135</td>
</tr>
<tr>
<td></td>
<td>Time Frame: September 1994 – April 1995</td>
</tr>
<tr>
<td>Network Information (includes same school, sister school, special codes, unmatched nominations)</td>
<td>Uniquely Nominatable Respondents: Total N of Nominations Sent 509,943</td>
</tr>
<tr>
<td></td>
<td>Non-uniquely Nominatable Respondents: Total N of Nominations Sent 30,696</td>
</tr>
</tbody>
</table>
4.3. Analytical Techniques

The aim of my dissertation is to examine the effects of peer networks and school characteristics on adolescents’ college expectations. I first test whether school context matters for respondents’ college expectations. Second, I examine the effects of peer networks in two steps: The first step investigates which school context is associated with prosocial peer networks and the second step extends the school model by testing for the effects of peer exposure on adolescent college expectations. The final analyses examine cross-level interactions between school-level factors and adolescent characteristics or school-level factors and peer networks.

The broad research on educational achievement and attainment includes such approaches as multiple regression analysis and the application of various multilevel models. Ordinary least squares regression models have been applied with cross-sectional and longitudinal samples. However, in circumstances where adolescents are part of a peer network and also belong to the same school environment, individual observations are generally not completely independent, which is assumption in standard statistical approaches (Ross 2000).

Observational dependence occurs in the Add Health data because of the likely similarities in the behaviors of respondents attending the same school. Not correcting for these correlated observations may bias both the parameter estimates and their associated standard errors. The multilevel model approach allows for simultaneously estimating the effects at the micro-level (i.e., student) and the effects of macro structural factors (i.e., school effects). This
capability allows for the identification of within and between school-level effects, while also
enabling the decomposition of the variance at each level (see Guo and Zhao 2000).

The multilevel framework allows for the partitioning of the variance in college
expectations among levels of nested social structures (within adolescents and peers and between
schools) and the modeling of macro-level effects by estimating attributes of aggregations in the
analysis. These models are statistically appropriate for the analysis of nested observations
(Raudenbush and Bryk 2002). The size of the clustering is one important aspect of the
multilevel approach to obtain the information on the variance across levels. In the present
analyses, the cluster size of adolescents across the 132 eligible schools ranges from small to
modest. Thus, examining random intercept models is appropriate (Raudenbush and Bryk
2002).

The common influence of schools on children or adolescents is specified in multilevel
models by means of the intraclass correlation coefficient, which measures the proportion of
variance in the outcome that exists between groups (i.e., the level-2 units). This influence is
also viewed as the cluster effect which applies to random intercept models only. Applied to the
current study, intraclass correlations represent the variance of college expectations between
schools. Further, I examine multiple attributes of schools and peer networks and how variations
in models affect the outcome of college expectations.

Multilevel regression models differentiate between residuals at the individual-level and
the school-level of the analysis. This technique generates independent random error variance
components and enlarges the standard errors for the implications of clustering (Bryk and
Raudenbush 1992). Thus, if there are many level-one units per higher level unit, common
statistical approaches assume greater availability of independent data than exists in reality. However, in the event that adolescents are not highly clustered in schools, the results of the multilevel approach are similar to those from ordinary-least-squares regressions. Overall, multilevel analysis provides information on the decomposition of variance across levels, which is not available in standard regression approaches.

The analyses in Chapter five assess the effects of network attributes and school characteristics on adolescents’ college expectations, net of adolescents’ sociodemographic attributes, family background, and adolescent behavioral characteristics related to expectations. The results show that schools explain four percent of the overall variance in college expectations. Thus, the analysis in a multilevel framework is justified (Hox 2000; Snijders and Bosker 1999). The ‘variance explained’ with each step, applying successive models, is examined in more detail in chapter five.

In view of the cross-sectional nature of the data, the relative magnitude of peer influences and school attributes should be interpreted with caution. The common evaluation of improvement across models deviates from procedures outlined in the multilevel research because of the complex survey data employed here. The obtained point-estimates for survey data use a weighted maximum-likelihood estimator. Thus the weighted or pseudo-likelihood is not the distribution of the function for the sample and, therefore, standard likelihood ratio tests are not appropriate for evaluations across models. In order to assess the potential effects of school-level characteristics on adolescents’ college expectations the individual-level and contextual-level variables in this study are grand mean centered (Raudenbush and Bryk 2002; Raudenbush et al. 2004). The main objective in this dissertation research is to examine the
association between school characteristics and adolescents’ college expectations net of the
effects of the individual-level covariates (e.g., adolescents’ gender, race, and SES). This means
in terms of the HLM model, that school-specific intercepts, which are treated as random at the
school level, should be adjusted for the effects of individual-level characteristics. In other
words, if the effects of school-level characteristics are a central part of the research interest,
Raudenbush and Bryk (2002) suggest “to estimate the association between a level 2 predictor
and the mean of Y, adjusting for one or more level-1 covariates” (p.142), which means that
grand-mean centering is more appropriate. Thus, I use grand-mean centering for the individual-
level predictors to examine school-level effects net of the effects of the adolescent and parent
characteristics. Additionally, in grand-mean centering, level-1 predictors can be explained
between-school variation as well.

In the generalized hierarchical linear model approach, the intercept and slopes in the
level-1 model become outcome variables at level-2. Thus, the intercept in level-1 is predicted
by level-2 variables and a level-2 error term. I estimate the generalized hierarchical linear
model with the specification of a Bernoulli distribution for the individual-level 1 outcome
(Raudenbush et al. 2004; Guo and Zhao 2000). This model is similar to a logistic regression in
which the log odds of expectations log \[ \frac{P}{1 - P} \] for adolescent \( i \) in school \( j \). The intercept
\( \beta_{0j} \) or the average likelihood of college expectations in school \( j \) is predicted by school
variables \( W \) (i.e., college preparation courses, school college expectation rate etc.) including the
level-2 error term \( \mu_0 \). \(^5\)

\(^5\) The terms in the equations are explained in greater detail in section 5.3.
Grand-mean centering at level-2 in the multilevel model is established by subtracting each adolescent's value on the independent variable from the mean of that variable across the mean of all other adolescents in the study. By applying grand-mean centering, the intercept is interpreted as the predicted score of an individual whose value for that independent variable is equal to the grand mean. Thus, the intercept of the model provides information about mean differences as predicted by the independent variables.

Common procedures in the multilevel approach involve a sequence of sub-models that facilitate the hypothesis-testing and establishing of the appropriate final model. First, I examine the testing of an unconditional model, also viewed as the random effects ANOVA model (Raudenbush and Bryk 2002). This model serves as a baseline model that provides the point estimate of the grand mean and a confidence interval, and also examines the variability of the variance components in the individual outcome. Thus, the residual variance ($\sigma^2$) is separated into two components: 1) a residual variance at the individual-level ($\sigma^2_\varepsilon$), and 2) a residual variance that is constant across individuals within a school but random across schools ($\sigma^2_\mu$). In other words, this model provides the percent of variance between schools. If random variance is established, the next step involves a “cross-over effects” model that specifies the effects of school attributes (see also Aneshensel and Sucoff 1996). This model examines the direct main effect of the social context characteristics on the individual measure of college expectations. Thus, school variables as fixed effects are added to the model to explain the random part of the variation in intercepts between schools and variation within schools.

---

6 Detailed equations for each model are presented in chapter five.
Ideally, if the error term moves closer to zero, the level-2 variance is assumed to be specified with the chosen variables.

Having established the fixed effects of contextual factors, I move to the next steps, which involve, first, the inclusion of control variables, and then the addition of the school-level measures in a random intercepts ANCOVA model (see Raudenbush and Bryk 2002). This approach allows for the distinction of social compositional attributes that influence adolescents in the schools they attend, thus accounting the “local” socializing properties. For example, this model provides information about how level-2 factors create potential differences in the effect of level-1 factors, thus showing interactions with level-1 indicators.

The analyses in chapter five partly follow the model sequence explained here. However, my theoretical emphasis on the various effects of school and peer networks, with controls added after these variables, is predominating the model building series. I conclude the analyses with a specified final hierarchical model (i.e., full model), which integrates all variables examined in the previous sub-models.

4.4. Research Design Issues

The Add Health study is a nationally representative survey of adolescents composed of students from a selected sample of schools in the United States. Schools and adolescents were selected with equal probabilities. However, students from the same school are more likely to
share similarities than students from different schools. Adolescent responses are therefore not independent or identically distributed (for a detailed review see also Chantala 2006). Thus, the data correspond to a clustered-correlated design sampled with unequal probabilities of selection. In order to achieve unbiased results, specific analytical strategies must be applied to correct for design effects and unequal probability of selection, so as to ensure the national representativeness of the results. The employed survey software must allow for specifying all primary sampling units: the stratum (region), sampling weight, and primary sampling unit (psuscid) to ensure unbiased estimates.

In this dissertation, I apply the analytical strategy of hierarchical linear modeling with binary and continuous outcomes using the statistical software HLM (Raudenbush et al. 2004). Thus, to account for the specific design effects, correct grand sample weights have to be assigned. HLM allows for the application of the correct sample weights at each level. The applied weight for the individual-level unit is ‘w1_wc’ and the school-level unit is ‘schwt1’ for the cross-sectional analyses.

7 Depending on the selected sample of interest the correct weight variable needs to be included in the analytical specification (for further details see also the documentation of “Strategies to Perform a Design-Based Analysis Using the Add Health Data” by Chantala and Tabor 1999).
4.5. Measures

In this section I describe the measures of the main concepts applied in the analyses. Adolescents’ reported level of college expectations and selected school-level, peer networks, and individual-level measures are discussed. Nonresponses or skip patterns are set to missing in the analyses, which results in retaining only data that have information available on the full set of selected variables. Descriptive statistics are provided in chapter 5 for all the variables included in the analyses.

4.5.1. Dependent Variables

In this study the primary dependent variables are adolescent’s self-reported college expectations and goal orientations of peer networks.

College Expectations. The measure of college expectations is based on the response to the question: “On a scale of 1 to 5, where 1 is low and 5 is high, how likely is it that you will go to college?” This is a measure of expectations and not of how much adolescents want to go to college, which involves aspirations. The variable is coded as a binary outcome, where “0” refers to a respondent’s low likelihood of expecting to attend college, including categories 1 through 3, and “1” refers to an adolescent’s high likelihood of expecting to attend college, with
values 4 and 5 in this category\(^8\). Approximately 74 percent of adolescents in wave 1 reported high expectations of college attendance.

*Academically Goal-Oriented Peer Networks.*\(^9\) The second dependent variable measures prosocial peers, involving goal-oriented peer networks with high likelihoods of expecting to go to college. Peer expectations are often examined in crime research. For instance, Haynie et al. (2006) found a positive relationship between exposure to violent friends and adolescent violent behavior net of controls. As part of the analysis of peer-network effects, I test which school characteristics are associated with prosocial peer networks. Friends’ educational expectations consist of friends’ mean response to the question asking them to estimate the likelihood that they will graduate from college. Responses range from “no chance it will happen” (0) to “it will happen” (8). Peer network data are only linked to the in-school survey and this measure remains in its continuous form. Similar to adolescent college expectations, peers on average are above the mid-point in their expectations (*mean*=6.53) to attend college after high school.

---

\(^8\) I explored various coding options, creating a three category (1-2=0, 3=1, 4-5=2) variable and a more restricted dichotomy (1-4=0 and 5=1). Yet, the three-category measure or the more restricted binary variable did not provide different findings compared to the current dichotomous outcome. The nature of the original variable is highly skewed, with the majority of responses in categories 1-2 and 4-5. Because I am interested in specific outcome approach, college expectations versus lower or no expectations, the use of a middle category did not appear to be meaningful for the purpose of my study. Thus, I decided to continue my analyses with the binary measure as described here.

\(^9\) This variable is also used as an independent measure in my analysis where I test the mediating and moderating effects of exposure to goal oriented peers on adolescent college expectations. See the calculation for this measure in section 4.5.4.
4.5.2. Individual-Level Independent Measures

The independent variables of primary interest for this study are taken from the adolescent in-home and in-school responses of Wave I. The control variables identifying parental background include: socioeconomic status, family structure, and educational expectations for youth. The control measures for adolescents include age, gender, race/ethnicity, adolescent’s grade-point average, youth’s level of self-esteem, and indicators of attachment to school and to parents. These selected individual-level measures have been examined in prior research on educational achievement and expectations (Antonio 2004; Crosnoe et al. 2004; Frost 2007; Glick and White 2004). Studies that investigate adolescents’ deviant or violent behaviors have controlled for school and parental attachment as indicators of social integration (Bollen and Hoyle 1990; Haynie 2001; Kreager 2007; Ueno 2005). Attachment to school potentially influences students’ overall integration in school and among friends, which may further affect students’ educational goals. I, therefore, include this variable as an additional control in this study. Descriptive statistics for all individual-level measures are listed in Table 5.2-2 of chapter five.

Socioeconomic Status (SES). Parents’ education and occupation are included as proxies for family SES. Attainment studies typically link these characteristics to adolescents’ academic achievement (Lareau 2000; McLoyd 1998). In the analyses, I first test the effects of each parental background variable separately to examine the influence on the ‘subjective’ outcome variable. Parents’ education may stimulate adolescents’ college expectations more than does the occupational position that parents hold. However, alternatively, occupational background
maybe more important for expectations. The information about parents’ level of completed education is obtained from the adolescent in-home interviews, which ask about mother’s (i.e., mother, stepmother, foster mother) and father’s (i.e., father, stepfather, foster father) schooling. The measure ranges from 0 to 9 with the following responses: “did not go to school” (0), “having an 8th grade education or less” (1), “more than 8th grade, but did not graduate from high school” (2), “went to a business, trade, or vocational school instead of high school” (3), “having a high school diploma” (4), “completed a GED”\textsuperscript{10} (5), “went to a business, trade, or vocational school after high school” (6), “went to college but did not graduate” (7), “graduated from a college or university” (8), and “professional training beyond a four-year college or university” (9). The highest educational level achieved is used regardless of the number of parents present. The Cronbach’s alpha for this index is $\alpha = 0.78$.

The occupational level of parents is also created from in-home responses asking adolescents separately about their mother’s and father’s work. Responses range from 1 to 10, including the following categories, “operators and laborers” (1), “mechanics” (2), “construction worker” (3), “craftsperson” (4), “service industry” (5), “sales” (6), “office worker” (7), “technicians” (8), “technical, sales, and administrative manager” (9), “professionals” (10). Similarly to parents’ education, parents’ occupation measures the highest occupational level of members present in the household. The combined indices measure parents’ socioeconomic status ranging from low socioeconomic status (1) to high status (10) with a Cronbach’s alpha of $\alpha = 0.77$. These detailed scales have been used as controls in various Add Health studies and have proven to be reliable indicators for an array of adolescent outcome variables (Haynie et al.\textsuperscript{10})

\textsuperscript{10} General Educational Development (or GED) tests include a number of five tests which (when passed) certifies that the test taker has American or Canadian high school-level academic skills.
Family income is excluded as a measure of socioeconomic status because of the high level of missing data on this item. However, analyses with a subsample of non-missing income information compared to the occupational and educational indicators of socioeconomic status did not reveal significant differences in the results.

**Family Structure.** Family structure is understood as influencing both family functioning and the well-being of all individuals involved in this unit (Thomson, Hanson, and McLanahan 1994). A series of dummy variables was created, based on the household roster. One dummy variable indicates the family household structure, where adolescents are living is either a “two parent family”, including blended families and two biological parents (1), or a “single parent family”, including single mother and single father families (0).

**Parents’ College Expectations for Youth.** The index of parents’ educational expectations was created from two items asked independently about mother’s (i.e., mother, adoptive mother, stepmother, or foster mother) and father’s (i.e., father, adoptive father, stepfather, or foster father) expectations. In the in-home interviews adolescents were asked: “On a scale of 1 to 5, where 1 is low and 5 is high, how disappointed would she/he be if you did not graduate from college?” Responses from parents are averaged to present an index with a reliability coefficient of 0.85.

**Race/Ethnicity, Gender, and Age.** Information about adolescent’s race derives from the in-home adolescent survey. In the analyses, non-Hispanic Whites are the reference group. They are the largest ethnic group in the Add Health sample. The four ethnic comparisons are Black Americans, Hispanic Americans, Asian Americans, and Other Americans. Because of the small sample of Native Americans, I have included this group in the “other” category.
Comparing non-Hispanic Whites with other ethnic groups helps to reveal which of the other groups is the most disadvantaged ethnic group within the educational process (e.g., Wilson 1987; Massey and Denton 1993). The descriptive statistics in Table 5.2-2 indicate a balance of approximately equal proportions of female and male adolescents. The average age of Wave I respondent was 15 years in 1995. The racial/ethnic distribution was about 51 percent for non-Hispanic whites, 21 percent for African Americans, 17 percent for Hispanics, and 7 percent for Asians.

*Adolescent’s Achievement.* Adolescent’s high-school grade-point average is assessed from respondent’s self reports of grades achieved in math, science, English, and history. Students must have had a letter grade in at least two of the subjects to be included in the analysis. Grades are combined to generate a grade-point average for Wave I. Valid responses range from 1 to 4 with (1) being the lowest and (4) being the highest category.

*School Attachment.* Before constructing an index of school attachment, an exploratory factor analysis was conducted. I chose three items that loaded on the same factor. The summed value of three selected items was created from the adolescent in-home interviews asking the following questions: 1) “You feel close to people at your school?”, 2) “You are happy to be at your school?”, and 3) “You feel like you are part of your school?” The reversed response categories range from “strongly disagree” to (1) to “strongly agree” (5). The Cronbach’s alpha for the index is $\alpha = 0.77$.

*Parental Attachment.* A mean value based on two items is created from the in-school survey asking the adolescent: (1) “How much do you think she [mother/ adoptive mother/ stepmother/ foster mother etc.] cares about you” and (2) “How much do you think he [father/
adoptive father/ stepfather/ foster father etc.] cares about you”. Response choices are “not at all” (1), “very little” (2), “somewhat” (3), “quite a bit” (4), and “very much” (5). The Cronbach’s alpha for the index is $\alpha = .70$.

**Adolescent Self-esteem.** The self-esteem measure is an index created from the adolescent in-home interviews in Wave I. The measure asked whether adolescents agreed or disagreed with the following statements: (1) “You like yourself just the way you are”, (2) “You feel like you are doing everything just about right”, and (3) “You have a lot to be proud of”. The original response choices were “strongly agree” (1), “agree” (2), “neither agree nor disagree” (3), “disagree” (4), and “strongly disagree” (5). All three items were reverse-coded to score the final scale in the direction of high scores corresponding to higher levels of self-esteem. This index has a Cronbach’s alpha of $\alpha = 0.76$. Self-esteem and socioeconomic status are positively associated with adolescents’ college expectations (Udry 2003).

**Skipping School.** Information about adolescents’ unexcused missed school days was taken from the in-school survey. Adolescents were asked, “During the past twelve months, how often did you skip school without an excuse?” Valid responses ranged from 0 to 6, including the categories “never” (0), “once or twice” (1), “once a month or less” (2), “2 or 3 days a month” (3), “once or twice a week” (4), “3 to 5 days a week” (5), and “nearly everyday” (6).

The literature about selection effects indicates that it is important to control for a range of individual and family-level characteristics. Thus, the selection of the individual-level control variables for the current analyses has been guided by more recent studies of the attainment and other behaviors of adolescents (Kreager 2004, 2007; Haynie et al. 2006; Ueno 2005).
4.5.3. School-level Independent Measures

The school-level measures examined in this dissertation focus on two important influences: the economic resources of the school and the peer group climate of the school.

*Classroom Size.* The information about the average number of students in a classroom is taken from the school administrator survey. Administrators provided information on classroom size by responding to the following question: “What is the average class size in your school?” For the selected 132 participating schools, the average classroom size ranged from ten to thirty-nine.

*School Average Socioeconomic Status.* The socioeconomic resource measure is constructed by aggregating individual reports of parents’ status to the school level. These two variables are strongly intercorrelated at the school-level, with a Cronbach’s alpha of $\alpha=0.90$. Schools with high-status parents are hypothesized to have resources that promote greater expectations of attending college (Coleman and Hoffer 1987; McNeal 1997; Schneider and Coleman 1993).

*High School Dropout Rate.* The high school dropout variable measure is based on the average percentage of 9th through 12th graders who were initially enrolled at the beginning of the school year in 1993 and dropped out of school before the end of the school year. Adolescents in schools with high percentages of dropouts are hypothesized to have lower expectations of attending college. Higher percentages of dropouts are associated with greater
school mobility and lower school quality. A negative school climate potentially harms students’ college expectations.

The following section describes the association between peer networks and college expectations.

4.5.4. Peer Network Measures

The Add Health in-school survey asked adolescents to list five of their best female friends and five of their best male friends. For each school included in the sample, Add Health obtained a roster of students and assigned them with identification numbers. These rosters enabled students to find their friends in their school and/or feeder school. The assigned numbers allowed the determination of the demographic characteristics (i.e., gender, race/ethnicity) of adolescents’ friends. Further, the determination of school friends permits the recreation of respondents’ peer networks in their schools and allows measurement of friends’ academic achievement, school attachment, or college expectations, based on friends’ own responses to the in-school survey questions.

Variables are available in the Add Health peer network data that indicate the mean value of ego’s peers (defined by a particular ego network) on behavior and attribute measures.
Thereby, the $MEAN_{ix}$ is the same as the range of $x$. For the purpose of my study, I examine mean peer goal orientation and unexcused school absences.

*College Expectations.* A mean friendship college expectation score was created by

$$MEANCOLL_{ix} = \sum \frac{x_j}{n_j}$$

where $x$ equals the in-school attribute of college expectations and $x_j$ equals the value of college expectations for the $j^{th}$ member of the adolescent’s network, while $n_j$ equals the number of nodes in the adolescent’s network based on the send and received friendship nominations, excluding the respondent (i.e., ego). Because this score is based on the in-school surveys, the variable ranged from “no chance” (0) to “it will happen” (8) (see details in chapter five).

*Mean Grade-Point Average.* For ego’s peers the grade-point average across four core subjects from the in-school questionnaire was weighted as follows: A=4, B=3, C=2, D=1. To calculate the GPA, only valid responses were used. This network measure is already pre-compiled by Add Health.

Because the measures of peer college expectations and peer GPA are highly correlated, I created a measure that presents the average of academically goal-oriented peers (see also Haynie et al. 2006). In order to measure the effects of positive networks on adolescents’ college expectations, I examine whether the exposure of prosocial peer networks mediates or moderates the association between the institutional characteristics of school and adolescents’ expectations.
Mean Unexcused School Absences. As with the measure of friendship college expectations, the created score translates into $MEANSKIPPING_{ix} = \sum_{j}^{X} \frac{x_{j}}{n_{j}}$ where $x$ equals the in-school attribute of missing school unexcused\footnote{The items match the adolescents’ individual-level measure from the in-school survey. It includes responses about youth skipping school without an excuse during the past 12 months and ranged from never (0) through nearly every day (6) (see also description of individual-level measure in section 4.5.3).} and $x_{j}$ equals the value of school skipping for the $j^{th}$ member of the adolescent’s network and $n_{j}$ equals the number of nodes in the adolescent’s network based on the send and received friendship nominations excluding the respondent (i.e., ego).

While I use exceptionally detailed social network data in the analyses, the networks themselves only involve friends who attend one of the sampled schools.

4.6. Other Methodological Issues

4.6.1. Schools versus Neighborhoods

Researchers have argued about which contextual effects are more important for child or adolescent outcomes (Alwin and Otto 1977; Lee and Bryk 1989; Leventhal and Brooks-Gunn 2000). A significant body of literature tests the effects of school characteristics on educational

Research also suggests the importance of neighborhood context relative to school effects in explaining educational performance (Entwisle, Alexander, and Olson 1994). Both contexts seem to matter for the development of youth outcomes, including educational achievement.

In this dissertation, I hypothesize the effects on adolescent college expectations in the presence of individual-level controls by focusing specifically on mechanisms within the school context. Past findings show evidence for school characteristics on educational achievement, attainment, and to some extent expectations, but results remain inconsistent with regard to the concurrent effects of school and peers on adolescents’ college expectations.

The Add Health sampling design is school-based. Schools were sampled first and a random sampling of adolescents within these schools was completed afterwards. There is a high correlation between the neighborhoods and schools. In view of these facts and the focus of my hypotheses, I have chosen to do an analysis of school context effects on early college expectations and goal-oriented peers.

4.6.2. Selection Effects

When studying contextual-level characteristics, a significant problem that only few existing studies have been able to address is the selection of respondents into schools or
neighborhood (Duncan and Raudenbush 1999; Elliott et al. 1996; Leventhal and Brooks-Gunn 2000). Selection effects may occur because families exert choice within the constraints in determining where they live (Duncan, Cornell, and Klebanov 1997). If the unobserved characteristics that influence residential location also influence adolescents’ outcomes, then analyses require the inclusion of these unobserved characteristics to avoid further biased estimates, in the form of overestimation or underestimation of contextual-level effects on individual-level outcomes (Leventhal and Brooks-Gunn 2000; Duncan et al. 1997). For example, parents actively involved in their children’s education may select high academic status schools and provide unobserved support at home, which leads to higher educational attainment for their children. If the quality of parents’ support/caring is unobserved, the effect may be mistakenly identified as an effect of schools.

Being able to separate empirical effects from selection processes or endogenous effects still remains a challenge when studying the influence of schools or neighborhoods on children’s or adolescents’ well-being (Hauser 1970; Duncan et al. 1997; Duncan and Raudenbush 1999; Elliott et al. 1996; Leventhal and Brooks-Gunn 2000; McLeod and Edwards 1995). One way of addressing the problem of selection in survey research is to include a series of appropriate control variables both at the family- and individual-levels (Elliott et al. 1996; Furstenberg et al. 1999). A review of contextual-level effects on academic and behavioral problems in children and youth reveals studies that tend to include controls for income, education, race/ethnicity, family structure, and family size at the family level of analysis (Leventhal et al. 2000). In addition to sociodemographic measures, research shows that perceived neighborhood problems continue to affect children’s behavior problems even in the presence of individual-level controls.
for self-esteem, academic aptitude, and maternal adolescent delinquency (McLeod and Nonnemaker 2000). In view of potentially omitted variable bias, I include in my study a number of theoretically relevant controls based on the extensive social stratification literature that address these issues in relation to college expectations. Focusing on college expectations rather than on overall educational achievement allows a better specification and diminishes the likelihood of omitted variable bias in these results.

As noted above, evidence from various research designs and methodological approaches (including experimental or survey data) draws attention to the issue of whether selection bias may account for the relationship between contextual-level attributes and child’s or youth’s outcomes. One commonly cited study in support of the hypothesis that social context is not completely a result of selection is the Chicago Gatreaux Assisted Housing Program. This project was designed by court mandate to address the discrimination policies in the administration of low-rent housing programs (Leventhal and Brooks-Gunn 2000). Eligible families were assigned to available private units, often in the suburbs and other inner-city locations. Families were given the available housing assignment by being selected as part of a quasi-random assignment to the new neighborhoods (Rosenbaum et al. 1993).12 Longitudinal findings compared youth outcomes for families who moved to suburban neighborhoods to those who relocated to inner-city locations. Results suggest that youth who relocated to suburban areas showed long-term differences, with higher college attendance and lower dropout rates compared to youth who relocated in inner-city areas.

12 This distribution approximated a random experimental design without taking into account that the sample itself was selected on the dependent variables because all of the residents came from economically disadvantaged backgrounds.
The performance improvements observed in the Gatreaux project were further explored in the Moving to Opportunity (MTO) experiment. The MTO is a continuous housing mobility study that started in 1994 across five locations in the United States, and examined how location and neighborhood characteristics can affect employment, income, and educational outcomes. Low-income families living in public housing in highly disadvantaged neighborhoods were given the opportunity to apply for rent vouchers that allowed them to move to private homes and apartments (Katz et al. 2001). Eligible families were randomly assigned to three treatment groups: 1) families that had to move to less disadvantaged neighborhoods with provided assistance, 2) families that were allowed to move to any metropolitan area of their choice, and 3) a control group that remained in their public housing units. In accordance with the findings from the Gatreaux project, families who resided in low-poverty neighborhoods experienced significant improvements in their overall physical and mental health, in youth’s problem behavior (especially for boys) and in well-being, and in juvenile offenses (Katz et al. 2001; Rosenbaum and Harris 2001). While these results provide support for the contribution of contextual-level attributes on behavior problems and well-being they, also point to the limitations of experimental design. Critiques have questioned how these designs can capture a larger causal theory of why and how context matters for individuals (Sampson et al. 2002).

Other evidence concerning selection biases obtained from survey research involves the use of instrumental variable models (Duncan and Raudenbush 1999). The challenge for the instrumental variable approach is to identify the variable that is correlated with the theorized selection mechanism but not with the variable of interest. For instance, Duncan and colleagues (1997) employed mother’s future neighborhood of residence, after the child moved out of
home, as an instrumental variable to capture mother’s unobserved preference for neighborhoods. When the variable was included in a two-stage regression model, it was hypothesized that it would eliminate the spurious effects of current neighborhood characteristics. However, researchers found that the effects of neighborhood actually became stronger. Still, the instrumental variable approach is difficult to implement and is not without weaknesses.

Results addressing selection bias indicate that contextual-level effects remain after potentially confounding influences are taken into account. While the results from these studies are promising, each approach has its methodological limitations. With respect to the issue of endogenous effects, research encourages the use of longitudinal data over cross-sectional data (Mason and Fu 1999). Evidence suggests that neighborhood influences on youths’ cognitive and behavioral outcomes are not only due to the rival hypothesis of selection bias. Although experimental designs present the most solid evidence, they are limited in their geographical generality and their measures of youth outcomes.

To address some of the problems mentioned above, in my dissertation I use survey data from a national American sample (Add Health) with a variety of statistical controls to broaden the research on youths’ college expectations and the variability of school and peer group characteristics.
4.7. Summary

This chapter described the main features of the Add Health survey: its design, sampling, variable choices from the survey, and the statistical approaches applied to the survey data in the two sets of analyses. Further, I examined details of the operationalization of the theoretical concepts tested in this dissertation.
CHAPTER V:
WHAT MATTERS FOR COLLEGE EXPECTATIONS?

5.1. Introduction

This chapter shows the results of the analyses addressing the research questions posed in chapter three, section 3.4, which describes the theoretical conceptualization of school and peer effects. First, I present random intercept models that test the effects of school-level characteristics on adolescent college expectations and the assumptions of these models. Second, I present a supplementary analysis of school-level effects on exposure to goal-oriented peers across schools. Third, I examine the combined effects of school-level characteristics and school-based peer networks on college expectations net of individual-level characteristics. The final analyses integrate cross-level effects models (i.e., random coefficient models), presenting interactions between school-level characteristics and adolescent gender, and school-level characteristics and peer networks on college expectations. I compare findings for schools and peers and interpret the effects of contextual characteristics across the sets of models.
5.2. Descriptive Statistics and Bivariate Associations

Table 5.2-1 displays the correlations among the multiple measures used in the analyses and the dependent measure of college expectations and academically goal-oriented peer networks. The correlations are weighted for each set of the analyses. For the majority of variables the correlation results are as hypothesized in the previous chapter. For instance, males are less likely to have college expectations than are females, these associations correspond with previous studies on educational expectations (Domene and Shapka 2005; Reisberg 2000).

In addition to gender, the strongest correlates of college expectations are parents’ educational expectations (.29, p<.001), adolescent educational achievement (.28, p<.001), and parental educational attainment (.25, p<.001).

The peer network measures are modestly associated with college expectations. Peers’ missing school (-.07, p<001) has a modest negative association with adolescents’ college expectations. The association between peers’ academic orientation (.23, p<001) and adolescents’ college expectations is the strongest among all peer measures.

The results for school-level characteristics are as expected. There is a small but significant association between affluent schools and higher college expectations (.05, p<.001). Classroom size (-.07, p<.001) and percentage of high school dropouts (-.09, p<.001) are negatively associated with college expectations.

Adolescents’ own educational achievement is significantly associated with having academically goal-oriented peers (.10, p<001). For school-level characteristics, an association

---

13 Goal-oriented peers measures peer behaviors by asking peers themselves about their level of academic achievement and college expectations.
is observed between socioeconomic status (r=.17, p<.001) of the school and having goal-oriented peers. That is, for adolescents’ expectations, the school SES is positively associated with the goal orientation of high school adolescents. Classroom size and propensity of high school dropouts show small to modest negative associations with academically goal-oriented peers.
Table 5.2-1 Correlations among Individual, Peer and School-Level Independent Measures and Dependent Outcomes

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Adolescent College Expectations</th>
<th>Academically Goal-Oriented Peers</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Expectations</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Goal-Oriented Peers</td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Individual Level Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.04***</td>
<td>-.01</td>
</tr>
<tr>
<td>Male</td>
<td>-.09***</td>
<td>-.03**</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-.10***</td>
<td>-.04***</td>
</tr>
<tr>
<td>Asian</td>
<td>.05***</td>
<td>.03**</td>
</tr>
<tr>
<td>African American</td>
<td>.01</td>
<td>-.02</td>
</tr>
<tr>
<td>Other</td>
<td>-.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Adolescent GPA</td>
<td>.28***</td>
<td>.10***</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>.14***</td>
<td>.03**</td>
</tr>
<tr>
<td>Skipping School</td>
<td>-.19***</td>
<td>-.04**</td>
</tr>
<tr>
<td>School Attachment</td>
<td>.15***</td>
<td>.06***</td>
</tr>
<tr>
<td>Parent Attachment</td>
<td>.14***</td>
<td>.04**</td>
</tr>
<tr>
<td>Parental Attainment</td>
<td>.25***</td>
<td>.09***</td>
</tr>
<tr>
<td>Parent Occupation</td>
<td>.19***</td>
<td>.07***</td>
</tr>
<tr>
<td>Any Two Parent Family</td>
<td>.06***</td>
<td>.03**</td>
</tr>
<tr>
<td>Parent Expectations</td>
<td>.29***</td>
<td>.09***</td>
</tr>
</tbody>
</table>

**Peer Network Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Academically Goal-Oriented Peers</td>
<td>.23***</td>
<td></td>
</tr>
<tr>
<td>Peer Skipping School</td>
<td>-.07***</td>
<td></td>
</tr>
</tbody>
</table>

**School-Level Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>School SES</td>
<td>.05***</td>
<td>.17***</td>
</tr>
<tr>
<td>High School Dropout Rate</td>
<td>-.09***</td>
<td>-.04***</td>
</tr>
<tr>
<td>Classroom Size</td>
<td>-.07***</td>
<td>-.04***</td>
</tr>
</tbody>
</table>

Table 5.2-2 provides descriptive data on all the outcome variables and the individual-level, peer network, and school-level measures included in the analyses. The distribution of gender in this sample is almost even, with approximately 49 percent male students and 50 percent female students. The average educational achievement of adolescents (2.8 out of 5) is low relative to their high anticipation of college attendance (74 percent). The majority of
parents (mean score of 3.95) have high expectations for their children to attend college after high school completion.
Table 5.2-2 Descriptive Statistics for the Analysis of College Expectations and Academically Goal-Oriented Peers

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Expectations</td>
<td>.739</td>
<td>.440</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Academically Goal- Oriented Peers</td>
<td>6.530</td>
<td>1.271</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td><strong>Individual-Level Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adolescent Attributes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>15.984</td>
<td>1.495</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Male</td>
<td>.494</td>
<td>.499</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Female (ref)</td>
<td>.506</td>
<td>.499</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.173</td>
<td>.378</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Asian</td>
<td>.072</td>
<td>.258</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>African American</td>
<td>.216</td>
<td>.412</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>.029</td>
<td>.168</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>White (ref)</td>
<td>.510</td>
<td>.499</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Adolescent GPA</td>
<td>2.794</td>
<td>.795</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>3.987</td>
<td>.713</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Skipping School</td>
<td>0.634</td>
<td>1.271</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>School Attachment</td>
<td>3.710</td>
<td>.871</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Parent Attachment</td>
<td>4.670</td>
<td>.714</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>Parental Attributes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Attainment</td>
<td>5.354</td>
<td>2.270</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Parent Occupation</td>
<td>6.056</td>
<td>2.903</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Two-Parent Family</td>
<td>.681</td>
<td>.466</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Parent Expectations</td>
<td>3.955</td>
<td>1.225</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>School-Level Measures (Collective Socialization)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>26.658</td>
<td>6.103</td>
<td>10</td>
<td>38</td>
</tr>
<tr>
<td>School SES</td>
<td>5.562</td>
<td>.284</td>
<td>4.56</td>
<td>6.45</td>
</tr>
<tr>
<td>HS Dropout Rate</td>
<td>4.106</td>
<td>3.851</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td><strong>Peer Networks (Social Capital)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual-Level Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academically Goal- Oriented Peers</td>
<td>6.530</td>
<td>1.271</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Skipping School</td>
<td>.647</td>
<td>.477</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

Notes: weighted statistics N =12,747 adolescents clustered within 127 schools.
Figure 5.2-1 presents the percentage differences between female and male adolescents, whose college expectations are high – that is, they expect to go to college. These expectations peak for females during early adolescence, between the ages 12 and 14. The gender gap in expectations declines somewhat toward the end of high school. However, for all ages females have higher expectations than males. Males peak at age 16. While more than half of the females expect to go to college throughout high school, males only approach this level in mid-adolescence.

**Figure 5.2-1 Distribution of Adolescents’ College Expectations by Age and Gender**

Note: This figure shows only adolescents who expect to go to college (expectations =1).
Overall, 54 percent of female adolescents have high college expectations compared to 46 percent of their male counterparts. Still, the majority of adolescents have high hopes of attending college. In contrast, approximately 44 percent of female and 54 percent of male adolescents are less certain or optimistic about their educational future.

Although racial attributes are not the main focus of this study, the descriptive statistics also show gender disparities by race/ethnicity. Figure 5.2-2 presents the distribution of college expectations by gender and race/ethnicity. Comparisons within and across all racial/ethnic groups indicate higher college expectations for females compared to males.
Figure 5.2-2 Distribution of Low and High College Expectations by Gender and Race/Ethnicity

- College Expectations Among African American Adolescents
- College Expectations Among Asian Adolescents
- College Expectations Among Hispanic Adolescents
- College Expectations Among Non-Hispanic White Adolescents
5.3. Main Effects

The following section presents the two-level hierarchical analyses testing the fixed effects of school-level characteristics and peer networks on college expectations. I test for school-level effects, first on the outcomes of adolescents’ college expectations, and second on goal-oriented peer networks. The interpretation of these multilevel models initially emphasizes the fixed effects of school context. The second part of this chapter investigates the effects of peer exposure on adolescents’ college expectations in the presence of school-level characteristics and individual-level control measures.

I first provide a brief description of the multilevel model assumptions used in this dissertation, followed by testing of the hypotheses.

5.3.1. Two-Level Hierarchical Model

This section presents the two-level hierarchical model specifications followed by the interpretation of the multilevel results. Model assumptions and hypotheses are also briefly explained.

The binary outcome of adolescent college expectations and the continuous outcome of goal orientations of peers require different forms of multilevel modeling. Multilevel analyses of social contextual-level effects (i.e., neighborhood, school) increasingly rely on hierarchical
linear models [HLM] (Raudenbush and Bryk 2002; Snijders and Bosker 1999). First, I briefly explain the general hierarchical linear model approach used with a continuous outcome (such as the continuously measured goal orientations of peers). The binary outcome of expectations of going or not going to college involves assumptions of non-normality and thus measures modification of the hierarchical linear model.

The initial step of hierarchical model building typically begins with an estimation of a one-way ANOVA model with random effects (see Raudenbush and Bryk 2002). This is also referred to as the unconditional model. The general two-level model is presented as follows:

(1) Level-1

\[ Y_{ij} = \beta_{0j} + e_{ij} \]

(2) Level-2

\[ \beta_{0j} = \gamma_{00} + u_{0j} \]

(3) Combined Model

\[ Y_{ij} = \gamma_{00} + u_{0j} + e_{ij} \]

The first HLM equation (1) specifies person-level effects and the second equation estimates the contextual-level effects, in this case the school effects. These are the models I use to estimate school-level effects on goal orientations of peers (see Table 5.4.1-1 in section 5.4.1). However, for the binary outcome of college expectations I substitute a Bernoulli distribution for the individual-level 1 outcome (Raudenbush et al. 2004; Guo and Zhao 2000). This model is similar to a logistic regression in which the log-odds of expectations are the log \([P/(1−P)]\) for adolescent \(i\) in school \(j\).
The second equation (2) examines the level one intercepts as outcomes. These intercepts are the mean levels of the hierarchical level-2 unit (e.g., schools). The gamma \( \gamma_{00} \) is the grand mean outcome in the population, and the level-2 random effect \( u_{0j} \) is associated with each level-2 unit. The random effect at level-2 is assumed to be normally distributed with a mean of zero and a variance of \( \tau_{00} \). Substituting the higher level equation for the intercept in equation one yields the combined model shown in equation three (3). The combined model can be interpreted as a regression equation, indicating the effects of the independent variables on adolescents’ college expectations or academic goal orientations of peers.

In order to estimate school effects on specific student outcomes, two types of multilevel models are commonly estimated: 1) a random-slope model and 2) a random-intercept model. The first model form examines the effects of individual student characteristics that are allowed to vary across schools; therefore, this model tests for differences in slopes across schools. In contrast, the random-intercept model examines questions about differences in the level of student outcome across schools. This information can be used to identify which school characteristics lead to variation in student outcomes. Because in this dissertation research I am interested in the extent to which school and peer network characteristics explain the variance in college expectations across schools, in the initial analyses the slopes are fixed with random-intercept models. However, in addition to these models random coefficient models with a random slope for the effect of adolescents’ gender and peer networks are presented, including models with cross-level interactions, in section 5.4.3. Both model types respond to the research questions stated in section 3.4.
I examine how much of the variance at level-2 is explained by adding the school contextual or peer network measures and individual control variables. In contrast to the general hierarchical linear models, when using a binary outcome, the level-1 error variance is not estimated, but an estimate of the intraclass correlation coefficient (ICC) estimates the proportion of variance that lies between schools. Since the binominal distribution for the link function implies a level-1 variance of \( \frac{\pi^2}{3} \), the ICC for the non-linear model is defined as:

\[
\rho = \frac{\tau_{00}}{\tau_{00} + \frac{\pi^2}{3}}
\]

By comparing the ICC across models, I indicate what proportion of the variance between-schools is explained ‘away’ in each successive model.

When specifying the Bernoulli distribution, the log-odds of expectations are for adolescent \( i \) in school \( j \). Each of the individual-level covariates is grand mean centered \((X_{ij} - \bar{X}_i)\) prior to estimating the HLM equations. The school-level coefficients, therefore, represent contextual effects that are not confounded with compositional differences between schools. The intercept \( \beta_{0j} \) or the average likelihood of expecting to go to college in school \( j \), is predicted by school variables \( W \) (i.e., socioeconomic status, high school dropout rate, etc.), including the level-2 error term \( u_0 \). As in logistic regression, the interpretation of the level-1 measure of each coefficient can be interpreted as a linear effect on the link function. Thus, one unit increase in the explanatory variable \( X \) results in an \( \beta_x \) additive increase in the log-odds of college expectations, controlling for the other measures in the model. Alternatively, the exponent of the coefficient represents the multiplicative increase or decrease in the odds of
expecting to go to college. The level-2 measures represent the relationship between the predictor and the level of expectations in the school, controlling for compositional effects and other school-level predictors.

In the first step of my analysis, I focus on the extent to which school socioeconomic status explains variance in college expectations (model 1). I use random intercept models first without control variables and then subsequently add control measures into the equation (model 2). This approach tests the first hypothesis about the importance of school socioeconomic status for educational outcomes. Although educational expectations are more subjective outcomes than test scores or grades, expectations are an important aspect within the achievement process. Thus, I examine whether school-level SES has a significant effect on the subjective expectations of going to college. The next step (model 3) estimates the effects of class size and percentage of high school dropout, net of other explanatory variables, on variance in college expectations across schools. Model 4 examines how these multiple characteristics additively affect adolescents’ college expectations. Because in models 2 to 4 all the slopes are fixed, the estimated random intercepts answer two research questions: Do educational expectations vary across school? Do school characteristics net of individual controls account for variation in college expectations among schools?

In Table 5.3.1-1, I first present the unconditional model which provides the baseline estimate of $\tau_{00}$ - the between-school variance, and its standard error. Given the Bernoulli distribution and a logit link function, the level-1 model is:

$$\eta_{ij} = \beta_{0j}$$

and the level-2 model is:
\[ \beta_{0j} = \gamma_{00} + \mu_{0j}, \quad \mu_{0j} \sim N(0, \tau_{00}) , \]

In this model, $\gamma_{00}$ is the average log-odds of college expectations across high schools, while $\tau_{00}$ is the variance between schools in the average log-odds of college expectations (see Raudenbush and Bryk 2002: 297). The estimated results are $\hat{\gamma}_{00} = 1.067$ (se = .072) as the average log-odds of college expectations across schools, while $\hat{\tau}_{00} = .141$ (se = .375) is the variance between schools in average school log-odds of college expectations. For a school with ‘typical’ college expectations, that is for a school with a random effect $u_{0j}=0$, the expected log-odds of college expectations (1.067) corresponds to an odds of $\exp\{1.067\}=2.91$. These results contradict the null hypothesis ($H_0 = \tau_{00} = 0$) and indicate that there is significant variance between schools. This indicates that a hierarchical multilevel approach is appropriate. The intraclass correlation coefficient [ICC] indicates the total variability that is associated with schools (Kreft and De Leeuw 1998). In Model 1, the sigma squared ($\sigma^2$) is fixed to $\pi^2 / 3(= 3.29)$. The intraclass correlation coefficient for the Model 1 is 4.11 percent.

A high ICC indicates high clustering of expectations in schools and a strong school influence on college expectations. In contrast, a low ICC indicates the existence of small school differences and a weaker school influence on college expectations. In this case, the unconditional model points to a modest ICC and limited school-level variance. However, contextually oriented researchers insist that “it is well recognized that it is possible to find large significant fixed effects (at level-2) in conjunction with small between-group variations.
(Duncan and Raudenbush 1999; Merlo et al. 2003). Thus, in spite of the small ICC, this percentage indicates that there is random variation at level-2 that should not be ignored.

The initial estimate of $\tau_{00}$ provides a point of comparison for the subsequent models in Table 5.3.1-1. The aim is to examine how much of the between-school variance in college expectations is explained by the inclusion of selected school-level indicators and controls.

The sequence of HLM testing is largely based on the research questions and hypotheses (Snijder and Bosker 1999). My focus is on the effects of school-level characteristics and peer networks on expectations, net of compositional characteristics. Thus, I begin with the interpretation of school-level attributes. Compositional attributes are not described in greater detail, except when I examine differences in expectations that are contingent on gender.

The ICC of the model including only individual-level measures is 8 percent. The compositional variables all show effects in the direction hypothesized by previous studies. The largest positive predictors of adolescents’ college expectations are parents’ educational expectations (odds=1.84), adolescents’ GPA (odds=1.97), and self-esteem (odds=1.37). Skipping school (odds=.61) and gender (odds=.55 for males) have negative effects on expectations (for more details, see Table 5.3.1-1 in the appendix).

Research at the contextual-level identifies school socioeconomic status as an important school-level source of students’ outcomes, including educational expectations (Frost 2007; Bryk and Raudenbush 1992). Thus, Model 2 examines the unique effects of individual level-2 units (i.e., school SES) on college expectations. I begin the hierarchical model building by adding the effect of school socioeconomic status into the equation before any other covariates. In the Bernoulli case the level-1 (within-school) model is:
$$\eta_{ij} = \beta_{0j},$$

And the level-2 (between-school) model:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{MSSES})_{j} + u_{0j}$$

Leading to the combined model:

$$\text{Logit}(\text{Expectations}_{ij}) = \gamma_{00} + \gamma_{01}(\text{MSSES})_{j} + u_{0j}$$

The random intercept model indicates that $\gamma_{00} (1.068)$ is the expected log-odds of college expectations for the average adolescent. This log-odds corresponds to the odds of $\exp\{1.068\}=2.91$ and a probability of $\left[\frac{e^{1.068}}{1+e^{1.068}}\right]=.074$ without taking any individual-level measures into account (Allison 1999). School socioeconomic status is positively associated with adolescents’ expecting to attend college, with log-odds of .499 and odds of 1.65. In substantive terms, higher SES schools have adolescents with higher college expectations.

The random intercept model (Model 3) adds the individual-level controls to the equation. This model tests if school SES affects college expectations net of compositional attributes. I hypothesize (Hypothesis 1) that school socioeconomic status directly affects adolescents’ college expectations, net of individual-level controls. An adolescent of average SES and attending a typical school has predicted log-odds of expecting to attend college of 1.689, corresponding to a probability of .84. Average school-level SES is associated with higher college expectations, with $\hat{\gamma}_{01} = .661$. Adding one unit of school-level SES leads to a predicted log-odds of $[1.689 + .661] 2.35$ and an associated predicted probability of .91 (Raudenbush and Bryk 2002). This means that successive increments of school-level SES lead to increases in the probability of expecting to go to college. Thus, there is a significant
association between high levels of school-SES and adolescents’ college expectations, which supports Hypothesis 1.

The variance between schools (\( \tau_{00} \)) increases from Models 2 to 3, which is not uncommon in binary multilevel models (Snijder and Bosker 1999). This increase actually indicates that the variance between schools is higher after controlling for individual attributes like adolescents’ gender, academic achievement, parents’ SES, and parents’ expectations. In this case, the estimate represents the conditional variance between schools after accounting for the effect of level-1 covariates (ICC=6.8 percent).

Model 4 includes additional organizational school-level measures. The percentage of high school dropouts and classroom size are added to the equation. Both are negatively associated with college expectations. However, only the percentage of high school dropouts has a statistically significant effect.

I next test Hypothesis 2, which predicts that smaller classrooms and lower percentages of high school dropouts are associated with higher adolescents’ college expectations. Similar to the previous school-level models, the predicted log-odds of college expectations is 1.667, translating into a probability of .84. The log-odds of high school dropout is -.032 and represents the odds of .97. Thus, an increment of high school dropout [1.667-.032] leads to the predicted log-odds of 1.635, yielding a predicted probability of .84 of expecting to go to college. However, a unit increase of 25 in high school dropouts [1.667 + (25) * (-.032)] corresponds to a predicted probability of .70. This is a non trivial negative effect of percentage of high school dropouts on college expectations.
The log-odds of school-SES are now .693, with an odds of 1.99. Similar to the previous model, school-level SES continues to be strongly predictive of college expectations.

Although results for classroom size were not significant, Hypothesis 2 is partially supported. These results of school-level characteristics parallel recent findings about college expectations by Frost (2007). Frost (2007) emphasizes the effects of school racial composition on college expectations; however, her results also reveal the importance of affluent school environments for college expectations. The implication is that high SES schools that emphasize social and scholastic success and feature low student dropout rates are more likely to promote and nurture a student’s decision about his or her educational future.

In this first set of analyses, the variance component between schools indicates a reduction from Model 3 to Model 4. This suggests that the additional characteristics related to college expectations at the school-level are responsible for a portion of the between-school variance in college expectations.

Some of the individual-level controls are notable. Adolescents’ own educational achievement (odds=1.98), parents’ expectations (odds=1.84), adolescent self-esteem (odds=1.35), and attachment to school and parents (odds=1.31) are all strongly and positively predictive of college expectations. These results are in the expected directions and consistent with previous research.

The negative log-odds of -.574 for males indicates that college expectations for males are 56 percent lower than for females. This is a significant gender disparity. The random intercepts models also show a significant positive fixed effect for Asian adolescents on college expectations. In spite of my focus on gender differences, I tested whether the effect of being
Asian on college expectations depends on school characteristics. The random slopes were insignificant, indicating no random effects for Asian adolescents; no significant cross-level interactions between school characteristics and race/ethnicity were found.

The random coefficients model (Model 5) allows for the estimation of both random slopes and intercepts (Raudenbush and Bryk 2002). I follow the research by Entwisle and Alexander (1994) and test whether the effect of gender on college expectations (the random slope) depends on school characteristics.

The results of the random coefficients model (Model 5) indicate random effects of gender as a level-1 predictor of expectations, showing an overall modest model improvement ($\tau_{00} = .162$). The significant slope for gender ($\tau_{10} = .817$) indicates random effects of gender. This implies that cross-level interactions involving gender should be tested. The results of these cross-level interactions are presented in section 5.4.3. below.
<table>
<thead>
<tr>
<th>Model</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School-Level Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.031</td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.032**</td>
<td>-0.033**</td>
</tr>
<tr>
<td>Average Socioeconomic Status</td>
<td>-</td>
<td>.499**</td>
<td>.661**</td>
<td>.693**</td>
<td>.681**</td>
</tr>
<tr>
<td><strong>Individual-Level Controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>(0.048)</td>
<td>(0.047)</td>
<td>(0.047)</td>
</tr>
<tr>
<td>Male a</td>
<td>-</td>
<td>-</td>
<td>-0.588***</td>
<td>-0.574***</td>
<td>-0.584***</td>
</tr>
<tr>
<td>Hispanic b</td>
<td>-</td>
<td>-</td>
<td>-0.181</td>
<td>-0.163</td>
<td>-0.170</td>
</tr>
<tr>
<td>African American b</td>
<td>-</td>
<td>-</td>
<td>0.027</td>
<td>0.036</td>
<td>0.041</td>
</tr>
<tr>
<td>Asian b</td>
<td>-</td>
<td>-</td>
<td>0.497*</td>
<td>0.505*</td>
<td>0.470*</td>
</tr>
<tr>
<td>Other b</td>
<td>-</td>
<td>-</td>
<td>-0.378</td>
<td>-0.386</td>
<td>-0.374</td>
</tr>
<tr>
<td>Adolescent Self-Esteem</td>
<td>-</td>
<td>-</td>
<td>0.313***</td>
<td>0.302***</td>
<td>0.302***</td>
</tr>
<tr>
<td>Adolescent GPA</td>
<td>-</td>
<td>-</td>
<td>0.685***</td>
<td>0.681***</td>
<td>0.687***</td>
</tr>
<tr>
<td>Skipping School</td>
<td>-</td>
<td>-</td>
<td>-0.486***</td>
<td>-0.493***</td>
<td>-0.496***</td>
</tr>
<tr>
<td>School Attachment</td>
<td>-</td>
<td>-</td>
<td>0.286***</td>
<td>0.269***</td>
<td>0.277***</td>
</tr>
<tr>
<td>Parental Attachment</td>
<td>-</td>
<td>-</td>
<td>0.275***</td>
<td>0.267***</td>
<td>0.267***</td>
</tr>
<tr>
<td>Parents’ Socioeconomic Status</td>
<td>-</td>
<td>-</td>
<td>0.211***</td>
<td>0.208***</td>
<td>0.210***</td>
</tr>
<tr>
<td>Parents’ Educational Expectations</td>
<td>-</td>
<td>-</td>
<td>0.613***</td>
<td>0.609***</td>
<td>0.609***</td>
</tr>
<tr>
<td>Two Parent Family c</td>
<td>-</td>
<td>-</td>
<td>0.250</td>
<td>0.261</td>
<td>0.264</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.067***</td>
<td>1.068***</td>
<td>1.689***</td>
<td>1.667***</td>
<td>1.663***</td>
</tr>
<tr>
<td>$\tau_{00}$</td>
<td>.141***</td>
<td>.108***</td>
<td>.240***</td>
<td>.217***</td>
<td>.162***</td>
</tr>
<tr>
<td>$\tau_{10}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.817***</td>
</tr>
</tbody>
</table>

*Note: Standard deviations are shown in parentheses.*

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed)

a Compared to the “female” category; b compared to the “white Non-Hispanics” category; c compared to the “single parent families” category (e.g., single mother families and single father families)
5.4. Other Effects Models

Schools are an institutional “socializing agent” for adolescents. They establish and promote societal norms and values and are important for adolescents’ future success (Brint 1998). Thus, schools with structural (e.g., high SES) and organizational (e.g., low dropout rate) resources are better able to facilitate educational success for their students. In particular, adolescents attending affluent schools are more likely to develop conventional goals and to form friendships with more conventionally oriented peers (Haynie et al. 2006).

Criminologists have long acknowledged the importance of multiple contextual influences on adolescents’ violent behaviors (Aber et al. 1997; Sampson et al. 1997; Shaw and McKay 1942), and more recently have examined the effects of exposure to delinquent peers on adolescents’ violent behaviors (Haynie et al. 2006). The studies of educational achievement also provide evidence of peer-group socializing effects (e.g., perceptions of peer behaviors) on academic outcomes. Research in this area suggests the value of using the measurement of responses from peers themselves to understand better the possible effects of peer influences on adolescent behaviors (Ryan 2000). The following section uses friends’ own reports of academic achievement and college expectations to assess the influence of goal-oriented peers.14

---

14 Because peer academic achievement and peer college expectations were highly correlated I created a measure that presents a scale of academically goal-oriented peers.
5.4.1. Effects of School on Academically Goal-Oriented Peers

This section treats the college expectations and achievement of peers as outcomes, which I call the goal orientations of peers. I use a two-level hierarchical linear model (briefly described in section 5.3.1). Unlike in the binominal model with the Bernoulli distribution, in the current hierarchical linear model the residual variance \( \sigma^2 \) is separated into variance at the individual-level \( \sigma^2 \), and variance that is constant across individuals within a school, but random across schools \( \sigma^2 \). The standard errors produced by this approach allow for significance tests at the school level and the individual level.

In this part of the chapter, before I examine whether positive peer networks affect adolescent college expectations net of individual-level controls (section 5.4.2), I first want to test whether there is significant variation between schools in exposure to goal orientations of peers. In the unconditional hierarchical linear model, with the continuously measured outcome of positively goal-oriented peers (ranging from 0-8), the overall variance is partitioned into the individual-level and school-level variance. The results indicate that although the variation within schools \( \sigma^2 = .148 \) is greater than between schools \( \tau_{00} = .024 \), there is nonetheless significant variation between schools in exposure to goal-oriented peers. Thus, the variance between schools is \( \hat{p} = \tau_{00} / (\tau_{00} + \sigma^2) \) 14 percent (see Table 5.4.1-1, Model 1). This is evidence of notable variation across schools in exposure to positive peer networks. Net of individual-level controls, Table 5.4.1-1 examines the school characteristics that have been linked to adolescent educational achievement and expectations. These characteristics are tested now for their effects on academic goal orientations of peers.
The second model presents the main effects of school measures on peer college expectations without any individual-level controls. Although the effects of classroom size and dropout rate are small, they are associated with educational goal orientation among peers. The negative associations indicate that, as expected, lower rates of high school dropouts and smaller classes increase expectations among peers. Similar to the findings for adolescents’ college expectations, school-SES is positively associated with goal-oriented peers. After adding the school-level effects into the model, the variance for peer networks declines. Thus, about 42 percent of the variance in goal-oriented peers across schools is explained by classroom size, the propensity of youth leaving school before finishing 12th grade, and schools’ socioeconomic status. This is a substantial change.

The final model tests the hypothesis that school-level characteristics are associated with exposure to goal-oriented peers, net of individual-level controls. Even with, controls for adolescents’ gender, age, ethnicity, self-esteem, achievement, school attendance, and parents’ socioeconomic status, and family structure, the school-level characteristics are significant. This supports Hypothesis 4. About 46 percent of the variance in positive peer exposure across schools is explained. As Model 3 indicates, the ‘explained variance’ between schools results from the inclusion of the combined effects of school attributes and in the presence of compositional effects.

With the compositional effects included in the model, gender differences remain, with males being less likely than females to have goal-oriented peers. As noted previously, adolescents’ academic achievement and youth’s high levels of self-esteem are positively

\[ \text{explained variance} = \frac{\tau_{00(1)} - \tau_{00(2)}}{\tau_{00(1)}} \]
associated with goal-oriented peers. In addition, parents’ socioeconomic background positively affects goal-oriented peers. In contrast, adolescents’ individual negative behaviors, such as skipping classes, do not affect goal orientations of peers.

This supplemental analysis extends our understanding. Consistent with my theoretical framework, it shows that adolescents attending schools with lower dropout rates, smaller classes, and higher socioeconomic status are also more likely to have friends with higher academic orientations.
Table 5.4.1-1 Two-Level Hierarchical Linear Model Predicting Exposure to Academically Goal-Oriented Peers

<table>
<thead>
<tr>
<th>Model</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>6.086***</td>
<td>6.110***</td>
<td>6.149***</td>
</tr>
<tr>
<td><strong>School-Level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>–</td>
<td>-.007*</td>
<td>-.010**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.003)</td>
<td>(.004)</td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>–</td>
<td>-.008**</td>
<td>-.008**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.004)</td>
<td>(.004)</td>
</tr>
<tr>
<td>Average Socioeconomic Status</td>
<td>–</td>
<td>.248***</td>
<td>.187***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.034)</td>
<td>(.045)</td>
</tr>
<tr>
<td><strong>Individual-Level Controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>–</td>
<td>–</td>
<td>.003</td>
</tr>
<tr>
<td>Male a</td>
<td></td>
<td>–</td>
<td>-.045**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.016)</td>
</tr>
<tr>
<td>Hispanic b</td>
<td></td>
<td>–</td>
<td>-.002</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.037)</td>
</tr>
<tr>
<td>African American b</td>
<td></td>
<td>–</td>
<td>-.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.023)</td>
</tr>
<tr>
<td>Asian b</td>
<td></td>
<td>–</td>
<td>.103***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.026)</td>
</tr>
<tr>
<td>Other b</td>
<td></td>
<td></td>
<td>-.016</td>
</tr>
<tr>
<td>Parent Socioeconomic Status</td>
<td>–</td>
<td>–</td>
<td>.011**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.030)</td>
</tr>
<tr>
<td>Adolescent Self-Esteem</td>
<td>–</td>
<td>–</td>
<td>.027**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.012)</td>
</tr>
<tr>
<td>Adolescent GPA</td>
<td></td>
<td>–</td>
<td>.036***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.011)</td>
</tr>
<tr>
<td>Skipping School</td>
<td></td>
<td>–</td>
<td>-.010</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.012)</td>
</tr>
<tr>
<td>Two Parent Family c</td>
<td></td>
<td>–</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.021)</td>
</tr>
<tr>
<td>$\sigma^2$</td>
<td></td>
<td>.148***</td>
<td>.147***</td>
</tr>
<tr>
<td>$\tau_{00}$</td>
<td>.024</td>
<td>.014</td>
<td>.013</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001 (two-tailed)

a Compared to the “female” category; b compared to the “white Non-Hispanics” category; c compared to the “single parent families” category (e.g., single mother families and single father families)

*Note: Standard deviations are shown in parentheses.*
5.4.2. Effects of Peer Networks

The previous section examined school-level effects on goal-oriented peers. This section investigates the ability of these goal-oriented peers to account for school characteristics on expectations. The results in Model 1, Table 5.4.2-1, show the effects of school characteristics on adolescent college expectations, net of individual-level controls. Since the results for this model have been presented in section 5.3.1 in Model 4, I begin the review of results with the second model.

Model 2 adds the network-based measures of peer behaviors to determine whether these account for any observed school effects. This model tests the hypothesis that exposure to peer behavior will mediate some part of the association between school-level characteristics and youths’ college expectations [Hypothesis 5]. Including the peer network characteristic reduces the contextual effect of high school dropouts to non-significance. The measure of goal-oriented peers reduces the coefficient for high school dropout by almost 16 percent \((-0.032) \div (-0.027)\). The coefficient for school SES is reduced by about 5 percent. School SES remains significantly associated with adolescents’ college expectations in spite of the presence of network-based peer characteristics. Still, these results support the idea that school affluence is associated with prosocial peer behavior, in part because it provides greater opportunities for youth to associate with more academically motivated peers. Consistent with previous findings, goal-oriented peers \(1.39 = e^{332}\) increase adolescent college expectations (Haynie et al. 2006). Adolescents who expect to attend college are more likely academically motivated and may select friends with similar qualities. In contrast, the association between exposure to negative
peer behavior (e.g., skipping school) and adolescents’ college expectations lacks significance. An adolescent who is part of an educationally resourceful and encouraging school environment may be well connected to prosocial peer networks and thus the effects of the negative peer behaviors may be minor in more affluent schools. In these school environments, teachers, school administrators, other students, and parents likely facilitate the successful socialization of adolescents by promoting conventional group norms and behaviors that compensate for negative peer behaviors.

Overall, these results suggest that school SES is associated with adolescents’ college expectations and that this association is in part mediated by exposure to goal-oriented peers, thus supporting Hypothesis 5.
Table 5.4.2-1 Binary HLM Random Intercept Models Predicting Adolescents’ College Expectations

<table>
<thead>
<tr>
<th>Model</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School-Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>-.031 (.016)</td>
<td>-.040 (.013)</td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>-.032** (.015)</td>
<td>-.027 (.025)</td>
</tr>
<tr>
<td>Average Socioeconomic Status</td>
<td>.693*** (.200)</td>
<td>.660*** (.177)</td>
</tr>
<tr>
<td><strong>Peer Networks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer Goal Orientation</td>
<td></td>
<td>.332*** (.019)</td>
</tr>
<tr>
<td>Peer Skipping School</td>
<td></td>
<td>-.173 (.203)</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td>.129*** (.047)</td>
<td>.203*** (.051)</td>
</tr>
<tr>
<td>Age</td>
<td>-.574*** (.122)</td>
<td>-.442*** (.144)</td>
</tr>
<tr>
<td>Male (\text{a} )</td>
<td>-.163 (.220)</td>
<td>-.113 (.216)</td>
</tr>
<tr>
<td>Hispanic (\text{b} )</td>
<td>.036 (.207)</td>
<td>.046 (.234)</td>
</tr>
<tr>
<td>African American (\text{b} )</td>
<td>.505** (.207)</td>
<td>.243 (.234)</td>
</tr>
<tr>
<td>Asian (\text{b} )</td>
<td>-.386 (.531)</td>
<td>-.318 (.547)</td>
</tr>
<tr>
<td>Other (\text{b} )</td>
<td>.302*** (.068)</td>
<td>.231 (.080)</td>
</tr>
<tr>
<td>Adolescent Self-Esteem</td>
<td>.681*** (.077)</td>
<td>.472*** (.078)</td>
</tr>
<tr>
<td>Adolescent GPA</td>
<td>-.493*** (.106)</td>
<td>-.574*** (.101)</td>
</tr>
<tr>
<td>School Attachment</td>
<td>.269*** (.060)</td>
<td>.163 (.059)</td>
</tr>
<tr>
<td>Parental Attachment</td>
<td>.267*** (.064)</td>
<td>.188 (.073)</td>
</tr>
<tr>
<td>Parents’ Socioeconomic Status</td>
<td>.208*** (.029)</td>
<td>.154*** (.037)</td>
</tr>
<tr>
<td>Parents’ Educational Expectations</td>
<td>.609*** (.040)</td>
<td>.615*** (.057)</td>
</tr>
<tr>
<td>Two Parent Family (\text{c} )</td>
<td>.267 (.176)</td>
<td>.313 (.172)</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.667***</td>
<td>1.792***</td>
</tr>
<tr>
<td>(\tau_{00} )</td>
<td>.217***</td>
<td>.218***</td>
</tr>
</tbody>
</table>

\( p < .05, \quad **p < .01, \quad ***p < .001 \) (two-tailed); Standard deviations are shown in parentheses.

\( \text{a} \) Compared to the “female” category; \( \text{b} \) compared to the “white Non-Hispanics” category; \( \text{c} \) compared to the “single parent families” category (e.g., single mother families and single father families)
5.4.3. Cross-Level Interaction Models

The findings in sections 5.3.1 and 5.4.2 indicate that school-level SES, the presence of high school dropouts, and exposure to academically goal-oriented peers are associated with adolescents’ college expectations.

Although the results of school-level characteristics suggest direct effects on adolescents’ college expectations, and although individual-level demographic indicators suggest a difference by gender, the effect of this gender difference on the association between school and college expectations is not explained through these models. Similarly, while the findings of peer networks suggest modest mediating effects on adolescents’ college expectations, we have not determined the conditions under which the goal-oriented peers exert their effects on the association between schools and adolescent’s own educational expectations. A test for interaction effects may provide further insight.

Thus, in this section, I examine the interaction effects of school context with background compositional variables such as gender on adolescent college expectations, as well as the interaction of school context with exposure to peer behaviors on these expectations. I hypothesized [Hypothesis 3] that school characteristics have an effect on expectations but that the effect is contingent on gender\textsuperscript{16}. Table 5.4.3-1, sections A and B present the relevant results. Section C then examines interaction effects between school characteristics and peer network behaviors on adolescent expectations, testing Hypothesis 6.

\textsuperscript{16} In addition to gender, I also examined random effects models of race/ethnicity and interaction effects of school context with adolescents’ race/ethnicity. However, the preliminary results showed no significant random effects or cross-level effects. Therefore, these analyses are not presented in this dissertation.
The previous sections of this chapter involved estimations of two model structures. First, random intercept models examined school-level characteristics and network-based characteristics of peers on youths’ college expectations. In addition, random coefficient models examined the potential presence of group differences (i.e., males versus females). The school-level model (section 5.3.1) indicated a significant slope for gender. I now examine the interactions of gender and school-level SES as well as gender and school-level percentage of high school dropouts on adolescents’ college expectations. These are cross-level interactions (Snijders and Bosker 1999).

Initial findings from the random coefficient models show that the slope of gender significantly differs across schools; thus, I examine school characteristics that account for different outcomes by gender. The school-level measures are grand-mean centered and the individual-level measures are grand mean centered, except for the dichotomous variables (see also Raudenbush and Bryk 2002). The combined model with the interaction of gender and school-level SES is:

\[ \eta_{ij} = \gamma_{00} + \gamma_{01} \cdot \text{ClassSize}_j - \text{ClassSize}_{..} + \gamma_{02} \cdot \text{Dropout}_j - \text{Dropout}_{..} + \gamma_{03} \cdot (\text{MSSES}_j - \text{MSSES}_{..}) + \gamma_{10} \cdot (\text{Age}_{ij} - \text{Age}_{..}) + \gamma_{20} \cdot \text{Male}_{ij} + \gamma_{21} \cdot (\text{MSSES}_j) \cdot \text{Male}_{ij} + \gamma_{30} \cdot \text{Hispanic}_{ij} + \gamma_{40} \cdot \text{Black}_{ij} + \gamma_{50} \cdot \text{Asian}_{ij} + \gamma_{60} \cdot \text{Other}_{ij} + \gamma_{70} \cdot (\text{PSES}_j - \text{PSES}_{..}) + \gamma_{80} \cdot (\text{Par exp}_j - \text{Par exp}_{..}) + \gamma_{90} \cdot (\text{sskip}_{ij} - \text{sskip}_{..}) + \gamma_{100} \cdot (\text{schoolattach}_{ij} - \text{schoolattach}_{..}) + \gamma_{110} \cdot (\text{Grade}_{ij} - \text{Grade}_{..}) + \gamma_{120} \cdot (\text{Parcare}_{ij} - \text{Parcare}_{..}) + \gamma_{130} \cdot \text{Twopar}_{ij} + u_{0j} + u_{2j} \cdot \text{Male}_{ij} \]
This model (Model 5) estimates the effects on college expectations with the Bernoulli distribution and a logit function, the interaction between MSSES*Male including the random slope of Male ($u_{2j} * \text{Male}_j$).

Section A of Table 5.4.3-1 presents the interaction effect of school SES and gender on adolescents’ college expectations. Model 1 in section A and B is identical to Model 5 of Table 5.3.1-1. In Model 2, results show a significant cross-level effect; the interaction between school SES and gender is very strong [$\exp (.816) = 2.26$], indicating that gender in conjunction with school SES is associated with a large increase in college expectations. More specifically, this finding suggests that males benefit more than females in terms of college expectations from being in higher socioeconomic status schools. Graphing this relationship, Figure 5.4.3-1 illustrates that females tend to have higher college expectations than males overall. However, the college expectations of females are relatively stable across school-level SES while male expectations rise to approximate parity with female expectations in high SES schools.

Section B of Table 5.4.3-1 tests the cross-level interaction of gender and high school dropout rate on college expectations. There is a modestly significant and small negative cross-level effect. In this case, the interaction between the propensity of high school dropouts and adolescents’ educational outcome is [$\exp(-.050) = .95$]. This indicates that college expectations for males are slightly more likely to decline in school environments with lower percentages of students leaving high school before completion. In contrast, girls’ expectations are less likely to be affected by school-level dropout rates (Figure 5.4.3-2)

Results of previous studies provide no consensus for effects of gender differences on college expectations. Some have argued in connection with race/ethnicity that males’ schooling
is more harmfully affected by disadvantaged social circumstances (Sewell, Haller, and Ohlendorf 1970; Sewell, Haller, and Portes 1969). In particular, African American males have lower documented achievements in urban schools compared to those in other types of school settings (Davis and Jordan 1994). In contrast, others indicate that girls’ educational achievement and expectations are more affected by their immediate environments (Kiuru et al. 2007; Wilson and Wilson 1992). The current results suggest that the effects of school structure and quality differ notably for adolescent boys. Hence, the long-term educational effects of attending a higher SES school appear to be significantly more beneficial for males than for females. Similarly, schools having more youth leaving high school before graduating modestly affects male adolescents’ college expectations whereas the factor has no effect on girls’ college expectations. Thus, these results are in agreement with research on neighborhood effects and gender contingencies. That is, males’ educational outcomes are negatively affected by disadvantaged settings (e.g., high dropout rates) (Connell and Halpern-Felsher 1997). More studies are needed to confirm the gendered effects on college expectations.

Section C of Table 5.4.3-1 examines the cross-level interaction of school SES and exposure to goal-oriented peers on college expectations. Model 1 tests for random effects of prosocial peer behavior before testing the cross-level interactions in Model 2. While the random slope for exposure to goal-oriented peers is significant, results in Model 2 show no significant moderating effects of peers on the association between school SES and college expectations. Thus, the prediction of potential cross-level effects between peer networks and school SES on expectations is not supported (Hypothesis 6).
Contrary to the tenets of the theory of social capital involving peer relations, friendships do not dramatically moderate adolescents’ college expectations. Adolescents do well if they attend affluent schools in which they experience attention and guidance from a variety of role models such as teachers, school administrators, and other parents. Nevertheless, peers are still significant for adolescents’ educational progress, mediating some part of negative school quality. Adolescents and peers are both affected by the structure and quality of the school environment. These results indicate that efforts to foster adolescents’ educational goals and academic progress can focus most successfully on enhancing the resources and overall quality of less advantaged schools.
Table 5.4.3-1 Cross-Level Interaction Models of School Characteristics, Gender, and Peer Network Attributes on Adolescents’ College Expectations

<table>
<thead>
<tr>
<th>Model</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Interaction Effects between Gender and Average School SES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
<td>1.663***</td>
<td>1.658***</td>
</tr>
<tr>
<td><strong>School-Level Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>-.030†</td>
<td>-.029†</td>
</tr>
<tr>
<td>(.016)</td>
<td>(.016)</td>
<td></td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>-.033**</td>
<td>-.032**</td>
</tr>
<tr>
<td>(.015)</td>
<td>(.015)</td>
<td></td>
</tr>
<tr>
<td>Average School SES</td>
<td>.681***</td>
<td>.628***</td>
</tr>
<tr>
<td>(.195)</td>
<td>(.181)</td>
<td></td>
</tr>
<tr>
<td><strong>Person-Level Measure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male^a</td>
<td>-.584***</td>
<td>-.545***</td>
</tr>
<tr>
<td>(.138)</td>
<td>(.132)</td>
<td></td>
</tr>
<tr>
<td><strong>Interaction of:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender * Average School SES</td>
<td></td>
<td>.816**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.405)</td>
</tr>
<tr>
<td><strong>B. Interaction Effects between Gender and High School Dropout Rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
<td>1.663***</td>
<td>1.663***</td>
</tr>
<tr>
<td><strong>School-Level Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>-.030</td>
<td>-.030</td>
</tr>
<tr>
<td>(.016)</td>
<td>(.016)</td>
<td></td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>-.033**</td>
<td>-.032**</td>
</tr>
<tr>
<td>(.015)</td>
<td>(.014)</td>
<td></td>
</tr>
<tr>
<td>Average School SES</td>
<td>.681***</td>
<td>.680***</td>
</tr>
<tr>
<td>(.195)</td>
<td>(.195)</td>
<td></td>
</tr>
<tr>
<td><strong>Person-Level Measure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male^a</td>
<td>-.584***</td>
<td>-.582***</td>
</tr>
<tr>
<td>(.138)</td>
<td>(.138)</td>
<td></td>
</tr>
<tr>
<td><strong>Interaction of:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender * High School Dropout Rate</td>
<td></td>
<td>-.050†</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.046)</td>
</tr>
</tbody>
</table>
C. Interaction Effects between Goal-Oriented Peers and Average School SES

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>1.798***</td>
<td>1.798***</td>
</tr>
<tr>
<td><strong>School-Level Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>-.039</td>
<td>-.039</td>
</tr>
<tr>
<td></td>
<td>(.013)</td>
<td>(.013)</td>
</tr>
<tr>
<td>High School Dropout Rate</td>
<td>-.027</td>
<td>-.028</td>
</tr>
<tr>
<td></td>
<td>(.025)</td>
<td>(.025)</td>
</tr>
<tr>
<td>Average School SES</td>
<td>.651***</td>
<td>.658***</td>
</tr>
<tr>
<td></td>
<td>(.171)</td>
<td>(.174)</td>
</tr>
<tr>
<td><strong>Peer Networks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academically Goal-Oriented Peers</td>
<td>.336***</td>
<td>.336***</td>
</tr>
<tr>
<td></td>
<td>(.021)</td>
<td>(.021)</td>
</tr>
<tr>
<td>Skipping School</td>
<td>-.185</td>
<td>-.187</td>
</tr>
<tr>
<td></td>
<td>(.215)</td>
<td>(.215)</td>
</tr>
<tr>
<td><strong>Interaction of:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal-Oriented Peers * Average School SES</td>
<td>_</td>
<td>-.080</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.070)</td>
</tr>
</tbody>
</table>

*p < .10, *p < .05, **p < .01, ***p < .001 (two-tailed)*

*a The reference category for this person-level is female.

*Note: All interaction models control for the individual-level characteristics selected in previous models.*
The average school SES is grand mean centered, thus, larger negative values refer to lower levels of school SES and positive values refer to higher levels of school SES.
Figure 5.4.3-2 The Cross-Level Interaction between Gender and School High School Dropout Rate on Adolescents’ College Expectations

---

18 Percentage of high school dropouts is grand mean centered.
5.5. Summary

The two-level hierarchical models tested in this chapter indicate school-level and peer network effects on college expectations. Random intercept models indicate strong effects of school SES on expectations. There are also cross-level interactions indicating gender differences involving school environments. I also examined possible mediational effects of peer networks on adolescent expectations and cross-level interactions between peer networks and school environments. I presented evidence that school SES is associated with having goal-oriented peers. Overall, the findings indicate the importance of positive and affluent school environments for adolescents’ expectations about college attendance.
6.1. Introduction

This dissertation examined the effects of school-level characteristics and network-based peer behaviors on adolescents’ college expectations. The aim of this final chapter is to examine the current findings in comparison to the existing literature in this area. I also discuss methodological aspects of this research. Further, I consider the potential strength and limitations of this dissertation research and propose future research directions.

6.2. Review of Findings

This dissertation research provides insights into the relationships among school structure, climate, peer networks, and adolescents’ college expectations. While previous studies have demonstrated that peers or schools are associated with various educational outcomes, few
studies have focused simultaneously on the connections between school context, peer networks, and adolescents’ college expectations.

While the descriptive results of this research on adolescents show lower educational expectations for males than for females, adolescents overall are optimistic about their prospects of attending college. This could partly be due to increasing parental encouragement, irrespective of parents’ educational and socioeconomic positions. Furthermore, in a globalizing economy, competition for jobs is becoming more salient and thus the completion of a college degree is increasingly a requirement for occupational success. Although parental background and students’ own individual-level characteristics are important determinants of children’s overall success, a variety of previous contextual-level studies also provide evidence of neighborhood and/or school characteristics associated with adolescents’ educational and behavioral development (Frost 2007; Haynie et al. 2006; Raudenbush and Bryk 2002).

The findings of my research show that, with increases in school SES, the likelihood of intending to go to college increases. More specifically, the relationship between high SES school environments and the intention of attending college was moderated by gender. That is, being male or female plays a role in the differences observed for youth’s expectations. High SES schools are more beneficial for the college expectations of males than for females.

Successful socialization involves the monitoring and role modeling of adults who promote optimism among youth about their educational futures. The school is the environment in which adolescents establish wider social relationships, obtain social support, social capital, and achievement gratification. A supportive school environment and positive achievement expectations potentially help to protect an individual from academic failure and behavioral
problems. In contrast, schools that are lower in status negatively affect adolescents’ college expectations.

The significant influence of adult role models in affluent schools is not surprising, but this finding reinforces the importance of school structure and the social relationships that evolve in such environments. Nevertheless, to disentangle the mechanisms within these high SES schools, more research is needed.

Peers are influenced similarly by affluent school environments. Especially high-SES schools produce more goal-oriented peers. Adolescents who expect to attend college are more likely to be affiliated with prosocial peer networks. Overall, the HLM models show that, the average exposure of goal-oriented peers has a moderate positive effect on adolescents’ college expectations.

I also examined cross-level interactions between schools and peers. The results indicate that prosocial peer network characteristics in connection with college expectations have mediating but not moderating effects on adolescents’ individual goal setting.

This dissertation research indicates contrasting results for peer networks when compared to the results of earlier studies on educational expectations. Previous studies of educational expectations do not account for effects of actual peer network responses and thereby may have overestimated the strength of adolescent-peer-education relationship by using only respondents’ perceptions.

The Add Health data on school-based peer networks indicate that peers who attend the same school tend to have similar goal orientations, or are exposed to prosocial peers who positively affect adolescents’ own expectations. Peer networks are based on adolescents’
friendship formations and this suggests that adolescents with college expectations tend to be affiliated with friends who seek similar future goals.

Overall, the findings confirm that schools can promote and encourage more positive functioning and future expectations in students than just individual, family, or peer network predictors alone. These results reinforce assumptions concerning school socialization, with schools serving as socializing agents that provide resources and educational encouragement that are crucial for adolescents’ developmental and long-term goal trajectories.

6.3. Methodological Issues

An issue of great concern and recurrence when examining multilevel models is the procedure and sequence of testing the effects of the variables of interest on the outcome in question. In view of my interest in contextual-level effects and peer networks, I tested these measures first by themselves to receive a sense of their magnitude on college expectations. The individual-level controls where added into the models afterward. Although research is guided by stated questions and hypotheses, there is no certainty about the correct step-by-step analytical procedure. For instance, Snijder and Bosker (1999) comment that “given one data set, a researcher (let alone two researchers) may come up with more than one model, each seeming in itself a satisfactory result of a model specification process. In our view, this reflects the basic indeterminacy that is inherent to model fitting on the basis of empirical data. It is
possible that several different models correspond to a given data set, and that there are no compelling arguments to choose between them. In such case, it is better to accept the indeterminacy and leave it to be resolved by further research than to make an unwarranted choice between the different models” (pp. 97-98).

The model specifications in this study were guided by the main interest in contextual-level effects and the effects of exposure to peer network goals. Thus, my hypotheses determined the sequence of model building and the types of models I applied.

Another important issue involves the measures of school-level effects and peer networks. The majority of my school-level measures are selected from school administrator documentations; an exception is school socioeconomic status. In preliminary analyses, I tested a variety of school-level characteristics used in existing studies of achievement or educational expectations. Measures that did not provide meaningful results for college expectations were eliminated from the final analyses.

6.4. Potential Limitations of the Study

There are several limitations of this research. In spite of the significant findings of school-level characteristics, the majority of school-level effects, except school SES, show only small to modest effects on college expectations. As in neighborhood research, there is always the risk that endogeneity potentially accounts for the observed school effects. Furthermore, the analysis
of cross-sectional data requires caution when making assumptions about causality. It may be the most cautious approach is to consider these results as baseline information intended to serve as a reference for future research. The current results provide information about the effects of peer networks and school-level characteristics on students’ educational goals.

6.5. Directions for Future Research

Although research in the area of neighborhood and school effects expanded rapidly over the last decade, studies that examine exposure to peer networks in the presence of school-level characteristics are still infrequent. This dissertation research aimed to answer some of the questions about contextual-level influences on college expectations; however, a great deal of work remains. Future studies of educational expectations should account for longitudinal change and examine peer networks and other social contexts concurrently and across time.

Longitudinal Study of Educational Expectations

As the descriptive results show, there are gender differences and modest age differences in adolescent college expectations. These differences are notable during the early high school
years when compared to the senior years of high school. In future research I want to examine the trajectories of educational expectations from early childhood through late adolescence to investigate the potential effects of ‘replacement’ between multiple contextual-level and peer network characteristics. That is, it is likely that family characteristics are replaced by school attributes and peer networks when students enter high school. Variation in educational expectations throughout adolescence may also be due to changes in relationships with peers.

The growth curve approach to predict adolescent trajectories of college expectations is problematic with the Add Health data for structural and stochastic reasons (Singer 2003). However, it is possible to take advantage of the accelerated cohort design of Add Health to model the effect of age. Add Health collected information on expectations in two waves that were only one year apart.19 Hence, the growth changes that can be examined, of course, represent only cross-sectional comparisons instead of true longitudinal trajectories. For stochastic reasons involving the variance and covariance components of the growth curve model, my preliminary analyses pointed to problems of non-convergence of the estimated models or zero variance components. These are typical indicators of not having enough within-person information to estimate the variance components. Being limited to estimating random effects of time20 for the intercept but not for the slope does not reveal the true potential that growth curve models have to offer. Thus, different longitudinal data with longer time spans between waves, or with multiple waves beyond just two, are needed to examine the trajectories of college expectations appropriately and constructively.

19 The survey collection began in 1994-1995 for the first wave, though the majority of adolescents in my analytical sample were interviewed in 1995 in wave I and 1996 in wave II, providing only twelve months between interviews.
20 In this case, the predictor of change in expectations would be associated with adolescents’ ages.
Study of Peer Networks

In my conceptual models, school-based peer networks are treated as individual-level predictors. Future studies should consider whether and how these network characteristics could be integrated into models that have adolescents embedded, for instance, within peer networks and within schools. An approach that would consider these multiple contexts would allow for predictions about school-level characteristics in determining how prominent peer networks are for adolescents’ educational goal development. Possible approaches to explore would include three-level models or cross-classified models. This was not possible with the current data framework. Thus, there remains the need for future research to create contextual-level peer measures and to examine their effects on various youth behaviors and educational outcomes.

Schools and Neighborhoods

An area that still needs further clarification involves disentangling the effects of school and neighborhood contexts. I argue that schools are more appropriate for the study of college expectations, with further analysis of school-based peer networks. Although various studies provide evidence of the importance of neighborhood characteristics or school-level attributes separately, I suggest that instead of focusing on which social context is more prominent over

---

21 These models allow for testing the nesting of adolescents for example, adolescents are nested within schools and within peer networks in which peer networks and schools are crossed with each other. Thus, a potential analysis of expectations may examine expectations with adolescents nested in these cross-classifications of both, schools and peer networks or neighborhoods.
the other, future research should address how context is relevant throughout adolescence and early adulthood.

It seems likely that school effects and neighborhood characteristics work through social networks, while also being contingent on social class and potentially other individual-level demographic factors.

**Potential Practical Implications**

Attention should be focused on addressing contextual impediments that prevent youth who live in poor communities and attend less advantaged schools from reaching their goals. Comprehensive efforts at improving adolescents’ educational success should include minimizing the structural barriers between low SES students and access to affluent schools, including the lack of academic preparation and insufficient financial resources. My findings suggest that it is necessary to reduce the economic disadvantage of students and to provide learning environments that foster adolescents’ educational attainment and future goals.

Policies and programs designed to enhance adolescents’ educational expectations, in particular for young males, are likely to benefit from addressing the contextual factors that undermine youths’ expectations in addition to their personal beliefs and attitudes.
6.6. Conclusions

The findings of this dissertation research add to the overall research on contextual-level effects and peer networks effects on adolescents’ behaviors, educational outcomes, and in particular college expectations. I used hierarchical models to examine the effects of school-level characteristics and school-based peer networks on adolescents’ college expectations and the extent of goal-oriented peers. Theoretical assumptions concerning school socialization and peer social capital help to explain the relationship between contextual-level characteristics and college expectations in the presence of individual-level control variables. Contingencies of gender provide evidence of moderating effects between school context and expectations, particularly affecting adolescent boys.

In addition, findings show that adolescents who expect to attend college are associated with peers who share similar goals. Schools function as socializing agents in promoting social norms and values, important for adolescents’ success. Adolescents who are part of an educationally resourceful and encouraging school environment are more likely connected to prosocial peer networks and thus effects of negative peer behaviors are reduced in affluent schools. In affluent schools, teachers, school administrators, and goal-oriented peers likely facilitate the successful socialization of adolescents by promoting conventional group norms and behaviors that potentially compensate for negative peer behaviors.

These are significant findings, because they suggest that the school structure and to some extent the school climate play an important role over and above individual-level
characteristics in how adolescents plan their future education. These influences, moreover, may have long-term consequences for their future life trajectories.

This research reconfirms that context-level orientated studies should take into account the multiple characteristics of social environments to constructively evaluate the effects on various adolescent behaviors. Contextual-level effects should not be assumed to exist separately. This study provides support for research on adolescent behaviors in the presence of multiple contextual characteristics. In addition, this research also suggests the importance of analyzing the contingencies of gender and peers to evaluate and detect more effectively the implications of disparities of adolescents’ educational expectations.

The strength of this study is the measurement of school-context and network-based peer group indicators. The analytical models include an array of individual-level controls (i.e., family and adolescent characteristics), school factors, and peer-network indicators. Measures of individual-level characteristics were available for school context and peer networks, which enabled the examination of their influences on adolescents’ college expectations. This dissertation research also examined various effects models to assess the robustness of social context on adolescents’ goal setting.
REFERENCES


## APPENDIX

Table 5.3.1-1 Extension of table - Hierarchical Logistic Regression of School-Level Effects on College Expectations including the Individual-level Characteristics Separately

<table>
<thead>
<tr>
<th></th>
<th>Model</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School-Level Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Size</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>-.031</td>
<td>-.030</td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>-.032**</td>
<td>-.033**</td>
</tr>
<tr>
<td>Average Socioeconomic Status</td>
<td>–</td>
<td>–</td>
<td>.661**</td>
<td>.693***</td>
<td>.681***</td>
<td></td>
</tr>
<tr>
<td><strong>Indivdual-Level Controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>–</td>
<td>–</td>
<td>(.049)</td>
<td>(.048)</td>
<td>(.047)</td>
<td>(.047)</td>
</tr>
<tr>
<td>Male</td>
<td>–</td>
<td>-.595***</td>
<td>-.588***</td>
<td>-.574***</td>
<td>-.584***</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>–</td>
<td>-.178</td>
<td>-.181</td>
<td>-.163</td>
<td>-.170</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>–</td>
<td>.051</td>
<td>.027</td>
<td>.036</td>
<td>.041</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>–</td>
<td>.493**</td>
<td>.497**</td>
<td>.505**</td>
<td>.470**</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>–</td>
<td>-.343</td>
<td>-.378</td>
<td>-.386</td>
<td>-.374</td>
<td></td>
</tr>
<tr>
<td>Adolescent Self-Esteem</td>
<td>–</td>
<td>.317***</td>
<td>.313***</td>
<td>.302**</td>
<td>.302**</td>
<td></td>
</tr>
<tr>
<td>Adolescent GPA</td>
<td>–</td>
<td>.676***</td>
<td>.685***</td>
<td>.681***</td>
<td>.687***</td>
<td></td>
</tr>
<tr>
<td>Skipping School</td>
<td>–</td>
<td>-.491***</td>
<td>-.486***</td>
<td>-.493***</td>
<td>-.496***</td>
<td></td>
</tr>
<tr>
<td>School Attachment</td>
<td>–</td>
<td>.288***</td>
<td>.286***</td>
<td>.269***</td>
<td>.277***</td>
<td></td>
</tr>
<tr>
<td>Parental Attachment</td>
<td>–</td>
<td>.283***</td>
<td>.275***</td>
<td>.267***</td>
<td>.267***</td>
<td></td>
</tr>
<tr>
<td>Parents’ Socioeconomic Status</td>
<td>–</td>
<td>.210***</td>
<td>.211***</td>
<td>.208***</td>
<td>.210***</td>
<td></td>
</tr>
<tr>
<td>Parents’ Educational Expectations</td>
<td>–</td>
<td>.610***</td>
<td>.613***</td>
<td>.609***</td>
<td>.609***</td>
<td></td>
</tr>
<tr>
<td>Any Two Parent Family</td>
<td>–</td>
<td>.250</td>
<td>.250</td>
<td>.261</td>
<td>.264</td>
<td></td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
<td></td>
<td>1.067***</td>
<td>1.649***</td>
<td>1.689***</td>
<td>1.667***</td>
<td>1.663***</td>
</tr>
<tr>
<td><strong>τ_{00}</strong></td>
<td></td>
<td>.141***</td>
<td>.280***</td>
<td>.240***</td>
<td>.217***</td>
<td>.162***</td>
</tr>
<tr>
<td><strong>τ_{01}</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.817***</td>
</tr>
</tbody>
</table>

*Note: Standard deviations are presented in parentheses.

* p < .05, ** p < .01, *** p < .001 (two-tailed)