

RELATIONSHIPS BETWEEN FIRST-GENERATION COLLEGE-BOUND
STUDENTS' STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR
UNIVERSITY DIRECTLY AFTER HIGH SCHOOL AND THE ENGAGEMENT
FACTORS OF STUDENTS, THEIR PARENTS, AND THEIR PEERS

by

Barbara Anne Zuck

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Education

in

Education

MONTANA STATE UNIVERSITY

Bozeman, Montana

March, 2007

© COPYRIGHT

by

Barbara Anne Zuck

2007

All Rights Reserved

APPROVAL

of a dissertation submitted by

Barbara Anne Zuck

This dissertation has been read by each member of the dissertation committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the Division of Graduate Education.

Dr. Larry J. Baker

Approved for the Department of Education

Dr. Robert Carson

Approved for the Division of Graduate Education

Dr. Carl Fox

STATEMENT OF PERMISSION TO USE

In presenting this dissertation in partial fulfillment of the requirements for a doctoral degree at Montana State University, I agree that the Library shall make it available to borrowers under rules of the Library. I further agree that copying of this dissertation is allowable only for scholarly purposes, consistent with "fair use" as prescribed in the U.S. Copyright Law. Requests for extensive copying or reproduction of this dissertation should be referred to ProQuest Information and Learning, 300 North Zeeb Road, Ann Arbor, Michigan 48106, to whom I have granted "the exclusive right to reproduce and distribute my dissertation in and from microform along with the non-exclusive right to reproduce and distribute my abstract in any format in whole or in part."

TABLE OF CONTENTS

1.	INTRODUCTION TO THE STUDY	1
	Introduction.....	1
	Statement of the Problem.....	6
	Purpose of the Study	6
	Definition of Engagement Factors.....	7
	Student Engagement Factors.....	7
	Parent Engagement Factors.....	8
	Peer Engagement Factors.....	9
	Statement of the Hypothesis	9
	Theoretical Framework	9
	Research Question	14
	Significance of the Study.....	16
	Definition of Terms.....	17
	Limitations and Delimitations of the Study.....	21
	Research Structure	22
	Chapter Summary	25
2.	REVIEW OF RELATED LITERATURE	27
	Introduction.....	27
	Synthesis of the Literature	27
	Criteria for Selecting the Literature	27
	Statement of the Problem and Purpose of the Study.....	28
	Review of Previous Research, Findings, and Opinions.....	29
	Profile of First-generation Students.....	29
	Profile of At-risk Students	31
	Students' Educational Aspirations.....	35
	Early Postsecondary Planning.....	37
	Sources of College-related Information.....	43
	Description of Outreach Programs.....	49
	Influences on Students' Educational Aspirations	53
	Other Themes.....	59
	Academic Preparation: Mathematics Curriculum.....	59
	Critical Characteristics of Postsecondary	
	Undergraduate Students.....	61
	Career and Economic Impacts of College	65
	Review of the Methodologies used in Other Studies.....	67

Evaluation of the Literature	68
Overall Weaknesses of the Literature	68
Overall Strengths of the Literature	70
Gaps in the Literature.....	71
Saturation Points in the Literature	75
Avenues for Further Inquiry	76
Chapter Summary	76
3. METHODOLOGY	74
Introduction.....	78
Population Studied.....	78
Sampling Method.....	80
Variables	83
Dependent Variable	85
Independent Variables	86
Microsystem: Standardized Math and Reading Composite Test Score	86
Microsystem: Checking of School Work.....	86
Microsystem: Offering Advice about Academics.....	88
Microsystem: Financial Savings for the Tenth Grade Child's Postsecondary Education.....	89
Microsystem: Educational Aspirations for the Tenth Grade Child: Attend Some College/No Degree.....	90
Microsystem: Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher.....	91
Mesosystem: Participation in Extra-curricular Activities.....	92
Mesosystem: Use of Resources for College Entrance Requirements.....	93
Mesosystem: PSAT/PACT Plans in Grade 10.....	94
Mesosystem: PSAT/PACT Plans in Grade 11.....	94
Mesosystem: PSAT/PACT Plans in Grade 12.....	95
Mesosystem: SAT/ACT Plans in Grade 10	96
Mesosystem: SAT/ACT Plans in Grade 11	97
Mesosystem: SAT/ACT Plans in Grade 12	98
Mesosystem: AP Test Plans in Grade 10.....	99
Mesosystem: AP Test Plans in Grade 11	100
Mesosystem: AP Test Plans in Grade 12.....	101
Mesosystem: Participation in an AP Program	102
Mesosystem: Participation in a College Preparation Program	103
Mesosystem: Importance of Schooling Among Friends.....	103
Exosystem: Use of a Computer for Learning	105
Macrosystem: Students' Socioeconomic Status	106

Confounding Variables	107
Level of Parental Education	107
High School Location	108
High School Type	109
Design Variables	110
Instrumentation	110
NCES ELS:2002 Reading and Mathematics Assessment Test.....	111
NCES ELS:2002 Base Year Student and Parent Questionnaires	111
NCES ELS:2002 Base Year Student Questionnaire (2002)	113
NCES ELS:2002 Base Year Parent Questionnaire (2002)	113
Data Collection	114
Analysis.....	115
Description of Logistic Regression.....	115
Why Logistic Regression was Chosen for this Study	116
Description of Stepwise Logistic Regression	118
Why Backward Stepwise Logistic Regression was Chosen for this Study.....	119
Data Analysis	121
Limitations and Delimitations of the Study	123
Chapter Summary	124
4. RESULTS	126
Introduction.....	126
Foundations of Data Analysis.....	129
Results of the Data Analysis.....	131
Overall Results: Student, Parent, and Peer Engagement Factors.....	131
Question 1A Results	134
Question 1C.1: Highest Level of Students' Parental Education: Did Not Finish High School	135
Student Engagement Factors.....	138
Use of Resources for College Entrance Requirements	138
SAT/ACT Plans in Grade 11	138
Peer Engagement Factor	138
Importance of Schooling Among Friends.....	138
Question 1C.1 Summary	139
Question 1C.2: Highest Level of Students' Parental Education Graduated from High School or Obtained a GED	139

Student Engagement Factors.....	142
Standardized Math and Reading Composite Test Score.....	142
Participation in Extra-curricular School Activities.....	142
PSAT/PACT Plans in Grade 10.....	143
PSAT/PACT Plans in Grade 11.....	143
SAT/ACT Plans in Grade 10.....	144
SAT/ACT Plans in Grade 11.....	144
Participation in an AP Program.....	145
Parent Engagement Factors.....	145
Educational Aspirations for the Tenth Grade Child:	
Graduate from College with a BA/BS Degree or Higher.....	145
Peer Engagement Factor.....	146
Importance of Schooling Among Friends.....	146
Question 1C.2 Summary.....	146
Question 1C.3: Highest Level of Students' Parental Education	
Attended a 2-year School/No Degree.....	147
Student Engagement Factors.....	150
Standardized Math and Reading Composite Test Score.....	150
Use of a Computer for Learning.....	150
Use of Resources for College Entrance Requirements.....	151
PSAT/PACT Plans in Grade 10.....	151
PSAT/PACT Plans in Grade 11.....	152
SAT/ACT Plans in Grade 11.....	152
AP Test Plans in Grade 10.....	152
AP Test Plans in Grade 11.....	153
AP Test Plans in Grade 12.....	153
Parent Engagement Factors.....	154
Offering Advice about Academics.....	154
Educational Aspirations for the Tenth Grade Child:	
Graduate from College with a BA/BS Degree or Higher.....	154
Peer Engagement Factor.....	155
Importance of Schooling Among Friends.....	155
Question 1C.3 Summary.....	155
Question 1C.4: Level of Students' Parental Education	
Graduated from a 2-year School.....	156
Student Engagement Factors.....	159
Standardized Math and Reading Composite Test Score.....	159
Use of Resources for College Entrance Requirements.....	159
PSAT/PACT Plans in Grade 10.....	160
PSAT/PACT Plans in Grade 11.....	160
SAT/ACT Plans in Grade 11.....	160
Participation in an AP Program.....	161

Parent Engagement Factor	161
Educational Aspirations for the Tenth Grade Child:	
Attend Some College/No 4-year Degree	161
Peer Engagement Factor	162
Importance of Schooling Among Friends	162
Question 1C.4 Summary	162
Question 1C.5: Highest Level of Students' Parental Education	
Attended College/No Degree	163
Student Engagement Factors	166
Standardized Math and Reading Composite Test Score	166
Participation in Extra-curricular School Activities	166
Use of Resources for College Entrance Requirements	167
PSAT/PACT Plans in Grade 10	167
SAT/ACT Plans in Grade 10	167
SAT/ACT Plans in Grade 11	168
SAT/ACT Plans in Grade 12	168
Parent Engagement Factor	169
Educational Aspirations for the Tenth Grade Child	
Attend Some College/No Degree	169
Question 1C.5 Summary	169
Question 2A Results	170
Question 2C.1: High School Location: Urban Setting	172
Student Engagement Factors	175
Socio-economic Status	175
Participation in Extra-curricular School Activities	175
Use of Resources for College Entrance Requirements	175
PSAT/PACT Plans in Grade 10	176
SAT/ACT Plans in Grade 11	176
AP Test Plans in Grade 11	177
AP Test Plans in Grade 12	177
Parent Engagement Factor	178
Educational Aspirations for the Tenth Grade Child:	
Graduate from College with a BA/BS Degree or Higher	178
Peer Engagement Factor	178
Importance of Schooling Among Friends	178
Question 2C.1 Summary	179
Question 2C.2: High School Location: Suburban Setting	179

Student Engagement Factors.....	182
Standardized Math and Reading Composite Test Score.....	182
Participation in Extra-curricular School Activities.....	182
Use of Resources for College Entrance Requirements.....	183
PSAT/PACT Plans in Grade 10.....	183
PSAT/PACT Plans in Grade 11`.....	184
SAT/ACT Plans in Grade 11.....	184
AP Test Plans in Grade 11.....	184
AP Test Plans in Grade 12.....	185
Participation in an AP Program.....	185
Parent Engagement Factors.....	185
Offering Advice about Academics.....	185
Educational Aspirations for the Tenth Grade Child:	
Graduate from College with a BA/BS Degree or Higher.....	186
Peer Engagement Factor.....	186
Importance of Schooling Among Friends.....	186
Question 2C.2 Summary.....	187
Question 2C.3: High School Location: Rural Setting.....	188
Student Engagement Factors.....	190
Standardized Math and Reading Composite Test Score.....	190
Use of Resources for College Entrance Requirements.....	191
PSAT/PACT Plans in Grade 10.....	191
SAT/ACT Plans in Grade 10.....	191
SAT/ACT Plans in Grade 11.....	192
Participation in an AP Program.....	192
Parent Engagement Factor.....	192
Educational Aspirations for the Tenth Grade Child:	
Attend Some College/No Degree.....	192
Peer Engagement Factor.....	193
Importance of Schooling Among Friends.....	193
Question 2C.3 Summary.....	194
Question 3A Results.....	195
Question 3C.1: High School Type: Public School.....	196

Student Engagement Factors.....	199
Standardized Math and Reading Composite Test Score.....	199
Participation in Extra-curricular School Activities.....	199
Use of Resources for College Entrance Requirements.....	200
PSAT/PACT Plans in Grade 10.....	200
PSAT/PACT Plans in Grade 11.....	201
SAT/ACT Plans in Grade 10.....	201
SAT/ACT Plans in Grade 11.....	201
SAT/ACT Plans in Grade 12.....	202
AP Test Plans in Grade 11.....	202
AP Test Plans in Grade 12.....	203
Participation in an AP Program.....	203
Parent Engagement Factors.....	203
Offering Advice about Academics.....	203
Educational Aspirations for the Tenth Grade Child:	
Attend Some College/No 4-year Degree.....	204
Educational Aspirations for the Tenth Grade Child	
Graduate from College with a BA/BS Degree or Higher.....	204
Peer Engagement Factor.....	205
Importance of Schooling Among Friends.....	205
Question 3C.1 Summary.....	205
Question 3C.2: High School Type: Private School.....	207
Student Engagement Factors.....	210
Standardized Math and Reading Composite Score.....	210
PSAT/PACT Plans in Grade 12.....	210
SAT/ACT Plans in Grade 10.....	211
SAT/ACT Plans in Grade 11.....	211
SAT/ACT Plans in Grade 12.....	211
AP Test Plans in Grade 11.....	212
Parent Engagement Factor.....	212
Educational Aspirations for the Tenth Grade Child:	
Attend Some College/No Degree.....	212
Peer Engagement Factor.....	213
Importance of Schooling Among Friends.....	213
Question 3C.2 Summary.....	213

Discussion of the Results	214
Independent Variables Significant in Five or More	
Areas of Analysis	217
SAT/ACT Plans in Grade 11	217
Importance of Schooling Among Friends	218
Standardized Math and Reading Composite Test Score	219
Use of Resources for College Entrance Requirements	220
PSAT/PACT Plans in Grade 10	221
Participation in Extra-curricular School Activities	222
PSAT/PACT Plans in Grade 11	223
SAT/ACT Plans in Grade 10	224
AP Test Plans in Grade 11	225
Participation in an AP Program	226
Educational Aspirations for the Tenth Grade Child	
Attend Some College/No 4-year Degree	227
Educational Aspirations for the Tenth Grade Child	
Graduate from College with a BA/BS Degree or Higher	228
Independent Variables Significant in Four or Fewer	
Areas of Analysis	230
Four Areas of Analysis: Significant Positive Relationship	231
Three Areas of Analysis: Significant Positive Relationship	231
One Area of Analysis: Significant Positive Relationship	232
One Area of Analysis: Significant Negative Relationship	232
Zero Areas of Analysis: No Significant Positive or	
Negative Relationship	233
Chapter Summary	233
5. CONCLUSIONS	235
Introduction	235
Overall Results Table	236
Comparison of Results to the Literature Review	243
Conclusions and Discussion	247
Conclusions Related to Student Engagement Factor:	
Socioeconomic Status	248
Conclusions Related to Student Engagement Factor:	
Standardized Math and Reading Composite Test Score	248
Conclusions Related to Student Engagement Factor:	
Participation in Extra-curricular School Activities	249
Conclusions Related to Student Engagement Factor:	
Use of a Computer for Learning	250
Conclusions Related to Student Engagement Factor:	
Use of Resources for College Entrance Requirements	251

Conclusions Related to Student Engagement Factor: College Entrance Exams	251
Conclusions Related to Student Engagement Factors: Participation in an AP Program and AP Test Plans	253
Conclusions Related to Student Engagement Factor: Participation in a College Preparation Program.....	254
Conclusions Related to Parent Engagement Factors: Checking of School Work and Offering Advice about Academics	255
Conclusions Related to Parent Engagement Factor: Financial Savings for the Tenth Grade Child’s Postsecondary Education	256
Conclusions Related to Parent Engagement Factors: Educational Aspirations for the Tenth Grade Child	257
Conclusions Related to the Peer Engagement Factor; Importance of Schooling Among Friends.....	258
Conclusions Related to the Theoretical Model.....	259
Recommendations.....	261
Recommendations for Future Practice.....	261
Recommendations for Further Research.....	267
Recommendations for Research to Address the Study’s Limitations and Delimitations	269
Recommendations for Research to Address Other Research / Policy Issues.....	272
Summary	273
Chapter Summary	274
 REFERENCES	 275
 APPENDICES	 282
Appendix A: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Did Not Finish High School	283
Appendix B: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Graduated from High School or Obtained a GED	288

Appendix C: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Attended 2-year School/No Degree	292
Appendix D: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Graduated from a 2-year School	295
Appendix E: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Attended College/No Degree	299
Appendix F: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Urban Setting	303
Appendix G: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Suburban Setting	307
Appendix H: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Rural Setting	310
Appendix I: Backward Stepwise Logistic Regression Results of <i>p</i> -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Type: Public High School	314

Appendix J: Backward Stepwise Logistic Regression Results of
p-values for First-generation College-bound Students'
Stated Intentions to attend a 4-year College or University
directly after High School and High School Type:
Private High School317

LIST OF TABLES

Table	Page
1. Independent Variables Associated with Student Engagement Factors.....	8
2. Independent Variables Associated with Parent Engagement Factors.....	8
3. Independent Variable Associated with Peer Engagement Factor	9
4. Independent Variables Associated with the Microsystem	11
5. Independent Variables Associated with the Mesosystem.....	12
6. Independent Variable Associated with the Exosystem.....	13
7. Independent Variables Associated with the Macrosystem	13
8. Independent Variables Listed by Engagement Factors.....	23
9. Parents' Highest Educational Attainment: Variable Information for Analysis.....	82
10. Students' Plan to Continue Education after High School: Variable Information for Analysis.....	82
11. Type of Postsecondary Institution Students' Plan to Attend: Variable Information for Analysis.....	83
12. Variables Which Were Used in this Study	84
13. Students' Plan to Continue Education After High School: Variable Information for Analysis	85
14. Type of Postsecondary Institution Students' Plan to Attend: Variable Information for Analysis.....	86
15. Checking of School Work: Factor Analysis with Total Variance Explained	87
16. Checking of School Work: Component Matrix	87
17. Checking of School Work: Variables used in Factor Analysis for Composite Measure	88

LIST OF TABLES - CONTINUED

Table	Page
18. Offering Advice about Academics: Factor Analysis with Total Variance Explained	88
19. Offering Advice about Academics: Component Matrix.....	89
20. Offering Advice about Academics: Variables used in Factor Analysis for Composite Measure.....	89
21. Financial Savings for the Tenth Grade Child's Postsecondary Education: Variable Information for Analysis.....	90
22. Educational Aspirations for the Tenth Grade Child: Attend Some College/No Degree: Variable Information for Analysis.....	91
23. Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher: Variable Information for Analysis.....	92
24. Use of Resources for College Entrance Requirements: Variables for Composite Measure.....	93
25. PSAT/PACT Plans in Grade 10: Variable Information for Analysis	94
26. PSAT/PACT Plans in Grade 11: Variable Information for Analysis	95
27. PSAT/PACT Plans in Grade 12: Variable Information for Analysis	96
28. SAT/ACT Plans in Grade 10: Variable Information for Analysis.....	97
29. SAT/ACT Plans in Grade 11: Variable Information for Analysis.....	98
30. SAT/ACT Plans in Grade 12: Variable Information for Analysis.....	99
31. AP Test Plans in Grade 10: Variable Information for Analysis	100
32. AP Test Plans in Grade 11: Variable Information for Analysis	101
33. AP Test Plans in Grade 12: Variable Information for Analysis	102
34. Participation in an AP Program: Variable Information for Analysis.....	102

LIST OF TABLES - CONTINUED

Table	Page
35. Participation in a College Preparation Program: Variable Information for Analysis.....	103
36. Importance of Schooling Among Friends: Factor Analysis with Total Variance Explained	104
37. Importance of Schooling Among Friends: Component Matrix	104
38. Importance of Schooling Among Friends: Variables Used in Factor Analysis for Composite Measure.....	105
39. Use of a Computer for Learning: Factor Analysis with Total Variance Explained.....	105
40. Use of a Computer for Learning: Component Matrix	106
41. Use of a Computer for Learning: Variables Used in Factor Analysis for Composite Measure.....	106
42. Parents' Highest Educational Attainment: Variable Information for Analysis.....	108
43. High School Location (BYURBAN): Variable Information for Analysis.....	109
44. High School Type (BYSCTRL): Variable Information for Analysis:.....	110
45. Development of Review Process for Instrumentation	112
46. NCES ELS: 2002/04 Pre-data Collection Activities	114
47. NCES ELS: 2002 Base Year Response Rates	115
48. Independent Variables Used in the Logistic Regression Models Chosen from a Backward Stepwise Regression Analysis.....	130
49. Independent Variables by Student Engagement Factors: Overall Results by Estimated Odds Ratio for Each Research Question.....	132
50. Independent Variables by Parent and Peer Engagement Factors: Overall Results by Estimated Odds Ratio for Each Research Question.....	133

LIST OF TABLES - CONTINUED

Table	Page
51. Chi-square Test of Independence for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education	135
52. Level of Students' Parental Education: Did Not Finish High School: All Independent Variables	136
53. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Students' Parental Education: Did Not Finish High School: Variables that were Significant	137
54. Level of Students' Parental Education: Graduated from High School or Obtained a GED: All Independent Variables	140
55. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Students' Parental Education: Graduated from High School or Obtained a GED: Variables that were Significant	141
56. Level of Students' Parental Education: Attended a 2-year School/No Degree: All Independent Variables.....	148
57. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Students' Parental Education: Attended a 2-year School/No Degree	149
58. Level of Students' Parental Education: Graduated from a 2-year School: All Independent Variables	157
59. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Students' Parental Education: Graduated from a 2-year School	158
60. Level of Students' Parental Education: Attended College/No Degree: All Independent Variables	164

LIST OF TABLES - CONTINUED

Table	Page
61. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Students' Parental Education: Attended College/No Degree	165
62. Chi-square Test of Independence for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location.....	171
63. High School Location: Urban Setting: All Independent Variables	173
64. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Urban Setting: Variables that were Significant	174
65. High School Location: Suburban Setting: All Independent Variables	180
66. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Suburban Setting: Variables that were Significant.....	181
67. High School Location: Rural Setting: All Independent Variables.....	188
68. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Rural Setting: Variables that were Significant	189
69. Chi-square Test of Independence for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Type.....	195
70. High School Type: Public High School: All Independent Variables	197
71. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Type: Public High School: Variables that were Significant	198

LIST OF TABLES - CONTINUED

Table	Page
72. High School Type: Private High School: All Independent Variables	207
73. Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Type: Private High School: Variables that were Significant.....	209
74. Ranking of Independent Variables: Sum of Ten Areas of Analysis.....	216
75. Independent Variables by Student Engagement Factors: Overall Results by Estimated Odds Ratio for each Research Question.....	239
76. Independent Variables by Parent and Peer Engagement Factors: Overall Results by Estimated Odds Ratio for each Research Question.....	240

LIST OF FIGURES

Figure	Page
1. Bronfenbrenner’s Structure of the Environment.....	10
2. Estimated Odds Ratios: SAT/ACT Plans in Grade 11 by Each Confounding Variable/Area of Analysis	218
3. Estimated Odds Ratios: Importance of Schooling Among Friends by Each Confounding Variable/Area of Analysis	219
4. Estimated Odds Ratios: Standardized Math and Reading Composite Test Score by Each Confounding Variable/Area of Analysis	220
5. Estimated Odds Ratios: Use of Resources for College Entrance Requirements by Each Confounding Variable/Area of Analysis	221
6. Estimated Odds Ratios: PSAT/PACT Plans in Grade 10 by Each Confounding Variable/Area of Analysis	222
7. Estimated Odds Ratios: Participation in Extra-curricular School Activities by Each Confounding Variable/Area of Analysis.....	223
8. Estimated Odds Ratios: PSAT/PACT Plans in Grade 11 by Each Confounding Variable/Area of Analysis	224
9. Estimated Odds Ratios: SAT/ACT Plans in Grade 10 by Each Confounding Variable/Area of Analysis	225
10. Estimated Odds Ratios: AP Test Plans in Grade 11 by Each Confounding Variable/Area of Analysis	226
11. Estimated Odds Ratios: Students’ Participation in an AP Program by Each Confounding Variable/Area of Analysis	227
12. Estimated Odds Ratios: Parents’ Educational Aspirations for the Tenth Grade Child: Attend Some College/No 4-year Degree by Each Confounding Variable/Area of Analysis	228
13. Estimated Odds Ratios: Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher by Each Confounding Variable/Area of Analysis	229

ABSTRACT

The purpose of this study was to examine the relationships between tenth grade first-generation college-bound students stated intentions to attend a 4-year college or university directly after high school and the engagement factor of students, their parents, and their peers. Data collected for the National Center for Education Statistics Education Longitudinal Study of 2002 (NCES ELS:2002) were used in this study. The population for this study was tenth grade students in 2002. The NCES ELS:2002 is a nationally representative sample of that population.

The dependent variable was first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school. Twenty-two independent variables, classified by student, parent, and peer engagement factors, were used in this study.

A logistic regression model developed from a backward stepwise regression analysis was used to answer the primary research question considered in this study: "What relationships exist between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?"

A number of significant positive relationships were shown to exist between the dependent variable and independent variables. The results suggest that students' college entrance test plans in grade 10 and grade 11, participation in an AP program, and AP test plans appear to be important predictors of students' intentions. When considering the highest positive odds ratio among all independent variables included in this study, the results suggest that the parent engagement factor, educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, stands out as the strongest predictor of students' intentions. The results suggest that peer influences matter. Students who stated intentions were more likely to have friends who feel it is important to attend classes regularly, study, get good grades, finish high school, and continue their education.

The results also suggest that three independent variables were not found to be predictors of students' intentions: 1) student' participation in a college preparation program; 2) parents' checking of school work; and 3) parents' financial savings for the tenth grade child's postsecondary education.

CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

Gaining access to higher education requires academic achievement, an application process, and ability to pay the price of attendance (King, 2002). Similarly, Horn (1997) described the transition through high school and beyond into postsecondary institutions as a five-step process: 1) having a bachelor's degree goal; 2) being at least minimally prepared academically to attend college; 3) taking entrance exams; 4) applying to college; and 5) enrolling in college. This transition, or pipeline to college, includes students' choosing college over other pursuits and task requirements linked to seeking college information and completing application forms. Additionally, academic proficiencies and intellectual development are associated with curriculum choices and achievement.

As described by Horn (1997), the pipeline to college consists of five somewhat sequential steps. However, the transition to college experiences between first-generation students, or students from families where neither parent had more than a high school education, and their non-first-generation counterparts are different (Choy, 2001). In turn, as the following results imply, first-generation college students are at a distinct disadvantage that persists through their path to college. First, using data from the National Center for Education Statistics (NCES) National Education Longitudinal Study of 1988, Horn and Bobbitt (2000) found that as parental education increased, students' aspirations toward postsecondary education increased. Additionally, Horn et al. reported

a change in educational aspirations among first-generation college students between the 8th and 12th grade:

When surveyed as eighth graders, first-generation students had relatively high educational aspirations: 42 percent aspired to a bachelor's degree....Between 1988 and 1990, the percentage of first-generation students who aspired to earn a bachelor's degree declined from 42 to 29 percent. (pp. 10 - 12)

Next, a disadvantage among students persisted with regard to academic preparation. Torrez (2004) studied high school seniors at three different high schools in Southern California. Torrez reported an achievement gap with regard to adequate academic preparation for college entrance requirements:

Though non-Hispanic White students were in the minority at these schools, about one-half of the seniors met eligibility for the California State University (CSU) system, whereas only one-third of the Latinos met the CSU eligibility....Another finding was that many parents were under the impression that their children were prepared for college, when, in fact, their children were placed in a high school curriculum that did not meet the prerequisites required for entrance into California's four-year colleges. (p. 56)

Furthermore, Horn et al. (2000) found that the frequency of discussions about college entrance exams varied with parents' education. Findings reported by Horn et al. showed that first-generation students reported having discussions with their parents about preparing for entrance exams less often than their counterparts whose parents graduated from college:

For example, among college-qualified students, about one-third of first-generation students reported that they never discussed entrance exam preparation with their parents, compared with one-quarter of students whose parents had some college and one-fifth of students whose parents had college degrees. (p. 39)

Similarly, with regard to discussions about the application process between students and their parents, Horn et al. reported the following findings:

A majority (61 percent) of students whose parents were college graduates indicated that they often discussed applying to college with their parents, compared with 47 percent of those whose parents had some college and 42 percent of first-generation students. (p. 41)

Moreover, college enrollment rates varied with parents' educational attainment (Choy, 2001). Using three national data sets conducted by the National Center for Education Statistics: 1) the National Education Longitudinal Study; 2) the Beginning Postsecondary Students Longitudinal Study; and 3) the Baccalaureate and Beyond Longitudinal Study, Choy studied middle school, high school, and college students whose parents did not go to college in relation to postsecondary access, persistence, and attainment. With regard to college enrollment rates, Choy reported findings showing that the likelihood of enrolling in postsecondary education is strongly related to parents' education:

In 1999, 82 percent of students whose parents held a bachelor's degree or higher enrolled in college immediately after finishing high school. The rates were much lower for those whose parents had completed high school but not college (54 percent) and even lower for those whose parents had less than a high school diploma (36 percent). (p. xviii)

College enrollment rates and the diversity of students attending postsecondary education reflect the accessibility of higher education. If access is measured by the number of students enrolled in college, then access is growing. Using data from the National Center for Education Statistics, Oblinger (2003) reported that college enrollment has increased in the last thirty years, from 7.4 million students in 1970 to 12.7 million students in 1999. Not only is college attendance increasing in the twenty-first century, but the growing demographic diversity of the undergraduate student body in American postsecondary education has been well documented. Using U.S. Census Bureau data and

population projections, Carnevale and Fry (2000) projected that “between 1995 and 2015, the number of undergraduates will grow by 19 percent – from 13.4 million to about 16 million” (p. 18). Contributing to this rise will be the arrival of students born between 1982 and 1996, returning adults, and persistent enrollments of foreign students. Linked to increases to college enrollment, Carnevale et al. reported the following findings which reflect a more racially and ethnically diverse mix of students:

Our analysis reveals that 80 percent of the 2.6 million students by 2015 will be minorities – African American, Hispanic, and Asian/Pacific Islander. Minority enrollment will rise in both absolute number of students – up about 2 million – and in percentage terms, up from 29.4 percent of undergraduate enrollment to 37.2 percent. (p. 10)

First, based upon a National Postsecondary Student Aid Study, the profile of U.S. undergraduates enrolled in higher education is changing with increases in female, minority, and non-traditional student representation (Horn, Peter, Rooney, & Malizio, 2002; King, 2002). As described by Oblinger (2003), non-traditional students are defined as having one or more of the following characteristics:

Delayed enrollment, did not enter postsecondary education in the same year that he or she graduated from high school; *Attend part-time*, for all or part of the academic year; *Work full-time*, thirty-five hours or more, while enrolled; *Are financially independent*, as defined by financial aid; *Have dependents*, other than a spouse, including children or others; *Are single parents*, having one or more dependent children; *Lack a high school diploma*. (p. 38)

Second, using results from the NCES Beginning Postsecondary Student Longitudinal Study, Choy (2001) reported that in 1995-96, 34 percent of students entering 4-year institutions and 53 percent of students starting at 2-year colleges were first-generation students where neither parent had more than a high school education. Finally, more recent data from the U.S. Department of Labor’s Bureau of Labor Statistics

(2006) illustrated similar trends related to college access among high school students. On a monthly basis, the federal government collects information on school enrollment through a nationwide survey, the Current Population Survey. Analyzing a series of data dating back to 1959, the U.S. Department of Labor's Bureau of Labor Statistics (2006) released findings which revealed a historical high college enrollment rate for 2005 high school graduates:

Of the 2.7 million youth who graduated from high school between October 2004 and October 2005, 1.8 million (68.6 percent) were attending college in October 2005. About two-thirds of the 2005 high school graduates enrolled in college attended 4-year institutions. (p. 1)

As described by Oblinger (2003), the new group of high school students entering higher education, the Millennial generation, exhibit different characteristics than students from previous generations:

Millennials gravitate toward group activity; identify with their parents' values and feel close to their parents; spend more time doing homework and housework and less time watching TV; believe 'it's cool to be smart'; are fascinated by new technologies; and are racially and ethnically diverse; and often (one in five) have at least one immigrant parent. (p. 38)

Educational institutions are called on to educate an increasing number of diverse students. As the diversity of the K-12 and college undergraduate population broadens, it is important that researchers, policymakers, educators, and administrators continue to gain an understanding of different influences on college expectations and preparations among different groups of students. With regard to students' transition to college, it is important for college-bound students to take the necessary preparation steps, complete appropriate K-12 coursework, participate in activities, and utilize resources which will adequately prepare them both academically and socially for a college environment. In

order to facilitate a successful path to college for students, establish policies, allocate resources, and provide support services, researchers, policymakers, educators, and administrators must understand today's high school students and their parents in relation to how they approach and prepare for access to college.

Statement of the Problem

Based on the literature review, the problem addressed in this study is that researchers, policymakers, educators, and administrators have limited information concerning the relative importance of various influences on college aspirations among a new generation of students, the Net Generation/Millennials. As defined by Oblinger and Oblinger (2005), Net Generation/Millennials were born between 1982 and 1992 and are now entering colleges and universities. As described in greater detail in Chapter 2, "Overall Weaknesses of the Literature," and with regard to the new generation of students, current information appears to be limited in at least three ways: 1) the postsecondary planning activities of tenth grade first-generation college-bound students; 2) the various influences on college aspirations among students who attend suburban high schools; and 3) how differences among students' access to and use of the computer for learning may be associated with students' college aspirations.

Purpose of the Study

To address these limitations in the literature, the purpose of this study was to examine the relationships between first-generation college-bound students' stated

intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, tenth grade students from families in which no parent or guardian earned a baccalaureate degree were the focus of this study. These students were defined as first-generation college-bound students.

Definition of Engagement Factors

The engagement factors consisted of three distinct categories: 1) student; 2) parent; and 3) peer. Within each engagement factor category, independent variables were identified. The independent variables were measured by each participant's responses to specific questions from the NCES Education Longitudinal Study of 2002 (ELS:2002) Base Year Student Questionnaire and the NCES ELS:2002 Base Year Parent Questionnaire.

For purposes of this study, the following definitions were used to define the engagement factors of students, their parents, and their peers.

Student Engagement Factors

As presented in Table 1, student engagement factors were defined by sixteen independent, or predictor, variables.

Table 1: Independent Variables Associated with Student Engagement Factors

Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
Preliminary Scholastic Assessment Test / Preliminary American College Test (PSAT/PACT) plans in grade 10
Preliminary Scholastic Assessment Test / Preliminary American College Test (PSAT/PACT) plans in grade 11
Preliminary Scholastic Assessment Test/ Preliminary American College Test (PSAT/PACT) plans in grade 12
Scholastic Assessment Test / American College Test (SAT/ACT) plans in grade 10
Scholastic Assessment Test / American College Test (SAT/ACT) plans in grade 11
Scholastic Assessment Test / American College Test (SAT/ACT) plans in grade 12
Advanced Placement (AP) Test plans in grade 10
Advanced Placement (AP) Test plans in grade 11
Advanced Placement (AP) Test plans in grade 12
Participation in an Advanced Placement (AP) program
Participation in a college preparation program

Parent Engagement Factors

As presented in Table 2, parent engagement factors were defined by five independent, or predictor, variables.

Table 2: Independent Variables Associated with Parent Engagement Factors

Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher

Peer Engagement Factor

As listed in Table 3, the peer engagement factor was defined by one independent, or predictor, variable.

Table 3: Independent Variable Associated with the Peer Engagement Factor

<u>Peer Engagement Factor</u>
<u>Importance of schooling among friends</u>

Statement of the Hypothesis

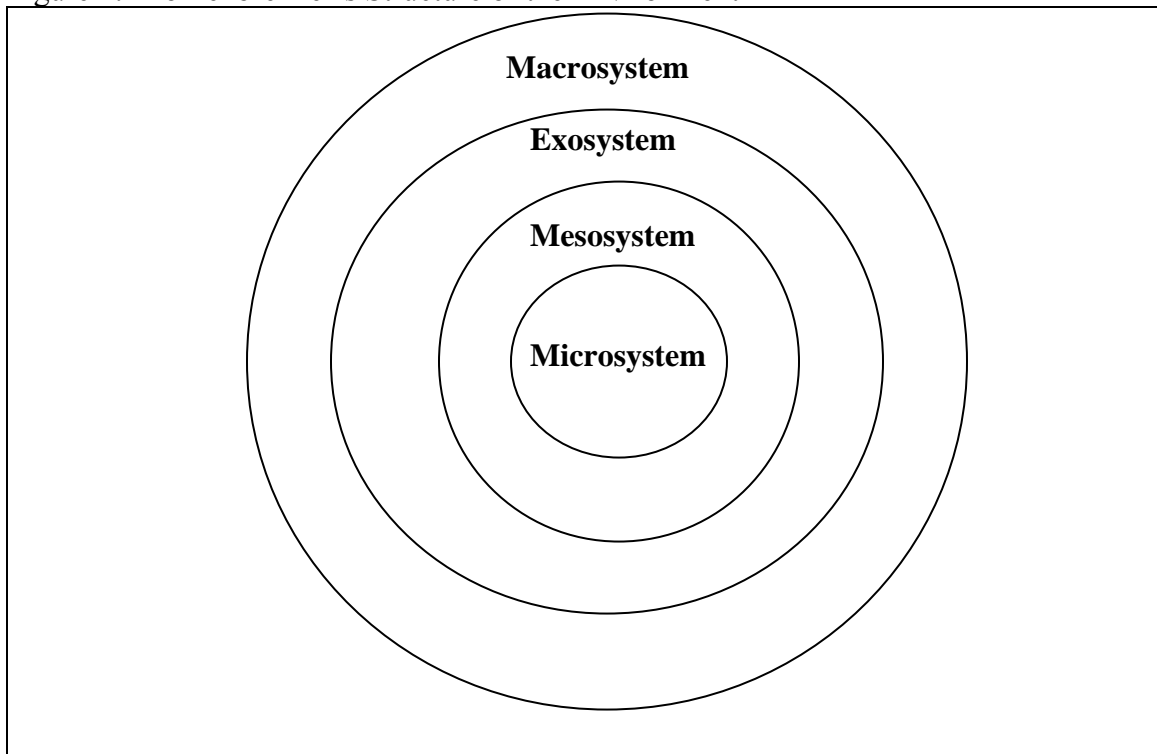
The research hypothesis in this study was: There is a relationship between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers.

Theoretical Framework

The theoretical framework for this study was based upon Urie Bronfenbrenner's 'Ecological System Theory' (Bronfenbrenner, 1979), which offers a perspective for research in human development. The focus of this theory is a child's development within the context of relationships and experiences that form and influence a child's environment. To understand the way a child develops from childhood to adulthood, Bronfenbrenner believes that it is necessary to observe the child's behavior in natural settings. The child's environment encompasses a broad range of factors, including family, economic, community, social, and political structures. As presented in Figure 1, Bronfenbrenner's structure of the environment, or ecological context, consists of four

nested systems within an immediate internal and larger external environment: 1) microsystem; 2) mesosystem; 3) exosystem; and 4) macrosystem.

Figure 1: Bronfenbrenner's Structure of the Environment



Each of the four systems within the environment has a rippling effect on and interconnectedness toward a child's development, from childhood to adulthood. To conceptualize this rippling effect, one may wish to consider and visualize the effects of a rock being thrown into a pond.

The four systems, or layers, within Bronfenbrenner's 'Ecological System Theory' were used as a foundational base to select the independent and confounding variables in this study. First, the microsystem is the innermost system. Bronfenbrenner (1979) defined the microsystem, the first layer within the ecological context, as "a pattern of activities,

roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics” (p. 22). For purposes of this study, the microsystem represented connections primarily associated with a family. The microsystem, defined and measured by six independent variables, provided in Table 4, includes one student engagement factor and five parent engagement factors.

Table 4: Independent Variables Associated with the Microsystem

Type of Engagement Factor	Independent Variable
Student	Standardized math and reading composite test score
Parent	Checking of school work
Parent	Offering advice about academics
Parent	Financial savings for the tenth grade child’s postsecondary education
Parent	Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Parent	Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher

The mesosystem signifies broader associations and community interactions. Bronfenbrenner (1979) defined the mesosystem, the second layer within the ecological context, as “the interactions among two or more settings in which the developing person actively participates” (p. 25). For purposes of this study, the focal points of the variables selected to represent the mesosystem were students’ peer relationships and students’ active participation in social and academic networks with either formal or informal communications. The mesosystem, defined and measured by thirteen independent variables, provided in Table 5, includes one peer engagement factor and twelve student engagement factors.

Table 5: Independent Variables Associated with the Mesosystem

Type of Engagement Factor	Independent Variable
Peer	Importance of schooling among friends
Student	Use of resources for college entrance requirements
Student	PSAT/PACT plans in grade 10
Student	PSAT/PACT plans in grade 11
Student	PSAT/PACT plans in grade 12
Student	SAT/ACT plans in grade 10
Student	SAT/ACT plans in grade 11
Student	SAT/ACT plans in grade 12
Student	AP Test plans in grade 10
Student	AP Test plans in grade 11
Student	AP Test plans in grade 12
Student	Participation in an AP program
Student	Participation in a college preparation program

The third layer, exosystem, is concerned about external influences on a child's development. Bronfenbrenner (1979) defined the exosystem, the third layer within the ecological context, as "one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person" (p. 25). Bronfenbrenner identified the television as part of the child's exosystem and believed it represented a second-order effect. Because this study will be conducted in the 21st century, or information society where the computer and Internet is a medium of economic, academic, and social transactions, the influence of the computer will replace the television set. For purposes of this study, the exosystem was defined by one independent variable which measured the students' use of a computer medium, an external source. The variable associated with the exosystem is listed in Table 6.

Table 6: Independent Variable Associated with the Exosystem

Type of Engagement Factor	Independent Variable
Student	Use of a computer for learning

Finally, the macrosystem, or outermost layer, symbolizes larger cultural contexts and elements. Bronfenbrenner (1979) defined the macrosystem, the fourth layer within the ecological context, as “consistencies, in the form and content of lower-order systems (micro-, meso-, and exo-) that exist, or could exist at the level of subculture or culture as a whole, along with any belief system or ideology underlying such consistencies” (p. 26). For purposes of this study, the macrosystem represented factors associated with family and school culture. As presented in Table 7, the macrosystem was defined and measured by one independent variable and three confounding variables.

Table 7: Variables Associated with the Macrosystem

Type of Engagement Factor	Independent or Confounding Variable
Student	Socioeconomic status
Not applicable (confounding variable)	Parents’ highest educational attainment
Not applicable (confounding variable)	High school location
Not applicable (confounding variable)	High school type

Because the researcher based the selection of the variables on an understanding of Bronfenbrenner’s ‘Ecological System Theory’ and identified student, parent, and peer engagement factors within each of the four systems, the theory testing stage and analysis may offer insight with respect to college choice as a developmental process. Tenth grade first-generation college-bound students were examined to determine whether student, parent, and peer engagement factors contribute to their aspirations to attend a 4-year college or university directly after high school. Accordingly, the results of the study may

guide policy action and offer insight about student and family interactions and resources, students' friend associations, and students' school and program experiences in relation to how students develop aspirations to attend and academically prepare for a 4-year college or university directly after high school. Other factors, such as cultural attitudes and geographic barriers, may play additional roles in understanding educational aspirations among various groups of students.

Research Question

The primary research question addressed in this study was: "What relationships exist between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?"

In answering the primary research question, the following secondary research questions were also answered:

1A. Among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and level of parental education?

1B. If there is a nonsignificant relationship based on level of parental education, among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

1C. If there is a significant relationship based on level of parental education, among first-generation college-bound students and for each level of parental education, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

2A. Among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and high school location?

2B. If there is a nonsignificant relationship based on high school location, among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

2C. If there is a significant relationship based on high school location, among first-generation college-bound students and for each high school location, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

3A. Among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and high school type?

3B. If there is a nonsignificant relationship based on high school type, among first-generation college-bound students, what relationships exist between

students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

3C. If there is a significant relationship based on high school type, among first-generation college-bound students and for each high school type, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

Significance of the Study

The results of this study offers five important contributions to the current body of literature with regard to college access among first-generation college-bound high school sophomores. First, based on Horn's (1997) steps required in the pipeline to higher education, the results of the data may help provide insights about the extent to which tenth grade students within the Millennial generation prepare for college.

Second, this study used information not only from students, but also from students' parents. Parental involvement was considered. The results related to parental involvement will help researchers and policymakers explore and better understand the extent to which parents are saving money for postsecondary education costs. As public higher education institutions shift from being state-funded to state-assisted institutions, the question as to who pays for higher education must be addressed (King, 2002). Additionally, the findings will inform researchers and policymakers if there are

relationships between first-generation college-bound students' stated college intentions and home and parental interactions

Third, this study explored the college expectations of the students' friends and the students' use of school resources. The results of this study will help researchers and policymakers understand possible peer influences. Additionally, the findings will help educators and policymakers evaluate college preparation programs and activities which may foster postsecondary aspirations and facilitate students' transition from high school to postsecondary education.

Fourth, this study investigated the relationship of high school type and high school location. The results of this study may prompt discussions at schools regarding policy issues and student opportunities. School resources, extra-curricular activities, communication between students and educators, and connections between K-12 and postsecondary education systems may be the focal points of these discussions.

Finally, items related to computer usage were included in this study. The results of this study will contribute to the understanding of the relationship between first-generation college-bound students' stated intentions to attend college directly after high school and their use of a computer for learning.

Definition of Terms

For purposes of this study, the following definitions were used within the research question and methodology guiding the research:

Base Year: Base-year was defined as spring term 2002 when high school sophomores were surveyed and assessed in a national sample of high schools with tenth graders. At this time, their parents, teachers, principals, and librarians were also surveyed (Ingels, Pratt, Rogers, Siegel, Stutts, & Owings, 2004).

BY: BY was an acronym used to reference the year the data were collected. Variables names beginning with a “BY” were collected in the Base Year (2002) (Ingels, et al. 2004).

BYP: BYP was an acronym used to reference the survey instrument. BYP represented Base Year Parent. Variable names which begin with a “BYP” came from the NCES ELS:2002 Base Year Parent Questionnaire. The acronym may be followed by a number which represented the survey question (Ingels, et al. 2004).

BYS: BYS was an acronym used to reference the survey instrument. BYS represented Base Year Student. Variable names which begin with a “BYS” came from the NCES ELS:2002 Base Year Student Questionnaire. The acronym may be followed by a number which represented the survey question (Ingels, et al. 2004).

Composite Variable: Composite variable was defined by Ingels et al. (2004) as “usually generated using two or more questionnaire items or from recoding of a variable....Some are copied from another source” (p. 13). Composite variables were taken from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System.

Ecological Context: Ecological context was defined by Bronfenbrenner's (1979) four systems, or structural layers: microsystem, mesosystem, exosystem, and macrosystem.

First-generation College-bound Student: A first-generation college-bound student was defined as a tenth grade student who comes from a family where no parent or guardian has earned a baccalaureate degree (Choy, 2001). A first-generation college-bound student was determined by a NCES ELS:2002 composite variable which measured the highest level of education reached by either of the student's parents, BYPARED.

High School Location: High school location was determined by the NCES ELS:2002 variable, BYURBAN. Ingels et al. (2004) defined high school location in the following way: urban as "the school is in a large or mid-size central city"; suburban as "the school is in a large or small town or is on the urban fringe of a large or midsize city"; and rural as "the school is in a rural area, either inside or outside a metropolitan statistical area" (p. 40).

High School Type: High school type was determined by the NCES ELS:2002 variable, BYSCTRL. High school type was defined as either a public school or a private school which is located in the United States with tenth grade students (Ingels et al. 2004).

Parental Level of Education: Parental level of education was determined by the NCES ELS:2002 variable BYPARED. This variable represents the highest level of education reached by either of the student's parents. The information was obtained from the NCES ELS:2002 Parent Questionnaire when available, or from the NCES ELS:2002 Student Questionnaire if missing on the parent questionnaire. One parent per student was

asked to complete parent questionnaire. The parent was self-selected with a stated guideline that one parent or guardian most familiar and knowledgeable about the child's education, school situation, and experience was to complete the survey. Parental level of education was defined by five categories: 1) student's parent who did not finish high school; 2) student's parent who graduated from high school or obtained a GED; 3) student's parent who attended a 2-year school/no degree; 4) student's parent who graduated from a 2-year school; and 5) student's parent who attended college/no 4-year degree (Ingels, et al. 2004).

Pipeline to College: The pipeline to college was defined by the steps Horn (1997) described as necessary for students to make the successful transition from high school to college: 1) having a bachelor's degree goal; 2) being at least minimally prepared academically to attend college; 3) taking entrance exams; 4) applying to college; and 5) enrolling in college.

Public Use Data Files and Electronic Codebook System: Public Use Data Files and Electronic Codebook System were defined as software that can be used by the public without a license agreement and which contains the NCES ELS:2002 data results, composite variables, and individual survey questions and frequencies.

Student: A student was defined as a spring-term high school sophomore, or tenth grade student, attending a public or private targeted school.

Student's Intent: A student's intent was defined and measured by the student's self-reporting response to the following question from the NCES ELS:2002 Base Year

Student Questionnaire (BYS57): “Do you plan to continue your education directly after high school or at some time in the future?” (p. 19)

Limitations and Delimitations of the Study

The following limitations and delimitations were inherent in this study:

1. A limitation was the actual college attendance and college persistence patterns of the high school students. At the time of this study, these NCES ELS:2002 data sets were not available.
2. A limitation was the students’ academic preparations for postsecondary education, curriculum path, course-taking sequence, and high school transcript information. At the time of this study, these NCES ELS:2002 data sets were not available.
3. A limitation was the length of time students had to complete the NCES ELS:2002 Base Year Student Questionnaire. Students were allowed 45 minutes to complete the survey which consisted of 98 questions. Due to the time limitation, some students may not have been able to complete the survey in its entirety.
4. In assessing potential relationships between students’ intent to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers, any relationships that were identified cannot be interpreted as cause-effect relationships.
5. A delimitation was that this study was limited to tenth grade students who attended public or private schools. Consequently, students who were home schooled were not considered for analysis in this study.

6. The NCES ELS:2002 is an integrated multilevel study that involves multiple respondent populations. The respondents included students, their parents or legal guardian, their teachers, and their schools, with data collected from the principal, the librarian, and a facilities checklist. A delimitation was that this study was limited to data collected from the students and their parents. Accordingly, data collected from the Base-year School Administrator Questionnaire, Teacher Questionnaire, Library Media Center Questionnaire, and Facilities Checklist were not included in this study.

Research Structure

Data collected by the Research Triangle Institute (RTI), a not-for-profit university-affiliated research organization, for the Education Longitudinal Study of 2002 (ELS:2002) were used in this study. The ELS:2002 was sponsored by the National Center for Education Statistics (NCES) of the Institute of Educational Sciences, U.S. Department of Education. The population for this study was tenth grade students in 2002. The NCES ELS:2002 is a nationally representative sample of that population, or 15,362 tenth graders in 2002. This sample represented 3.6 million tenth grade students attending one of 752 targeted schools. The targeted schools represented 27,000 schools that contained 10th grade and were located in the United States (Ingels et al. 2004).

In this study, one dependent variable, or outcome measure, was analyzed. The dependent variable was a measure based upon students' self-reported intentions to attend

a 4-year college or university directly after high school. The dependent variable was dichotomous (0=No; 1=Yes).

The independent variables in this study were classified by student, parent, and peer engagement factors. Based upon the classification of engagement factor, illustrated in Table 8, this study included twenty-two independent variables.

Table 8: Independent Variables Listed by Engagement Factor

Type of Engagement Factor	Independent Variable
Student	Socioeconomic status
	Standardized math and reading composite test score
	Participation in extra-curricular school activities
	Use of a computer for learning
	Use of resources for college entrance requirements
	PSAT/PACT plans in grade 10
	PSAT/PACT plans in grade 11
	PSAT/PACT plans in grade 12
	SAT/ACT plans in grade 10
	SAT/ACT plans in grade 11
	SAT/ACT plans in grade 12
	AP Test plans in grade 10
	AP Test plans in grade 11
	AP Test plans in grade 12
Participation in an AP program	
Participation in a college preparation program	
Parent	Checking of school work
	Offering advice about academics
	Financial savings for the tenth grade child's postsecondary education
	Educational aspirations for the tenth grade child: attend some college/no 4-year degree
	Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer	Importance of schooling among friends

Additionally, three other independent variables were used during the exploratory data analysis, or Chi-square test of independence: 1) parents' highest educational

attainment; 2) high school location; and 3) high school type. While this study included three broad areas of engagement factors: 1) student engagement; 2) parent engagement; and 3) peer engagement, each independent variable was classified with one of the layers of Bronfenbrenner's ecological context: 1) microsystem; 2) mesosystem; 3) exosystem; and 4) macrosystem.

In addition to the dependent variable and independent variables, three confounding variables were used in the data analysis. While these variables were independent variables during the exploratory data analysis, they were confounding variables during the logistic regression analysis: 1) parents' highest educational attainment; 2) high school location; and 3) high school type. The confounding variables were classified with the fourth layer, macrosystem, of Bronfenbrenner's ecological context.

As an exploratory data analysis, a Chi-square test of independence was conducted to test the relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the level of parental education. Correspondingly, this same exploratory analysis was used with the following independent variables: 1) high school location; and 3) high school type. The level of significance was set at $\alpha = 0.05$.

A goal, or outcome, of logistic regression is to predict the outcome of a dichotomous dependent variable with the use of continuous and/or categorical independent variables. Logistic regression calculates changes in the log odds of the dependent variable and estimates the probability of a certain event occurring (Menard,

2002; Pampel, 2000). Finally, because the dependent variable, or outcome measure, in this study was dichotomous (0=No, 1=Yes), logistic regression models were constructed to test the relationship with each of the independent variables. To determine if the independent variables may be interrelated, a logistic regression model developed from a backward stepwise regression analysis was used to illustrate relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Associations between the independent variables and the dependent variable were tested by calculating the Wald statistic which has an asymptotic Chi-square distribution (Pampel, 2000). The level of significance was set at $\alpha = 0.05$. First, the full model included all of the independent variables. If the p -value for an individual independent variable was greater than 0.05, then that variable was eliminated, and the next model included all variables except the one eliminated. After fitting the first model with all independent variables and eliminating the variable with the greatest p -value, this process was repeated, until only those variables that were significant (p -values were less than 0.05) were included in the model. With this process, the researcher eliminated one variable at a time; throughout the backward stepwise logistic regression process, the variable which was eliminated had the greatest p -value.

Chapter Summary

In this chapter, the problem statement, purpose of, and theoretical framework for this study were discussed. The primary research question and three secondary research

questions were presented. Additionally, the research structure was introduced, definitions given, and important delimitations and limitations acknowledged. In the remaining chapters of this study, a review of literature relevant to the present study is presented in Chapter 2, and a detailed explanation of the research and statistical methodology is provided in Chapter 3. The results of the study are presented in Chapter 4, followed by Chapter 5 which offers conclusions drawn from the results of the study and recommendations for further research.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

In this chapter, the synthesis and evaluation of the literature pertinent to this study is presented. The synthesis of the literature includes the criteria for selecting the literature, followed by a statement of the problem and purpose of the study, a review of previous research, findings, and opinions, and other themes important to this study. A review of the methodologies used in other studies concludes the synthesis of the literature. The literature is evaluated in terms of overall weaknesses and strengths, and gaps and saturation points are discussed. Proposed avenues for future inquiry conclude the evaluation of the literature.

Synthesis of the LiteratureCriteria for Selecting the Literature

The primary criterion for the selection of articles in the literature was that the article title or abstract must have indicated specificity to: 1) postsecondary educational aspirations of high school students; 2) college preparation; 3) parental, school, or community resources related to postsecondary educational aspirations of high school students; or 4) profile of first-generation, at-risk, and undergraduate college students.

In addressing the primary criteria above, secondary criteria for the selection of articles in the literature were also applied to the computer searches of online

bibliographic databases. With the exception of three conference papers, the secondary criteria were: 1) the research study came from a primary source, referring directly to the investigation by the author who researched the project; and 2) the sources for the articles selected came from either a referred journal or from the National Center for Education Statistics website. Accordingly, studies from secondary sources, dissertations, conference papers, or articles from nonrefereed journals were not included in the literature review.

Statement of the Problem and Purpose of the Study

Based on the literature review, the problem addressed in this study is that researchers, policymakers, educators, and administrators have limited information concerning the relative importance of various influences on college aspirations among a new generation of students, the Net Generation/Millennials. As defined by Oblinger and Oblinger (2005), Net Generation/Millennials were born between 1982 and 1992 and are now entering colleges and universities. As described in greater detail in Chapter 2, “Overall Weaknesses of the Literature,” and with regard to the new generation of students, current information appears to be limited in at least three ways: 1) the postsecondary planning activities of tenth grade first-generation college-bound students; 2) the various influences on college aspirations among students who attend suburban high schools; and 3) how differences among students’ access to and use of the computer for learning may be associated with students’ college aspirations.

The purpose of this study was to examine the relationships between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents,

and their peers. Specifically, tenth grade students from families in which no parent or guardian earned a baccalaureate degree were the focus of this study. These students were defined as first-generation college-bound students.

Review of Previous Research, Findings, and Opinions

Profile of First-generation Students. First-generation college students have been defined in slightly different ways by researchers. Choy (2001) defined first-generation students as students from families in which no parent or guardian earned a baccalaureate degree. Likewise, Pascarella, Pierson, Christopher, Wolniak, and Terenzini (2004) defined first-generation college students as students from families in which neither parent had more than a high-school education. Horn, Nunez, and Bobbitt (2000) defined first-generation students as students from families in which both parents have no more than a high school education. Similarly, Gibbons and Shoffner (2004) defined first-generation students as students whose parents did not attend college. Despite the differences in definitions, research on first-generation students has helped the researcher identify several unique characteristics of this population.

Well-documented characteristics among first-generation students included the following: 1) tend to come from families with lower incomes; 2) tend to have lower levels of engagement in high school; and 3) tend to have lower scores on standardized assessment measures (Pike & Kuh, 2005; Ishitani, 2005; Gibbons et al. 2004).

Additionally, using data from the NCES National Education Longitudinal Study of 1988, With regard to race, income, and family structure, Horn et al. (2000) reported particular

demographic characteristics of first-generation high school students that distinguished them from other students:

Just over one-quarter (27 percent) of 1992 high school graduates were identified as ‘first generation’ students....For example, compared with students whose parents were either college graduates or had some college education, first-generation students were more likely to be Hispanic....First-generation students were also more likely than students whose parents were college graduates (but not more likely than those whose parents had some college) to be black, non-Hispanic ...and to be female....Family characteristics of first-generation students also differed from those of their non-first-generation counterparts. As parents’ education rose, the likelihood that students’ family income was in the lowest income quartile declined sharply (51 percent of first-generation students, 29 percent of those whose parents had some college, and 8 percent of those whose parents were college graduates). Similarly, as parents’ education increased, the likelihood of being from a single-parent home also declined, from 23 percent of first-generation students, to 16 percent of those whose parents had some college, to 9 percent of those whose parents were college graduates. (pp. 9 - 10)

As presented in Chapter 1, when studies have compared first-generation students to their non-first-generation peers, differences regarding college access emerged.

Findings suggested that first-generation students were less academically prepared for college (Torrez, 2004), had lower aspirations toward postsecondary education, and had few discussions with their parents about college entrance exams (Horn et al. 2000).

Additionally, differences were noted among college enrollment rates. Choy (2001) reported that the “likelihood of enrolling in postsecondary education is strongly related to parents’ education even when other factors are taken into account” (p. xx).

Research findings also indicated that first-generation students approached the college environment differently. Pike et al. (2005) studied undergraduates from across the nation who completed the *College Student Experiences Questionnaire (CSEQ)*. Pike reported the following results:

The findings from this study indicate that on some key indicators of college success first-generation college students do not compare favorably with their peers from families where at least one parent graduated from college. Specifically, first-generation college students were less engaged overall and less likely to successfully integrate diverse college experiences; they perceived the college environment as less supportive and reported making less progress in their learning and intellectual development. Most of these differences, however, were due to educational aspirations and where students lived when attending college. (p. 289)

Correspondingly, Pascarella and Terenzini (2005) reported that first-generation college students are more inclined to work more hours on campus and less likely to live on campus, develop relationships with faculty members, establish strong relationships with other students, and become involved in campus activities.

In summary, the findings illustrated particular characteristics of first-generation students. The results suggested that these characteristics are different from other college students, which consequently led to differences in how students prepared for college, both socially and academically, and how individuals had connected with college life.

Profile of At-risk Students. Researchers have defined at-risk youth as students who have an increased probability of school failure and dropping out of school early (Croninger & Lee, 2001; Kaufman & Bradby, 1992; Horn, Chen & Adelman, 1998). Additionally, researchers have identified general family background and school experiences which increased the odds of dropping out of school. Horn et al. (1998) identified the following risk factors associated with 8th grade students:

[1] Lowest socioeconomic quartile; [2] Single-parent family; [3] Older sibling dropped out of high school; [4] Changed schools two or more times from 1st to 8th grade; [5] Average grades of C's or lower from 6th to 8th grade; [6] Repeated an earlier grade from 1st to 8th grade. (p. 3)

Horn's et al. identification of risk factors included both demographic and school-related issues.

By focusing on social-risk and academic-risk in separate categories, Croninger et al. (2001) portrayed at-risk youth in a slightly different manner. Using the NCES National Education Longitudinal Study of 1988, Croninger et al. (2001) examined the relationship between social-risk and academic-risk and the probability that students drop out of high school. Their study targeted a cohort of adolescents who attended high school between 1990 and 1992. Croninger et al. defined at-risk youth as a student who fell into one or more of the following five social-risk groupings:

- (a) live in household where family income is at or below the 1988 poverty threshold; (b) belong to a language-minority group; (c) belong to a disadvantaged-minority group (i.e., Black, Hispanic, or American Indian); (d) live in a single-parent household; or (e) have a mother who failed to complete high school (or a father in the case of a male-headed, single-parent household.) (p. 556)

The second form of risk, academic-risk status, referred to school-related problems.

Croninger et al. defined at-risk youth as a student who experienced one or more of the following difficulties before high school:

- (a) grade-point average of less than a C during middle-school years; (b) held back between the 2nd and 8th grades; (c) no expectation of education beyond high school; (d) sent to the office more than once during the 1st semester of their 8th-grade year; or (e) parents notified more than once about school-related problems during the same time period. (p. 557)

While conceptualizing risk both demographically with social-risk and behaviorally with academic-risk, Croninger et al. reported these results:

Forty-four percent of students in the sample possessed one or more of these social-risk factors....Slightly more than one-third of students in the sample possess one or more of these academic-risk factors. Nearly half of the students in our sample who are socially at risk enter high school also academically at risk. (pp. 556-557)

Croninger et al. reported that both socially and academically at-risk students are more likely to drop out of high school than students without these characteristics:

Academic risk *increases* the probability of dropping out, as shown by the differences in constants (-1.70 v. -3.43). Although both log odds are negative (students are more likely to graduate than not), the log odds, as represented by the constants, are greater for students with academic risk than students without academic risk (the value is closer to 0)...Beyond academic risk, social risk also contributes to dropping out. For both students with and without academic risk, a single social-risk factor increases the log odds of dropping out (.72 and .65, respectively)...Although accumulation of social-risk factors accentuates the probability of dropping out, it does so only for those students who begin high school without any academic-related problems. (pp. 563-564)

As a result of these findings, Croninger et al. suggested that at-risk students fail to complete high school for non-academic reasons. As such, students from socially disadvantaged backgrounds experience negative consequences associated with poverty, low educational attainment by parents, minority status, or family composition.

The risk factors associated with at-risk college students are slightly different from the risk factors associated with at-risk youth. Horn, Premo, and Malizio (1995) characterized students by a series of risk attributes associated with college enrollment patterns, financial and family status, or high school graduate status: 1) delayed postsecondary enrollment by one or more years; 2) enrolled part time; 3) was financially independent; 4) had children or dependents; 5) was a single parent; 6) worked full time while enrolled; and 7) obtained a GED or was a high school dropout. These risk factors are interrelated with attributes that characterized a diverse college student population.

Additionally, based on results from studies with regard to persistence in postsecondary education, the risk factors identified by Horn et al. (1995) were determined to be related to college persistence and degree attainment. Horn et al. (2002) reported that as the number of risk factors increased, educational attainment decreased. Horn (p. 33) stated that: “at least half or more of 1999-2000 students with three or more risk factors could be in danger of leaving postsecondary education without a degree or credential.” Also, using data from the NCES Beginning Postsecondary Students Longitudinal Study of 1996-2001 (BPS:96/01), Berkner, He, and Cataldi (2002) studied a sample of approximately 3 million undergraduates who entered postsecondary education for the first time during the 1995-96 academic year. With a focus on college persistence and degree attainment, Berkner et al. reported that traditional students with no risk factors had higher bachelor’s degree completion rates than nontraditional students who started college with one or more risk factor.

Recent high school graduates who went to college immediately were more likely to complete a bachelor’s degree in six years than the beginners who had delayed entry (67 percent vs. 37 percent). The six-year completion rate for traditional students who started college with no persistence risk factors was 71 percent, compared with 49 percent for those who had one risk factor and 21 percent for those who had two or more risk factors. Moreover, students with no persistence risk factors were more likely to complete a bachelor’s degree in four years than they were to finish in more than four years (42 percent vs. 28 percent); however, among those with one risk factor, no difference could be detected between the percentage who took more than four years to finish and the percent who finished in four years (24-25 percent).

In addition to findings with regard to persistence risk factors related to enrollment patterns, income group, and demographic characteristics, Berkner et al. also described the profile of students who had high college completion rates in other ways. Students who

entered college with good academic preparation completed a bachelor's degree in four years. Berkner et al. defined good academic preparation as students who obtained a SAT score in the highest quartile among college freshman and who had taken two or more AP tests.

In summary, the findings presented numerous factors associated with both at-risk youth and at-risk college students. The results suggested that for both groups of at-risk students, one critical component is the threat of leaving either high school or college early.

Students' Educational Aspirations. In the last two decades of the twentieth century, a dramatic transformation occurred in high schools. This transformation is reflected in students' aspirations toward postsecondary education. Several studies have reported this change. First, using data from the U.S. Department of Education, Roderick (2006) reported the following statistics:

Nationally, the percentage of tenth-graders who stated that they hoped to obtain a bachelor's degree or higher doubled, from 40 percent in 1980 to 80 percent in 2002. These rising aspirations were shared across racial and ethnic groups, with the largest increase occurring among low-income students. (p. 3)

Then, Roderick studied minority and low-income public high school students in the Chicago urban school system and found a rise in educational aspirations of students at virtually all achievement levels:

Over 90 percent of juniors stated that they hoped to attend a four-year college. The reasons students gave for wanting to go college suggested that they saw it as an essential pathway to their future. Students emphasized the perceived economic utility of a college degree. They talked about the realities of the labor market, the more immediate experiences of their parents and family, and the need for a college education to repay their parents' sacrifices. (p. 5)

These trends are also reflected in an integrated qualitative and quantitative methods research study by Wimberly and Noeth (2005) which included eighth-, ninth-, and tenth-grade students from a broad array of urban and suburban schools with diverse social and economic backgrounds, including low-income, minority, middle and upper-middle class communities. Wimberly et al. reported these survey results:

Middle and early high school students reported high educational expectations. Survey findings show that as early as eighth grade nearly all students planned to pursue postsecondary education or training. Over three-quarters (77%) of students indicated that they planned to enter a four-year college or university. (p. 9)

In focus group discussions, Wimberly et al. also explored why these students recognized the need to finish high school and pursue some form of postsecondary education. The overarching reason described by the students was to be able to work in their chosen field or professional career.

Chenoweth and Galliher (2004) examined the academic aspirations of West Virginia rural Appalachian youth. Their study targeted a student population in which low college-going rates in the Appalachian region have persisted. The Appalachian region had been identified as an economically disadvantaged area, with lower rates of white-collar employment opportunities, poverty, and isolation. Based upon survey results, approximately 69% of the students in this study reported they planned to attend college. Among these students, self-improvement, money/status, and external/escape factors were the top three reasons reported for attending college.

Finally, using data from the NCES National Education Longitudinal Study of 1988, Goyette and Xie (1999) restricted their analysis to Asian American and white students and made the study of ethnic differences among Asian American a central focus.

Goyette et al. reported that among high school students all Asian American groups have higher educational expectations in terms of years than did whites:

16.1 years for Filipinos, 16.1 years for Southeast Asians, 16.7 years for Japanese, 16.9 years for Chinese, 17.5 years for Koreans, and 18.3 years for South Asians, in contrast to 15.6 years for whites. (p. 27)

Although these results indicated differences among the ethnic groups within Asian Americans, the educational expectations of Asian American students were higher than those of the white students. Goyette et al. implied that this commonality among Asian ethnic groups may be due to shared characteristics and experiences among immigrants and a conscious strategy to overcome racial discrimination and achieve upward mobility.

In summary, the findings reported from these studies revealed some differences toward postsecondary aspirations among different groups and ages of students. However, the results suggested that middle school and early high school students articulated the need to finish high school and a desire to pursue some form of postsecondary education. The high academic aspirations of U.S. youth indicated that they understood the need to develop advanced skills. To be successful in a diverse society, global market, and economy which has shifted from an industrial economy to one based on service, information, and technology, U.S. youth recognized the need for education past high school.

Early Postsecondary Planning. To ensure that students have ample time to consider and explore postsecondary education and career options, a consistent message throughout the literature is that college readiness should begin in middle school and be reinforced throughout high school. Students have embraced these suggestions; research

findings consistently revealed that high school students developed their future educational plans between the 8th and 10th grades (Cabrera & La Nasa, 2000; Cabrera, Prabhu, Deil-Amen, Terenzini, Lee & Franklin, 2003; Roderick, 2006; Wimberly et al. 2005).

Throughout the literature, researchers described the pipeline to college with slightly different components. Building upon the pipeline to college as described by Horn (1997), McDonough (1997) identified early stages of postsecondary planning and recommended multiple and progressive steps that students and their parents can take to become college-ready. These steps included the following activities: 1) considering postsecondary education; 2) deciding to attend college; 3) selecting high school courses to prepare for postsecondary training; 4) maintaining good grades; 5) gathering information about the college admissions process (including college admissions tests); 6) discussing educational and career goals with counselors, teachers, and parents; 7) obtaining information about colleges and academic programs; 8) obtaining information about financial aid opportunities; and 9) exploring college major and career interests.

Similarly, Wimberly et al. (2005) recommended that schools should develop a formal college readiness plan that included the following eight components:

- 1) postsecondary and career goals; 2) high school graduation requirements; 3) middle and high school courses needed to prepare for postsecondary training; 4) standardized assessments students will take in middle and high school and how results will be used; 5) potential extra-curricular and community activities; 6) available pre-college programs; 7) college finance plan; and 8) college admission steps. (pp. 17-18)

Common ground was found in the literature which emphasized both the importance of postsecondary planning and the involvement of students, parents, and

schools. Students' decisions to go to college were the result of a complex, systematic, and longitudinal process. This process involved parents, school teachers, administrators, peers, and the community working together and included the offering of numerous types of activities and intervention strategies. As suggested by the literature, the primary aim of this process was three-fold: 1) to educate students on college-level standards and what is expected of them to succeed in college; and 2) to increase students' self-efficacy and outcome expectations; and 3) to address perceived barriers and supports (Wimberly et al. 2005; McDonough, 1997; Roderick, 2006).

Researchers acknowledged that early postsecondary planning and intervention efforts benefited students in several proactive and important ways (Cabrera et al. 2003; Roderick, 2006; Wimberly et al. 2005). One benefit associated with postsecondary planning and intervention efforts was enhanced academic aspirations among youth. Chenoweth et al. (2004) examined direct and indirect influences upon the academic aspirations of West Virginia rural Appalachian youth and determined which variables contributed significantly to the college plans of males and females:

The most salient factors in predicting college decision making were those related to academic preparation. Objective measures, such as students' grade point averages and whether they had engaged in a college preparatory curriculum in high school were strongly associated with college plans. In addition, more subjective measures, such as students' perceptions of their own intelligence, preparedness for college, and comfort in the school setting, were also highly associated with college plans. (p. 10)

Because individual variables representing prior academic success and preparation for college emerged as the most salient predictors of college aspirations, Chenoweth et al. concluded that "students who aspired to college appeared to have been working toward

that goal for most of their academic careers, suggesting that early interventions targeting elementary and junior high school aged students would be appropriate” (p. 13).

Another benefit associated with postsecondary planning and intervention efforts was in helping students acquire college qualifications. Using data from the NCES National Education Longitudinal Study of 1988, Cabrera et al. (2000) examined factors that affected the chances of lowest socioeconomic status (SES) students to secure college qualifications. Adequate academic preparations in middle school lay the academic foundation on which other subject matter built during high school. Cabrera et al. reported that the lowest-SES students faced academic difficulties starting as early as the sixth grade, which in turn effected the students’ acquisition of academic college qualifications:

Lowest-SES students were 35 percent more likely to receive lower grades during the sixth through the eighth grades than were their high-SES counterparts....In the following of the 1,000 eighth graders in 1988 from lowest-SES backgrounds on the path to college, only 285, less than one-third, secured some degree of college qualifications by the end of their senior year....Of them, 151 were fully college qualified. One hundred and thirty-four obtained minimal college qualifications. In contrast, 697, or over two-thirds, of a similar group of 1,000 upper-SES students secured some degree of college qualifications by their senior year. The majority (549 out of 697) were qualified to begin collegiate work. (pp. 33-35)

Cabrera et al. reported that securing at least minimal college qualifications correlated with socioeconomic status; however, the gap between the lowest-SES and upper-SES students narrowed when parental involvement and early planning for college were taken into account:

Parental involvement in a student's education is pivotal for his or her chances of fulfilling the college qualification task. Each unit increase in parental involvement accounted for an 18% increase in a high school student's likelihood of securing minimal college qualifications. Early planning for college also matters. Students who planned to attend a four-year institution by the time they were in the 8th grade were 17% more likely to secure minimal college qualifications by the end of the senior year. (p. 15)

Consistent with previous research conclusions (Wimberly et al. 2005; McDonough, 1997; Roderick, 2006), Cabrera et al. implied that intervention strategies related to parental involvement, school based resources, school partnerships, and outreach programs would facilitate college aspirations and college participations rates among socioeconomically disadvantaged high school students. Specifically, Cabrera et al. recommended that elementary and secondary education levels were the suggested time in which schools and parents should help students target academic curriculum needed to be successful in college.

Interestingly, the suggestion by Cabrera et al. (2000) is complemented by research findings which indicated that strong basic skills proficiencies are a powerful determinant of college success, while family income and financial aid have only a modest influence on whether a high school graduate will complete college (Harrington & Sum, 1999; Adelman, 1997). Harrington et al. (1999) presented these findings:

The [1978 NCES National Longitudinal Survey] NLS findings reveal that 12 years after the initial interview, only about 1 percent of those in the bottom one-fifth of the basic skills distribution had graduated from college....In contrast, 60 percent of those high school students who scored in the top one-fifth of the basic skills distribution had completed four or more years of college....Only 1 percent of low-income, low-skill students earn a college degree, while just 3 percent of the highest-income, lowest-skill students earn a degree....In contrast, low-income students have a relatively high likelihood of completing college if they also score in the top one-fifth of the basic skills distribution. In fact, nearly 36 percent of high school students who live in low-income households but have strong basic skills complete college by the time they reach their late 20s. (pp. 16-17)

Also using the NCES National Longitudinal Study, similar findings were reported by Adelman (1997). Adelman reported that the answer to the questions of “Who was most likely to attend a four-year college?” and “Who finishes bachelor’s degrees?” is “exactly the same: the people who were best prepared, regardless of race, regardless of financial aid” (p. 41). Based upon these findings, Harrington et al. implied that while access to postsecondary education is contributed by higher family income, a key predictor is proficiency in basic skills related to reading comprehension, vocabulary, mathematical reasoning, and numerical problem-solving. As a result of these findings, strategies for increasing the likelihood that a high school graduate will enroll in college and persist through graduation should move beyond affordability and financial aid and target academic preparation. Harrington et al. urged that educational leaders place more emphasis on preparing students for the intellectual rigor that college demands and stated that “we need to redirect our efforts to ensure that more high school students possess the literacy, quantitative, and critical thinking skills required to succeed at the postsecondary level” (p. 17).

Sources of College-related Information. Previous studies have suggested that parents who have attended college are better able to model and facilitate their child's transition to higher education. Students with college-educated parents were more likely to seek information from their parents (Cabrera et al. 2000; Venezia & Kirst, 2005). In contrast, parents of prospective first-generation college students lacked firsthand personal experience and knowledge about many of the logistical requirements, financial planning, preparation courses, course placement, extra-curricular college preparation activities, outreach efforts, and high school programs related to college planning. Additionally, Cabrera et al. (2000) reported that the path to college among low-socioeconomic status (SES) students is also extraordinarily difficult, with parental level of education playing a role. Using the NCES National Education Longitudinal Study of 1988, Cabrera et al. examined data on 1,000 eighth graders and reported the following findings:

When considering those parents with at least some exposure to the requirements of college and the college-choice process, our results indicate that at most 23 percent of lowest-SES parents can provide their children with any guidance based on firsthand collegiate experience....In contrast, nearly all of highest-SES students (99.3 percent) grew up in families knowledgeable of postsecondary education. (p. 32)

Accordingly, prospective first-generation college students and low-SES students faced the task of applying to college without the assistance of parental experience. Researchers have reported that the high school-to-college transition was particularly challenging for prospective first-generation college students, as well as many students of color, and students who are economically disadvantaged (Cabrera et al. 2000; Gibbons et al. 2004; Venezia et al. 2005). Consequently, students with these background characteristics relied almost completely on in-school resources to help them find support, obtain college

information, and acquire the necessary resources to make informed decisions. In-school resources included teachers, high school counselors, and administrators (Cabrera et al. 2000; Gibbons et al. 2004; Horn et al. 2002; Venezia et al. 2005).

Although school counselors and school personnel play a role in helping students learn about postsecondary options and college preparation requirements, previous research uncovered inequalities throughout the school system. An unequal distribution of resources in areas such as college counseling, college preparation course offerings, up-to-date admission, placement, and financial aid information, and connections with local postsecondary institutions were found (Chenoweth et al. 2004; Spohn, Crowther, & Lykins, 1992; Venezia et al. 2005). Several studies reported difficulties in the college decision process; three examples will be described briefly. First, Chenoweth et al. (2004) reported the following problems encountered in the college decision process for West Virginia rural Appalachian youth:

Students listed ‘lack of financial resources’ as the top problem encountered in the college decision process, followed by ‘lack of information regarding college.’ ‘Lack of information’ was found to have a significant relationship with the college decision. ‘Lack of information regarding financial aid’ was third most reported. (p. 10)

Research findings indicated that students reported they had vague understandings on specific admission and placement policies, financial aid processes and deadlines. While primarily looking to in-school resources for college planning information, students felt confused and misinformed about how to prepare for college.

Additionally, Chenoweth et al. (2004) reported that high school counselors often felt uninformed and lacked college information themselves. These findings are consistent

with the Appalachian Access and Success Study (Spohn, et al. 1992) which reported that school personnel found it difficult to obtain and maintain access to admission requirements and financial aid information for various colleges. The lack of information available to high school counselors consequently resulted in a lack of college information to students.

Chenoweth et al. (2004) implied that innovative strategies for disseminating information about college opportunities in rural settings should be a priority among colleges, state-systems, and local schools. Chenoweth et al. further suggested that high school counselors needed to proactively seek and improve access to information on college enrollment requirements, funding opportunities, and financial aid.

Venezia et al. (2005) conducted a study for Stanford University's Bridge Project and collected data from universities, community colleges, and high schools regarding state and institutional policies and surveyed approximately 2,000 9th and 11th grade students in Honors and non-Honors English classes from six states: California, Illinois, Texas, Oregon, Georgia, and Maryland. Venezia et al. reported slightly different findings than those reported by Chenoweth et al. (2004) and Spohn et al. (1992) in that primarily teachers of Honors and college preparatory courses took a greater role in helping students prepare for college than school counselors:

...the data showed that a greater proportion of students spoke with a teacher about college admission policies than with a counselor. Honors English students tended to talk with counselors and teachers more than did their peers. In California, 81% of Honors students spoke with a teacher, compared with 77% of their peers in non-Honors classes. This compared with 70% and 67% in Georgia; 73% and 52% in Illinois, 67% and 53% in Maryland, and 71% and 60% in Oregon, all respectively. (p. 293)

Teachers, rather than school counselors, played a major role in helping students prepare for college. However, in relation to the difficulties with obtaining and maintaining access to critical college information, findings reported by Venezia et al. are similar to the research results reported by Chenoweth et al. (2004) and Spohn et al. (1992):

Teachers in every state but California (a state with well-defined and well-publicized eligibility criteria) believed that admission and placement policies in the state and region are too complex. They often thought the complexity of the policies, coupled with frequent K-12 policy shifts, made it difficult for them to stay abreast of the policies, especially in states where institutions were moving toward becoming more selective. Most teachers throughout the states were completely uninformed about specific placement policies. A Maryland teacher commented, 'I've never seen [a placement text], so all my presumptions are based on my own experience with the placement tests 10 years ago at a state college'. (p. 296)

In addition to the striking differences between students in Honors and non-Honors classes in terms of the amount and quality of the college counseling they received, Venezia et al. reported the following misconceptions, but perceptions, among the 9th and 11th grade students:

...the Bridge Project also found that many students believe the following misconceptions: They have to be 'stellar' athletes or students to receive financial aid; they cannot afford college; meeting high school graduation requirements will prepare them for college; getting into college is harder than preparing for, or succeeding in, college; community colleges do not have academic standards; the senior year in high school does not matter; they do not have to worry about grades or the types of classes they take until their sophomore year; they do not need to think about financial aid until they know where they are going to college; and they can take classes they want to take when they get to college. (p. 300)

As a result of these findings, Venezia et al. suggested numerous education reform and collaborative strategies for K-12 schools, postsecondary institutions, state agencies, and the federal government. Although the recommendations from Venezia et al. mirrored the college readiness plans as described by Wimberly et al. (2005), they emphasized more

engagement and collaboration efforts between K-12 and postsecondary institutions and stressed the need to focus federal and state financial and policy attention on institutions that serve the vast majority of students.

A problem identified in findings reported by Chenoweth (2004), Spohn (1992), and Venezia (2005) is that while prospective first-generation college-bound students, many students of color, and students who are economically disadvantaged looked to in-school resources for expertise and guidance, school counselors and teachers often lacked the very resources they needed to effectively assist these students. As researchers continue to uncover and report potential barriers, steps can be taken to improve the situation, as illustrated by a strategic direction set forth by the American School Counseling Association. In 2003 the American School Counseling Association released its new model for school counseling programs. This model was based on the National Standards which was designed to enhance the academic, career and person/social domains of students and help maximize student achievement (Gibbons et al. 2004).

Interestingly, slightly different research results regarding from whom students sought academic planning were reported by Horn et al. (2000). Using data sets from the NCES National Education Longitudinal Study of 1988, findings reported by Horn et al. suggested that students frequently discussed their high school plans with their mothers more than anyone else. In contrast, the likelihood that students frequently discussed their high school program with their fathers increased with parents' education levels. When Horn et al. narrowed their research focus and specifically examined first-generation

students, additional differences between first-generation students and students whose parents had more education were reported:

There was some indication that first-generation students consulted with individuals other than school staff or immediate family about selecting their high school program more often their counterparts whose parents had more education. For instance, they were more likely than students whose parents had college degrees to have discussed their high school programs with their close relatives three or more times (34 versus 26 percent)...Further evidence...is supported by the finding that first-generation students were more likely to report consulting with their friends than with their fathers (49 versus 34 percent) about their high school programs. (p. 33)

As a result of these findings, Horn et al. suggested various planning and intervention efforts would be needed to reach both prospective first-generation college students and students whose parents have obtained a college degree. Policymakers who wish to increase postsecondary aspiration and participation rates should concentrate their efforts on students whose parents have low levels of education. Additionally, Horn et al. implied that special efforts to increase parental involvement and engagement in areas of students' academic program planning and college readiness planning would potentially encourage more prospective first-generation college students to become college ready, both academically and socially.

In summary, consistent trends were evident in the findings which suggested that students have misconceptions about college-readiness requirements and seek information about academic and college planning from a variety of sources, which includes, but is not limited to, parents, relatives, friends, school counselors, and teachers. Although some differences were evident in the findings, prospective first-generation college students

often relied on in-school resources or relatives for information, while students with college-educated parents looked more to their parents for advice.

Description of Outreach Programs. Federal programs, community groups, and not-for-profit organizations played a role in seeking to raise the level of student preparation and college readiness of students for postsecondary work and to increase college access among first-generation, disadvantaged, and at-risk students. There are numerous major programs and interventions designed to primarily help educationally or economically disadvantaged students prepare for life beyond high school. These programs include, but are not limited to, the following: 1) the federal TRIO programs (Upward Bound, Upward Bound Math Science, Talent Search); 2) the federal Gaining Early Awareness and Readiness for Undergraduate Programs (GEARUP); 3) the not-for-profit organization, I Have a Dream (IHAD); and 4) other networks, such as Advancement Via Individual Determination (AVID) and Mathematics, Engineering, and Science Achievement (MESA) (Adelman, 1997; Swail, 2000).

Swail (2000) directed a National Survey of Outreach Programs which sought to provide detailed and descriptive information about four areas associated with early intervention programs: 1) average starting point for outreach programs; 2) services offered by and goals of outreach programs; 3) student groups targeted by outreach programs; and 4) program evaluations. Additionally, using the NCES High School & Beyond Study and the National Longitudinal Study of 1978, Adelman (1997) analyzed participation rates and outcomes associated with school-college collaboration projects and precollege outreach programs. Although the research focus of these two studies

differed, taken together, the findings offered insight into how the goals of the outreach program are being applied.

Swail (2000) reported results which demonstrated that over 90% of the outreach programs were targeted at students in middle school or beyond. Consistent with other findings which described early postsecondary planning beginning early, Swail reported the following results for the average starting point for outreach programs, illustrating the highest percent at middle school: “Elementary school (9%); Middle school (33%); Ninth grade (25%); Tenth or eleventh grade (22%); and Twelfth grade or graduate (11%)” (p. 94). Similarly, Adelman (1997) recommended that all participating students start while they are still in middle school.

As presented by Swail (2000), the top four goals of the outreach programs were 1) college attendance; 2) college awareness; 3) exposure to college; and 4) improve academic skills. Swail reported findings which described how many of the activities focused around these goals:

The highest-ranked service was college awareness [90%], and a perusal of the list revealed that it included a number of related activities, including campus visits, meetings with faculty and students, and college fairs. Academic support activities focused on a number of areas, from content knowledge (math, science, reading, writing) to skill development (study, test taking, computer, critical thinking). (p. 94)

Adelman (1997) reported similar results related to the academic support activities, but did not report specific findings related to college awareness and pre-college activities:

The average reported annual time in these programs was 250 hours. That number sounds decent—until we see how the time was used. Colleges were asked to indicate the three most important services carried out within their largest outreach programs. The top item on the list was ‘social skills development.’ Preparatory courses and remediation ranked fifth and sixth. (p. 42)

As a result of these findings, Adelman implied an opportunity cost associated with the actual services being provided. This opportunity cost is the disconnect between the goals of the programs and the actual services being used, with the loss primarily being in the activities targeted toward postsecondary education.

Swail (2000) reported that while the highest percent of outreach programs sought to target low income, first-generation college, minorities, and high school students, other categories of targeted student groups emerged. The additional targeted groups included: 1) middle academic; 2) middle school students; 3) females; 4) males; 5) high academic; 6) low academic; 7) at risk; and 8) English as a Second Language students. Conversely, Adelman (1997) reported slightly different findings which illustrate the percent of institutions that sponsor a precollegiate outreach program. As described by Adelman, a consequence of participation among institutions impacts both the number and type of students served:

Only 32 percent of institutions of higher education even sponsored a precollegiate outreach program for disadvantaged students. The median number of participating faculty was six per college, the mean student/staff ratio was 46:1, and 42 percent of participating students attended only during the summer. One out of seven participating students entered after high school graduation, which means they didn't stay long. Only a third entered prior to high school, and – we can infer – were out well before they finished high school (p. 42).

Additionally, Swail revealed that parental involvement was a common theme that emerged from the focus group sessions, and more than “two-thirds (69 percent) of all programs offered a parental component, whereas about one-fifth (22 percent) of all programs mandated parental involvement” (p. 97). Both Swail and Adelman implied that parental involvement was important because of the primary student groups targeted by

the outreach programs. Specifically, Adelman stressed the need to focus on reading tutors for students in elementary schools and suggested including English as a Second Language (ESL) for family members who wish to participate. Adelman implied these efforts, in turn, would expand the students' environment of learning.

Finally, one area of concern voiced by Swail (2000) and Adelman (1997) was the lack of program evaluations that were empirically sound. Consequently, as described by Swail, most of the knowledge known about individual programs was anecdotal, with potentially serious consequences:

Patricia Gandata, in her national search for empirical analysis of precollege outreach programs, has found only a few handfuls of program evaluations that are empirically sound. Others are either poorly done, internally biased, or nonexistent....we are still very much in the dark about what works best in programs....For instance, we know that mentoring, tutoring, and role modeling can work, and we know that study skills, academic support, and career awareness are all important. But we also know that not all mentoring programs are the same; some are better and some are worse. In fact, it is entirely plausible that poorly conducted programs may do an injustice to students and have a reverse impact. (p. 98)

Based upon these findings, Swail and Adelman implied that outreach programs must seek to find and apply best practices within the industry. With this knowledge, Swail and Adelman urged that outreach programs consider issues of standards of practice and be held to a standard of excellence.

As a result of the overall research findings, Swail (2000) acknowledged the accomplishments of these programs and implied that long-term strategies, large-scale reform efforts, and the combined efforts of many people are still necessary to make a significant impact on students, especially those without many role models to emulate.

Correspondingly, necessary strategies would include the following: 1) systematic

resources with increased program offerings; 2) expanded networking among programs; 3) improved linkages; and 4) partnerships between the outreach programs and schools.

Additionally, Adelman suggested that a targeted strategy should include desks, dedicated computers, and Intranet connections to foster interchanges between student mentors and participating students and their family members.

Influences on Students' Educational Aspirations. Previous studies have examined the relationships between specific types of influences on students' educational aspirations. Among these studies the effects of specific influences varied based on the definition used, analytical models employed, and somewhat different samples or respondents involved; however, four widespread elements were evident in the findings: 1) parents' aspirations; 2) various types of parental influences; 3) peer influences; and 4) other indicators.

First, parents' aspirations had a consistent and positive effect on their child's academic aspirations (Hao & Bonstead-Bruns, 1998; Smith-Maddox, 1999; Mahoney & Merritt, 1993; Hossler & Stage, 1992; and Fan, 2001). Specifically, Hossler et al. (1992), Mahoney et al. (1993), and Fan (2001) reported that above socioeconomic status, across ethnic group samples, and across student and parent data, the effect of parents' education aspirations for their children stood out as the most positive effect on students' academic growth and aspirations. In essence, these findings reported that the parents' desire for their children's education was the strongest relationship in influencing their child's postsecondary educational aspirations.

Various types of direct and indirect parental influences involvement were important in students' academic aspirations, depending on ethnicity (Patricio & Anguano, 2004; Desimone, 1999; Peng & Wright, 1994). Most notably, the different ways students perceive and come to understand the manner by which their parents influence and shape their educational goals and aspirations were described by Ceja (2004). Ceja focused on female high school seniors of Mexican descent, Chicanas, attending an inner-city high school in the greater Los Angeles area and reported these findings:

Another important source of parental influence was embodied in the form of a self-interpretation on the part of Chicana students of their parents' lived experiences. In many cases, it was not so much what parents said that was important in the development of Chicana students' educational aspirations. What appeared to be perhaps most important in the development of college aspirations was the meaning that Chicana students were able to extract from their awareness of the struggles that their parents experienced on a daily basis. These participants understood that their parents' lack of education, along with their lack of English fluency and their immigration status, were among some of the main factors that had situated their parents in the margins of society. For Chicana students, their parents' lived experiences represented an important source of strength and motivation to aspire for a college education. (p. 357)

Previous studies have suggested that the influence of students' close friends and peers affect students' college aspirations (Hallinan & Williams, 1990; Zietz & Joshi, 2005; and Sokatch, 2006). Using data from the NCES High School and Beyond Study, Hallinan et al. examined how characteristics of students and of students' close friends affect the students' college aspirations and attendance. With regard academic track, Hallinan et al. reported that solidarity tends to lead to greater peer influence:

Students in the vocational track who had a best friend in the academic track had lower college aspirations and attendance than did students in the academic track who had a best friend in the vocational track. Moreover, students in the academic track who had a best friend in the academic track had the highest college aspirations and rate of attendance at college...As predicted, the college plans and attendance of P's best friends had a strong positive effect of P's college plans and attendance. A best friend's higher aspirations and educational outcomes led to higher aspirations and outcomes for the respondent. (p. 128)

Using dating from the National Longitudinal Survey of Youth 1997, and with regard to students' academic program choices and peer influences, similar results were reported by Zietz and Joshi (2004). Zietz et al. reported that family background, pre-high school academic performance, and peer influence plays a significant role for students' choice of academic programs:

Peer pressure is strongly correlated with the choice behavior of high school students. In particular, if a high percentage of peers plan to go to college, the estimated probability of choosing the college program rises sharply, while the probability of choosing the vocational program drops significantly. Also, the more class cutting is common among peers, the less likely is a student going to choose the college program and the more likely is he/she to choose the general program of study. (306-307)

Zietz et al. implied that educators should encourage a climate of positive peer behavior that is focused on academic excellence. Additionally, Zietz et al. implied that because the college preparatory program encourages getting students to focus on and prepare for college, students' academic performance and learning should begin early, prior to when students enter high school in ninth grade.

Also, Hallinan et al. (1990) reported that year in school was an important consideration with regard to peer influence. Studying both sophomore and senior students, Hallinan et al. suggested that while sophomore had higher college aspirations

that did seniors, the influence on a students' college plans was greater of twelfth graders than of tenth graders:

The results show that O's influence on P's college plans was greater if P was a senior. The find suggests that seniors are more vulnerable to a friend's influence regarding college than are sophomores, possible because seniors consider college plans more seriously than do sophomores....Twelfth graders may know each other longer, which is likely to lead to stronger friendships, or the greater immediacy of the college decision may make the opinions of older friends more salient. (pp. 129-130)

The findings suggest that close friends, whose background and academic experiences are similar to those of the student, have a greater potential for influence. Hallinan et al. implied that the greater similarity among friends increases their trustworthiness and the strength of the friendship. These factors, coupled with year in school, make students more vulnerable to the peer influence process.

Using data from the NCES National Education Longitudinal Study of 1988, Sokatch studied the roles that peer play in the decision to go to college for low-income, urban, and minority students. Even when controlling for socioeconomic, familial, and academic ability variables, Sokatch reported that friends' wishes and friends' plans are the most powerful and robust predictors of 4-year college enrollment for low-income, urban and minority high school graduates.

Holding all else constant, the probability of 4-year college attendance increases more than 10 times for students who report that most of all of their friends plan on going to college and who report that their friends want them to go to college. In this case, the probability of attendance jumps from only 2.6% for those whose friends do not plan on going to college and do not wish the respondent to go to college, all the way up to 29.1% for low-income, urban minority students who have friends who plan on going to college and wish the respondent goes to college as well. (p. 141)

Sokatch referred to this sample as an educationally vulnerable group with a need for peer-group interventions. Sokatch suggested that college recruitment strategies and program-level policies should seek to incorporate peer-based programs, thus allowing peer networks and friends to serve as resources and mediators with peer influence.

Finally, findings suggested that policies designed to promote educational aspirations must extend beyond the school and include the family and community (Hao et al. 1998; Hossler et al. 1992; and Fan, 2001). Using data from the NCES National Education Longitudinal Study of 1988, Smith-Maddox (1999) studied the academic aspirations of African American eighth graders and reported that the African American adolescents were optimistic about their education and that several social and cultural resources shaped their aspirations:

Conversations with an adult other than a parent ($p < .05$), discussions with parents ($p < .001$), participation in activities outside of school ($p < .001$), parents' education level ($p < .001$), parental involvement ($p < .001$), and parents' expectations ($p < .001$) were positively related to educational aspirations. Poverty status ($p < .01$) and teachers' perception of student achievement level as low ($p < .001$) were significant negative predictors of aspirations. (p. 174)

Based upon these research results, Smith-Maddox implied that the most important predictors of educational aspirations for both poor and non-poor students were communication with parents, participation in extra-curricular activities, parental involvement, and parental expectations. Strong ties with both the school and family were critical to the formation of educational aspirations of these African American eighth graders. However, because many of these adolescents may have absent parents or loose connections with their parents, Smith-Maddox suggested a need for wider interpersonal networks and improved information flow.

Also, utilizing the NCES National Longitudinal Study of 1988, Horn et al. (1998) focused their research study on at-risk students and were primarily interested in factors that contributed to the transition from high school to postsecondary education. Consistent with previous findings (Hao et al. 1998; Smith-Maddox, 1999; Mahoney et al. 1993, & Fan, 2001), Horn et al. (1998) reported three similar influences which had positive effects on students' transition to college: 1) parents' educational expectations for their child; 2) parental discussions about school-related matters with their child; and 3) students' participation in two or more extra-curricular activities. Additionally, Horn et al. noted that peer influences, the number of students' friends with college plans, students' participation in outreach programs, and students' involvement with college preparation activities had a beneficial affect on students' transition to college.

In summary, findings varied among specific variables related to parental involvement. Although direct and indirect parental influences and parental involvement may be necessary based upon ethnicity and level of parental education, parental involvement was recognized to be an important factor related to students' postsecondary aspirations and college-readiness planning activities. Parental expectations appeared to play an important role in the pipeline to college (Horn, 1997). In addition to a strong relationship between parents' expectations and their child's postsecondary educational plans, findings have also revealed other school, community, and peer factors which influence students' academic aspirations.

Other Themes

Academic Preparation: Mathematics Curriculum. As described by Horn (1997) and Wimberly et al. (2005), one of the critical checkpoints during the pipeline to college is that students meet the necessary academic qualifications for college work. Specifically, studies have reported that a rigorous mathematics curriculum, which began with a critical first step of taking Algebra in the 8th grade, opened the gateway to completing advanced courses in high school and increased the likelihood of attending college. Taking advanced mathematics courses in high school was acknowledged as an important part in the pipeline to college process and described as highly valued, if not required for admission to many 4-year colleges and universities (Horn, 1997; Cabrera et al. 2000; Choy, Horn, Nunez & Chen, 2000). Horn et al. (2000) described the relationship “between completing any advanced mathematics courses in high school and whether or not a student was qualified for and subsequently enrolled in college was strong and compelling” (p. 22). Additionally, mathematics was viewed as a subject which needs continual task focus. Using data sets and transcript information from the NCES National Longitudinal Study of 1988, Horn et al. expanded on this relationship and reported that the level of parents’ education was associated with students’ completing mathematics courses in high school, showing proficiency in mathematics, and taking a senior-year mathematics course:

Just over one-fifth (22 percent) of 1992 high school graduates took high school-level algebra in the eighth grade. . . . Students whose parents were college graduates were at least twice as likely as first-generation students to take algebra in the eighth grade (34 versus 14 percent). . . . among students who were proficient at the highest level tested, approximately one-third (34 percent) of first-generation students took algebra in the eighth grade, compared with nearly one-half (47 percent) of student who parents had some college and 55 percent of students whose parents had bachelor's degrees or higher. . . . first-generation students and those whose parents had some college were less likely than students who parents were college graduates to take mathematics in their senior year (63 and 68 percent versus 75 percent). (pp. 15-17)

Based upon these findings, Horn et al. (2000) made the following three conclusions. First, access to algebra for all students in the 8th grade is important. Second, if school counselors and teachers provided students and parents with key information about choosing courses well before high school, specifically, more first-generation students would be able to pursue higher level courses. Third, a lack of four-year high school mathematics means that students enter college having been off task in mathematics for up to 14 months. Correspondingly, the students' pipeline to college would include taking algebra in the 8th grade and advanced mathematics courses in high school.

In summary, a consistent trend evident among research findings was the advantage of students taking algebra in the 8th grade with respect to completing advanced-level mathematics courses in high school. Not only do these courses aid in academically preparing students for college, but research results indicated that students who completed advanced mathematics programs also increased their chances of enrolling in a 4-year college or university.

Critical Characteristics of Postsecondary Undergraduate Students. As previously presented in the literature, there is an increase in students who have stated postsecondary aspirations, and many factors impact formalizing students' educational plans. Because there is evidence that aspirations may translate into high school graduation, college-readiness, college attendance, and ultimately, college graduation, another important theme related to this study is the profile of postsecondary undergraduate students. The NCES prepared a comprehensive report based upon the National Postsecondary Aid Study (NPSAS:2000). This report provided a detailed statistical overview of the approximately 16.5 million undergraduates enrolled in all U.S. postsecondary institutions in 1999-2000 (Horn et al. 2002). Five characteristics will be briefly described: 1) gender; 2) race/ethnicity; 3) age; 4) work; and 5) enrollment.

First, in terms of gender, the undergraduate population has become increasingly female. As reported by Horn et al. (2002), in 1999-2000, more women than men attended postsecondary institutions: 56% of undergraduates were women. In addition to increases in female undergraduate enrollment, college persistence through graduation has been increasingly female. While men receive the majority of first-professional (54%) and doctoral degrees (55%), women receive the majority of degrees awarded at the associate's (60%), bachelor's (57%), and master's level (59%).

Second, the U.S. undergraduate population has become increasingly more diverse with increases in minority student representation. As reported by Horn et al. (2002), in 1999-2000, white students constituted the majority of undergraduates, which was

followed by Black, Hispanic, and Asian students. Specifically, Horn et al. reported the following statistics:

Nearly 30 percent of 1999-2000 undergraduates identified themselves as a race other than White, including 13 percent who were Black, 6 percent who were Asian, and 5 percent who chose "other" as race. About 1 percent of undergraduates were American Indian/Alaska Native or Native Hawaiian/Other Pacific Islander. . . . Among undergraduates of any race, 7 percent reported their ethnicity as Hispanic. (p. 71)

When comparing socioeconomic indicators, findings reported by Horn et al. (2002) revealed several differences among ethnic groups. In 1999-2000, when compared to their white peers, minority undergraduate students were more likely to be in the lowest income quartile. Black undergraduates were more likely to receive financial aid (69%) than any other racial group. There were also differences among racial/ethnic groups with respect to the highest level of education obtained by undergraduates' parents. Hispanic undergraduates (57%) and Black undergraduates (47%) had parents who had completed no more than a high school education; and therefore, these students were first-generation college students. Asian students (52%) and White students (44%) had parents who had attained a bachelor's degree or higher.

Horn et al. (2002) also reported differences among undergraduates' home language. In 1999-2000, approximately 13% of undergraduates spoke a language other than English at home. Among these undergraduates, the largest portion spoke Spanish (43%), followed by Chinese (8%), and Vietnamese (4%). Compared to non-Hispanic undergraduates, Hispanic undergraduates were more likely to have taken remedial courses (28% versus 19%), with the most emphasis on reading.

Third, the U.S. undergraduate population has become more diverse in age. Findings reported by Horn et al. (2002) indicated that in 1999-2000, more than half of undergraduates were age 23 or younger. Approximately one quarter of undergraduate students was 30 or older, and the remaining students (17%) were in their mid-to-late twenties. The average age of undergraduates was 26, and the median age was 22. Beginning at age 19, the gender gap widened for women: 19 to 26 (54%); 30 to 39 (60%); and 40 years and older (62%).

Consistent with the age profile of students, Horn et al. (2002) reported that in 1999-2000, roughly one-quarter (27%) of undergraduates had children or other dependents. Students with dependents were also more likely to attend postsecondary education on a part-time basis.

When comparing socioeconomic indicators and undergraduates with parenthood responsibilities, Horn et al. (2002) reported that in 1999-2000, single parents alone (38%) had incomes that fell in the lowest income quartile, and 27% of single parents were Black. Undergraduates with children were more likely to have parents who completed no more than a high school education.

Fourth, Horn et al. (2002) reported findings that illustrated the extent to which the U.S. undergraduate population worked while attending college. In 1999-2000, about one-quarter (26%) of students at public and private (not for profit) 4-year institutions worked full-time compared with 44% of students at 2-year institutions. Undergraduates who worked while enrolled less than full-time reported working an average of 32 hours per

week during the school year. Undergraduates attending college full-time worked fewer hours, with a reported average of 26 hours per week.

Finally, Horn et al. (2002) reported enrollment characteristics of the 1999-2000 undergraduates. About three-quarters of undergraduates were enrolled in either public 2-year (42%) or public 4-year colleges and universities (31%). Enrollment characteristics varied by age, race/ethnicity, parents' education level, and family income level.

Horn et al. (2002) reported findings that indicated undergraduates' age and ethnicity distinguished students enrolled in 2-year public institutions from those enrolled in 4-year public institutions. In 1999-2000, beginning at the age of 19, with each successive age group, the percent of undergraduates enrolled in 2-year public institutions increased. Older undergraduate students who juggle financial, work, and family commitments were more likely to be enrolled in community colleges and more likely to attend college part-time. Similarly, in 1999-2000, undergraduates' ethnicity distinguished students enrolled in 2-year public institutions. Black and Hispanic undergraduates, coupled with U.S. citizens born in another country, were more likely to attend public 2-year colleges than 4-year colleges.

Parents' educational level distinguished undergraduate students enrolled in 2-year public institutions from those enrolled in 4-year public institutions. Horn et al. (2002) reported that 2-year institutions enrolled a higher percent of first-generation college students. In 1999-2000, 54% of undergraduates whose parents completed no more than a high school education were enrolled in a 2-year public institution. Similarly, 4-year institutions enrolled more undergraduate students whose parents had attained a bachelor's

degree or higher, compared with those whose parents had completed no higher than a high school education (58% versus 37%).

Also reported by Horn et al. (2002), in 1999-2000, students from families in the upper quartile of household income were three times more likely to enroll in college than those students from families in the lower quartile. Among dependent undergraduate students, with each successive increase in rate of family income, the rate at which they attended 4-year institutions rose.

In summary, the U.S. undergraduates enrolled in higher education in 1999-2000 were diverse. A majority of undergraduate students were women. Nearly one-third of the students were minority, with some stratification of these students who attended 2-year public institutions. Although a majority of undergraduate students were still at a traditional age, older students were enrolled in postsecondary education. Age, work, family responsibilities, and life circumstances were influential factors in student enrollment decisions between 2- and 4-year institutions. Younger and more traditional students tended to enroll in 4-year institutions and attend college full-time. Students with work and family responsibilities tended to enroll in 2-year institutions and attend part-time. Undergraduate students worked to help cover the costs of higher education (Horn et al. 2002).

Career and Economic Impacts of College. Consistent research trends and common ground were found in the career and economic impacts of college (Ewell, 2004; Harrington et al. 1999; Pascarella et al. 2005; Venezia et al. 2005). Harrington et al.

(1999) presented findings that support economic rewards and earning advantages associated with a college degree:

Since the mid-1970's, the economic rewards of earning a college degree have increased dramatically. Changes in the industrial and occupational job content of the U.S. economy have resulted in a sharp increase in the earnings advantages of college graduates. During the mid-1970's, men under age 30 with fresh bachelor's degrees earned just 15 percent to 20 percent more per year than their high school graduate counterparts. Twenty years later, young men who are recent college graduates can expect to earn 50 to 60 percent more per year than their counterparts with only high school diplomas. The gains in annual earnings for women with college degrees are even higher. (p. 15)

As reported by Venezia et al. (2004), more recent data from the U.S. Bureau of the Census (2001) illustrated similar trends related to the significant economic returns of further education:

In the year 2000, median annual earnings for workers age 25 years and older with a high school diploma was US\$24,267, compared with \$26,693 for workers with an associate's degree (27% higher) and \$40,314 for those with a bachelor's degree (66% higher). (pp. 285-286)

Research findings support the benefits of obtaining an advanced degree. Postsecondary education provides an increasingly important gateway to better jobs and social mobility. Given the current economic reality, a college degree provides a much stronger foundation for a consistent, growing, and more secure income over a lifetime.

Participation in postsecondary education has positive benefits for individuals and for society. From a student's vantage point, degree attainment clearly has a powerful influence on one's future occupation and income, as well as other factors that affect one's quality of life. From a state economic vantage point, a qualified and educated workforce to meet labor needs, exceed in and fill high-demand fields, and disseminate new knowledge was essential for state economic development, the nation's economy, and

society (Ewell, 2004; Harrington et al. 1999; King, 2002; Pascarella et al. 2005; Carnevale et al. 2000). Moreover, a highly educated workforce commands higher salaries, thus producing stronger growth in the gross domestic product and additional tax revenues (Carnevale et al. 2000).

Review of the Methodologies used in Other Studies. The research methodologies found in the literature included quantitative methods, qualitative methods, and mixed methods research with the integration of qualitative and quantitative methods. Specifically, of the twenty-one studies reviewed, seventeen of the studies utilized quantitative research methods. Among these seventeen quantitative studies, several studies used more than one type of analysis. With logistic regression analysis being the most predominate, the following is a list of the quantitative analysis found in the literature: 1) logistic regression analysis (8 studies); 2) descriptive statistics (4 studies); 3) ordinary least square regression (2 studies); 4) Chi-square analysis (2 studies); 5) multivariate analysis of covariance (ANOVA) (2 studies); 6) two-stage least square method (TSLS); 7) likelihood estimation technique (LISREL VII); 8) factor analysis; 9) latent growth modeling analysis; 10) repeated measures design; 11) event history modeling; 12) multilevel multinomial analysis; and 13) simple cross-tabulations.

While one study utilized a grounded theory qualitative method in which common themes were presented, three of the studies combined both quantitative and qualitative research methods. Research findings from the mixed methodology studies were reported with descriptive statistics from the quantitative research method and common themes which emerged from the interviews or focus group sessions.

Based upon this review of the methodologies used in other studies, it appears that logistic regression analysis was often employed by researchers who used data from a national data set. Consequently, coefficients were reported in log odds. Additionally, it appears that these types of research studies were deemed noteworthy by being published in peer-reviewed publications. This review provided a level of confidence in relation to the caliber of studies performed by educational researchers and offered a framework on which to conduct this study.

Evaluation of the Literature

Overall Weaknesses of the Literature. Based on the literature review, the problem addressed in this study is that researchers, policymakers, educators, and administrators have limited information concerning the relative importance of various influences on college aspirations among a new generation of students, the Net Generation/Millennials. As defined by Oblinger and Oblinger (2005), Net Generation/Millennials were born between 1982 and 1992 and are now entering colleges and universities. Particularly, within the Net Generation/Millennial population, current information appears to be limited in at least three ways. First, prior research indicated that compared to their peers, first-generation college students tend to be at a disadvantage with regard to postsecondary access (Choy, 2001). Moreover, research recognized 8th grade as the time for which early postsecondary planning activities should begin. Researchers acknowledged that these activities should be reinforced throughout high school (Cabrera et al. 2000; Cabrera et al. 2003; Roderick, 2006; Wimberly et al. 2005). It appeared that research studies on the subject of postsecondary planning tended to target earlier grades,

such as 8th and 9th grade, or later grades, such as 11th and 12th grade. Given that 10th grade falls in the middle of 8th and 12th grade, there appeared to be a need for research to examine more fully the postsecondary activities of tenth grade first-generation college-bound students.

Second, Predmore (2004) identified challenges associated with urban schools: over-crowded classrooms, dilapidated facilities, lack of equipment, teacher shortages, and low student achievement. Although different school characteristics were cited, Roellke (2003) described that rural school systems tend to be smaller, geographically isolated, and alternatively staffed. Predmore and Roellke implied that these challenges have implications on students' postsecondary planning activities and opportunities. Both urban and rural schools are vulnerable in the following ways: inadequate access to resources, challenges hiring teachers, lack of parent involvement, lack of community connectedness, population density or isolation, and inequalities in the educational system. Horn et al. (2000) reported the following distribution of 1992 first-generation high school graduates' school location: 39 percent attended a rural high school, 36 percent attended a suburban high school, and 26 percent attended an urban high school. Interestingly, Ferguson (2002) analyzed data collected by the Minority Student Achievement Network, formed by fifteen middle- and upper-middle income districts throughout the nation. Ferguson reported the following findings:

More minority students attend suburban schools than popularly believed; in 2000, 33 percent of African-American children, 45 percent of Hispanic children, 54 percent of Asian children, and 55 percent of white children lived in suburban areas, and they attended both poor, segregated schools and excellent, racially integrated schools with many resources. (p. 2)

Although first-generation college-bound students attend high schools representative of all three locations, it does not appear current literature includes journal articles or research studies which have explored or analyzed the effects of various influences on college aspirations among students who attend suburban high schools.

A third weakness is related to information technology access and resources in relation to students' postsecondary educational aspirations. Oblinger (2003) characterized the Net Generation/Millennial population as being digital, information, and multimedia literate and technology savvy. Because many of the Net Generation/Millennial population have grown up with computers and use modern forms of communication and new technologies, such as the Internet, instant messaging, beepers, blogs, wikis, and cell phones, Oblinger (p. 38) stated that "technology is assumed to be a natural part of the environment." Warschauer (2004) identified and analyzed four resources which are essential to access and social inclusion: 1) physical resources: computers and connectivity; 2) digital resources: content and languages; 3) human resources: literacy and education; and 4) social resources: communities and institutions. However, it appears that research is limited in how differences among students' access to and use of the computer for learning may be associated with students' college aspirations.

Overall Strengths of the Literature. A review of the literature with regard to the broad topic of college access revealed two strengths. First, one strength of the literature was the primary aim of the studies. It appeared that researchers focused on the relative importance of various school and family influences on college expectations among different groups of students during middle and high school years. Although the studies

appeared to have similar focal points related to how students and parents prepared for college, researchers employed various types of methodology. Quantitative methods, qualitative methods, and mixed methods research with the integration of qualitative and quantitative methods were used. Correspondingly, the findings were interpreted and presented in various ways. This, in turn, provided the reader with a more diverse discussion of the meaning of the results. Although researchers utilized different types of methodology, consistent findings and trends emerged which, in part, gave credence to the findings.

An additional strength of the literature was the type of information provided in the articles. Common elements found in each of the articles included an abstract, the purpose of the study, the theoretical framework or model on which the study was based, a description of the sample used in the study, methodology, research results, and recommendations. Accordingly, the reader had a relatively good understanding of the research study and enough information to self-critique the merits and drawbacks of the study and findings.

Gaps in the Literature. A review of the literature uncovered a gap in the literature. One source of data available for research on the topic of college access is the National Center for Education Statistics (NCES). NCES, located within the U.S. Department of Education and the Institute of Education Sciences, is the primary federal entity for collecting and analyzing data related to education in the United States and other nations (Ingels et al. 2004).

A program area within NCES is the Education High School Longitudinal Studies Program which began over thirty years ago and currently includes four school-based longitudinal studies: 1) the National Longitudinal Study of the High School Class of 1972 (NLS-72); 2) High School and Beyond (HS&B); 3) the National Education Longitudinal Study of 1988 (NELS:88); and most recently 4) the Education Longitudinal Study of 2002 (ELS:2002). The overall aim of the Education High School Longitudinal Studies Program is two-fold: 1) to study the educational, vocational, and personal development of students at various stages in their educational careers; and 2) to study the personal, family, social, institutional, and cultural factors that may affect the development of students at various stages in their educational careers (Ingels et al. 2004).

Over time, these national data sets have been used to study an array of education and policy issues. These policy issues included the following topics: 1) educational processes and outcomes; 2) trend data about critical transitions experienced by students as they leave middle or junior high school, progress through high school, and enter postsecondary institutions, the military, or the workforce; 3) trend data about students who leave high school early; and 4) measurements of students' learning and cognitive growth. However, due to the recent release of the NCES ELS:2002 data, current literature about the broad topic of college access and the narrower topic related to the pipeline to college as it relates to this data set is limited. Specifically, it does not appear that current literature includes journal articles or research studies which have explored or analyzed the effects of various influences on college aspirations among a nationally representative sample of high school students who were tenth graders in 2002.

It appears that NCES ELS:2002 data have seen limited use in studies that have sought to understand college access. A review of the literature indicated that seven reports, five papers, and one manual have been published regarding the NCES ELS:2002. The focal points of these efforts varied and included the following topics: 1) methodological comparisons; 2) a description of initial findings of student profiles and demographic trends from the NCES ELS:2002; 3) key findings from the NCES ELS:2002 Facilities Checklist; 4) an overview of the NCES ELS:2002 school library media centers; 5) information about the methods and procedures of the NCES ELS:2002; and 6) an overview of the U.S. Department of Labor and Department of Education studies. As such, it appears a void exists in the systematic exchange of these data as they relate to tenth grade students' aspirations, choices, and activities associated with the pipeline to college.

Although beyond the scope of this study, additional gaps in the current literature include at least three areas: 1) school environment and safety climate; 2) students with disabilities; and 3) Hispanic students. First, current literature is limited in how school climate, school crime, safety, or violence at school affects the individuals involved, disrupts the educational process, and influences students' intentions toward postsecondary education. DeVoe, Peter, Noonan, Snyder, & Baum (2005) reported data on school crime and safety, which included the following information:

The violent crime victimization rate at school declined from 48 violent victimizations per 1,000 students in 1992 to 28 such victimizations in 2003. Even so, violence, theft, bullying, drugs, and weapons are still widespread. In 2003, students ages 12-18 were victims of about 740,000 violent crimes and 1.2 million crimes of theft at school. Seven percent of students ages 12-18 reported that they had been bullied, 29 percent of students in grades 9-12 reported that drugs were made available to them on school property, and 9 percent of students were threatened or injured with a weapon on school property. (p. ix)

Additional research of these data is needed to understand the influence of school environment and safety climate on students' achievement, development, and postsecondary aspirations.

Second, current literature is limited in the consideration of potential differences which may exist between high school students without disabilities and high school students with disabilities with regard to college access. The United States government passed the Americans with Disabilities Act (1990) and subsequent amendments which protect students with disabilities from discrimination in postsecondary education and support their right to reasonable and appropriate accommodations (Mondy & Noe, 2005). Although research suggested that institutions of higher education are continuing to learn how to fulfill their statutory obligations and how to offer campus community and classroom accommodations to an increasing number of students with varying disabilities (Forrest, 2003), additional policy issues need to be examined.

Finally, a third limitation is that current literature on the topic of college access is limited on the Hispanic population, which in the United States is growing rapidly and more than any other population. As reported by Llagas and Snyder (2003), the Hispanic population was projected to be the largest minority group in the United States by 2005:

In 2000, 32.5 million Hispanics lived in the United States, comprising nearly 12 percent of the total population. Between 1990 and 2000, the Hispanic population increased by approximately 10 million people, accounting for 38 percent of the nation's overall population growth during the decade. Hispanics are expected to account for 51 percent of the population growth between 2000 and 2050 so that, by mid-century, Hispanics are projected to reach 98 million in number, then representing about one-fourth of the total U.S. population and more than three times their current number. (p. 6)

With the growth of the Hispanic population, research in the areas of the students' social background, such as family structure and composition, parental education and employment, languages spoken, and parental aspirations for their child will be beneficial to understand these influences on the likelihood of Hispanic students' transition from high school to postsecondary education.

Saturation Points in the Literature. A saturation point in the current literature is the volume of research studies, articles, conference papers, and dissertations related to the first three NCES school-based studies from Education High School Longitudinal Studies Program: 1) the National Longitudinal Study of the High School Class of 1972 (NLS-72); 2) High School and Beyond (HS&B); and 3) the National Education Longitudinal Study of 1988 (NELS:88). In addition to local or regional data, these data sets provide a rich archive on a specific generation of Americans. Numerous publications have offered descriptive, qualitative, quantitative, and analytical information about educational processes and outcomes, trend data about critical transition experiences by students as they leave middle or junior high school and progress through high school and into postsecondary institutions or the workforce, early dropouts and their experiences, and measurements of learning and cognitive growth. Although the topics among these publications are broad and many are beyond the focus of this study, a considerable

number of studies focusing on students from the 1970s, 1980s, and 1990s have been published using NCES national data sets and local and regional data sets.

Avenues for Further Inquiry. The relative importance of various influences on college aspirations among different groups of students is an avenue of further inquiry. Specifically, a new generation of students who were tenth graders in 2002 can be studied to examine their experiences with regard to postsecondary planning. Additional research findings in areas specific to an identified group of students can inform researchers, policymakers, educators, and administrators about a broad range of factors which can be identified as being associated with students' postsecondary aspirations, educational outcomes, special needs, and unique opportunities. As more students hold postsecondary aspirations, and as the undergraduate college population becomes more diverse, increased information about the students' socioeconomic background, home environment, community support systems, in-school resources, and school characteristics will be beneficial when decision-makers establish policies, allocate resources, and provide support services.

Chapter Summary

This chapter provided a review of some of the literature most relevant to the current study intended to examine potential relationships among first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the substantial base of literature emphasizing factors which influence

students' aspirations toward postsecondary education was reviewed and evaluated. In the remainder of this study, a detailed explanation of the research methodology used to conduct the study is provided in Chapter 3. The results of the study are presented in Chapter 4, followed by Chapter 5 which offers conclusions drawn from the results of the study and recommendations for further research.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to examine the relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Within this chapter, a detailed explanation of the methodology which was employed is provided. This explanation includes a description of the population studied, sampling method, variables, instrumentation, data collection procedures, analysis, and important limitations and delimitations inherent in this study.

Population Studied

The NCES ELS:2002 survey sample design involved a two-stage sample selection process: 1) schools; and 2) students. The population of approximately 27,000 schools consisted of public, Catholic, and other private schools that contain 10th grade and are located in the United States. The population of students consisted of 3.6 million spring-term tenth graders in 2002 enrolled in the targeted schools.

Stage one of the NCES ELS:2002 sample selection process involved the selection of schools. The probability of school selection was proportional to size, and up to three schools per stratum were allowed. The sampling frame for public schools was stratified by the nine-level U.S. Census divisions, with New England and Middle Atlantic Census

divisions combined: 1) New England/Middle Atlantic; 2) East North Central; 3) West North Central; 4) South Atlantic; 5) East South Central; 6) West South Central; 7) Mountain; and 8) Pacific. Within each of the public school divisions, stratifications were made by metropolitan status, or level of urbanicity: 1) urban setting; 2) suburban setting; and 3) rural setting. The sampling frame for Catholic and other private schools was two-fold. First, Catholic and other private schools were stratified by Catholic, those identified with affiliation identified as Roman Catholic, and other schools. Second, stratifications were made by the four-level Census regions: 1) Northeast; 2) Midwest; 3) South; and 4) West. The sampling of schools resulted in 1,221 eligible public, Catholic, and other private schools. The NCES ELS:2002 study over sampled private schools. Of the eligible schools, 580 public and 172 private schools participated in the study. Therefore, the sample of schools consisted of 752 schools with a 10th grade representing 27,000 schools in the United States, for a 67.8 percent weighted response rate. These schools provided 10th-grade enrollment lists which were subsequently used in the second stage of the sample selection process (Ingels, et al. 2004).

Stage two of the NCES ELS:2002 sample selection process involved selecting 26 students per school from the enrollment lists provided by the school. Tenth-grade students were selected randomly within each school, and quality checks were performed. Of the 17,591 eligible students, 15,362 students participated in the study, for an 87.28 percent weighted response rate. Therefore, the sample consisted of 15,362 tenth grade students representing 3.6 million tenth grade students in the United States (Ingels et al. 2004).

Linked to student surveys were parent surveys. After the full sample of tenth grade students were selected, one parent per student was asked to complete an NCES ELS:2002 Base Year Parent Questionnaire. The parent was self-selected with a stated guideline that one parent or guardian most familiar and knowledgeable about the child's education, school situation, and experience was to complete the survey. Of the 15,362 eligible parents, 13,488 parents participated in the study, for an 87.45 percent weighted response rate (Ingels, et al. 2004).

Sampling Method

The sample for this research study was drawn from the NCES ELS:2002 nationally representative sample of 15,362 adolescents who were tenth graders in 2002 attending one of the 752 targeted schools (Ingels, et al. 2004). The NCES ELS:2002 tenth grade student cohort was used as the base sample, N= 15,325. Because this study is concerned with first-generation college-bound students who plan to attend a 4-year college or university directly after high school, three variables were analyzed to determine the sample for this study: 1) the parents' highest educational attainment (BYPARED); 2) the students' plan to continue education after high school (BYS57); and 3) the type of postsecondary institution the students' plan to attend (BYS58). In order to be among this sample, students needed to have values for all three of these outcome measures. As described by the three-step process which follows, in this study, the sample consisted of tenth grade students who were defined as first-generation college-bound students who plan to continue their education directly after high school and plan to attend

a 4-year college or university, N = 4,269. The comparison group consisted of tenth grade students who were defined as first-generation college-bound students who state other intentions and do not plan to continue their education directly after high school, N = 3,050.

First, students were included in this study if they were considered to be a first-generation college-bound student. In this study, a first-generation college-bound student was defined as a tenth grade student from a family in which no parent or guardian earned a baccalaureate degree. To determine which of the tenth grade students in the base sample met this criterion, the parents' highest educational attainment (PYPARED), a composite variable taken from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System, was used to measure the highest level of education reached by either of the student's parents. The outcome was dichotomous, meaning that the outcome "graduated from college" was either achieved or not achieved. As presented in Table 9, responses for this variable were dummy coded in SPSS as (1) for "graduated from college," (1) for "completed Master's degree or equivalent," and (1) "completed PhD, MD, other advanced degree," and (0) for all other choices.

Table 9: Parents' Highest Educational Attainment: Variable Information for Analysis

Category Label	Dummy Code
Did not finish high school	0
Graduated from high school or obtained a GED	0
Attended a 2-year school/no degree	0
Graduated from a 2-year school	0
Attended college/no 4-year degree	0
Graduated from college	1
Completed Master's degree or equivalent	1
Completed PhD, MD, other advanced degree	1

Second, students were included in the study if they responded with a “yes, right after high school” to the following question from the NCES ELS:2002 Base Year Student Questionnaire (BYS57): “Do you plan to continue your education right after high school or at some time in the future?” The outcome was dichotomous, meaning that the outcome “yes, right after high school” was either achieved or not achieved. As presented in Table 10, responses for this variable were dummy coded in SPSS as (1) for “yes, right after high school” and (0) for all other choices.

Table 10: Students' Plan to Continue Education after High School: Variable Information for Analysis

Category Label	Dummy Code
No, I don't plan to continue my education after high school	0
Yes, but I don't know when	0
Yes, after staying out of school for over a year	0
Yes, after staying out of school for one year	0
Yes, right after high school	1

Finally, students were included in the study if they respond with a “4-year college or university” to the following question from the NCES ELS:2002 Base Year Student Questionnaire (BYS58): “Which of the following do you plan to attend?” The outcome

was dichotomous, meaning that the outcome “4-year college or university” was either achieved or not achieved. As presented in Table 11, responses for this variable were dummy coded in SPSS as (1) for “4-year college or university” and (0) for all other choices.

Table 11: Type of Postsecondary Institution Students’ Plan to Attend: Variable Information for Analysis

Category Label	Dummy Code
Vocational, technical, or trade school	0
Two-year community college	0
4-year college or university	1

Variables

The variables which were used in this study were taken from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System. The electronic codebook system is software for viewing the ELS:2002 data and individual survey questions and frequencies. The variables were either composite or individual variables taken from the ELS questionnaires or were created by combining one or more items in these questionnaires. Table 12 lists the variables which were used in this study.

Table 12: Variables Which Were Used in This Study

Type of Variable	Type of Engagement Factor	Variable Name	Variable Description
Independent			
	Student	BYSES2	Socioeconomic status
	Student	BYTXCQU	Standardized math and reading composite test score
	Student	BYS42	Participation in extra-curricular school activities
	Student	BYS45B&C	Use of a computer for learning
	Student	BYS59A-J	Use of resources for college entrance requirements
	Student	BYS55A.3	PSAT/PACT plans in grade 10
	Student	BYS55A.4	PSAT/PACT plans in grade 11
	Student	BYS55A.5	PSAT/PACT plans in grade 12
	Student	BYS55B.3	SAT/ACT plans in grade 10
	Student	BYS55B.4	SAT/ACT plans in grade 11
	Student	BYS55B.5	SAT/ACT plans in grade 12
	Student	BYS55C.3	AP Test plans in grade 10
	Student	BYS55C.4	AP Test plans in grade 11
	Student	BYS55C.5	AP Test plans in grade 12
	Student	BYS33A	Participation in an AP program
	Student	BYS33L	Participation in a college preparation program
	Parent	BYP55A&B	Checking of school work
	Parent	BYP56A-C	Offering advice about academics
	Parent	BYP82	Financial savings for the tenth grade child's postsecondary education
	Parent	BYPARASP.3	Educational aspirations for the tenth grade child: attend some college/no 4-year degree
	Parent	BYPARASP.4 , .5, .6, .7	Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
	Peer	BYS90A,B, D, F & H	Importance of schooling among friends
Dependent			
		BYS57	Students' plan to continue education after high school
		BYS58	Type of postsecondary institution students' plan to attend
Confounding and Independent			
		PYPARED	Parents' highest educational attainment
		BYURBAN	High school location
		BYSCTRL	High school type
Design			
		PSU	Primary sampling unit
		STRAT_ID	Stratum
		BYSTUWT	Student weight

Dependent Variable

The dependent variable was measured by each participant's response to two questions from the NCES ELS:2002 Base Year Student Questionnaire. 1) "Do you plan to continue your education right after high school or at sometime in the future?" (BYS57); and 2) "Which of the following do you plan to attend?" (BYS58).

The outcome for question BY57, "Do you plan to continue your education right after high school or at sometime in the future?" was dichotomous, meaning that the outcome "yes, right after high school" was either marked or not marked on the student questionnaire. As presented in Table 13 responses for this variable were recoded in SPSS as (1) for "yes, right after high school" and (2) for all other choices.

Table 13: Students' Plan to Continue Education After High School: Variable Information for Analysis

Category Label	Recode
No, I don't plan to continue my education after high school	2
Yes, but I don't know when	2
Yes, after staying out of school for over a year	2
Yes, after staying out of school for one year	2
Yes, right after high school	1

The outcome for question BY58, "Which of the following do you plan to attend?" was dichotomous, meaning that the outcome "4-year college or university" was either marked or not marked on the student questionnaire. As presented in Table 14, responses for this variable were recoded in SPSS as (1) for "4-year college or university" and (2) for all other choices.

Table 14: Type of Postsecondary Institution Students' Plan to Attend: Variable Information for Analysis

Category Label	Dummy Code
Vocational, technical, or trade school	2
Two-year community college	2
4-year college or university	1

Independent Variables

The independent variables were measured by each participant's response to specific questions from the NCES ELS:2002 Base Year Student Questionnaire and the NCES ELS:2002 Base Year Parent Questionnaire. Each of the independent variables was identified with one of the four layers of Bronfenbrenner's (1979) ecological context.

Microsystem: Standardized Math and Reading Composite Test Score. This variable, *standardized Math and Reading composite test score*, was measured by the student's standardized composite test score in mathematics and reading. The variable, BYTXCSTD, taken directly from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System, was treated as a continuous variable.

Microsystem: Checking of School Work. This variable, *checking of school work*, was treated as a continuous variable and was a composite measure based on a parent's response to the following question from the NCES ELS:2002 Base Year Parent Questionnaire (BYP55A&B): "How often do you (a) check that your tenth grader has completed all homework; and (b) discuss your tenth grader's report card with him/her?" The composite measure was based on a factor analysis. As presented in Table 15, the result was a one factor solution. One factor explains 63 percent of the variance ($\alpha = .359$).

Table 15: Checking of School Work: Factor Analysis with Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.268	63.389	63.389	1.268	63.389	63.389
2	.732	36.611	100.000			

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis.

The factor loading for each variable was .796. In creating the composite variable, each category label, or item, was multiplied by the respective factor loading, as presented in Table 16.

Table 16: Checking of School Work: Component Matrix

	Component 1
How often a parent checks that their tenth grader has completed all homework	.796
How often a parent discusses their tenth grader's report card with him/her	.796

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis. One component was extracted. The solution cannot be rotated.

Following the factor analysis, as presented in Table 17, this variable was recoded in a SPSS syntax file with the following formula:

`"compute pcheck=((.796*byp55a)+(.796*byp55b))."`

Table 17: Checking of School Work: Variables Used in Factor Analysis for Composite Measure

Questionnaire Item	Description	Factor Analysis: Weight Assigned to Variable
BYP55A	...check that your tenth grader has completed all homework?	.796
BYP55B	...discuss your tenth grader's report card with him/her?	.796

Microsystem: Offering Advice about Academics. This variable, *offering advice about academics*, was treated as a continuous variable and was a composite measure based on a parent's response to the following question from the NCES ELS:2002 Base Year Parent Questionnaire (BYP56A-C): "In the first semester or term of this school year, how often have you and/or your spouse/partner provided advice or information about the following to your tenth grader (a) selecting courses or programs at schools; (b) plans and preparation for college entrance exams such ACT, SAT, or ASVAB; and (c) applying to college or other schools after high school?" The composite measure was based on a factor analysis. As presented in Table 18, the result was a one factor solution. One factor explains 64 percent of the variance ($\alpha = .719$).

Table 18: Offering Advice about Academics: Factor Analysis with Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.922	64.063	64.063	1.922	64.063	64.063
2	.633	22.093	86.157			
3	.415	13.843	100.000			

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis.

Factor loadings range from .727 to .813. In creating the composite variable, each category label, or item, was multiplied by the respective factor loading, as presented in Table 19.

Table 19: Offering Advice about Academics: Component Matrix

	Component 1
Selecting courses or programs at school	.727
Plans and preparation for college entrance exams such as ACT, SAT, or ASVAB	.855
Applying to college or other schools after high school	.813

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis. One component was extracted. The solution cannot be rotated.

Following the factor analysis, as presented in Table 20, this variable was recoded in a SPSS syntax file with the following formula:

“compute padvice=((.727*byp56a)+(.855*byp56b)+(.813*byp56c)).

Table 20: Offering Advice about Academics: Variables Used in Factor Analysis for Composite Measure

Questionnaire Item	Description	Factor Analysis: Weight Assigned to Variable
BYP56A	Selecting courses or programs at school	.727
BYP56B	Plans and preparation for college entrance exams such as ACT, SAT, or ASVAB	.855
BYP56C	Applying to college or other schools after high school	.815

Microsystem: Financial Savings for the Tenth Grade Child’s Postsecondary Education. This variable, *financial savings for the tenth grade child’s postsecondary education*, was measured by the parent’s response to the following question from the NCES ELS:2002 Base Year Parent Questionnaire (BYP82): “Have you or your

spouse/partner done anything specific in order to have some money for your tenth grader's education after high school?" The measure was based on a positive parent response concerning the financial savings for college (yes/no). As presented in Table 21, this variable was treated as a categorical variable. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 21: Financial Savings for the Tenth Grade Child's Postsecondary Education: Variable Information for Analysis

Category Label	Description	Recode in SPSS Syntax File	Dummy Code in AM Statistical Software
No	No, a parent/spouse/partner has not saved money for their tenth grade child's education after high school	0	0
Yes	Yes, a parent/spouse/partner has saved money for their tenth grade child's education after high school.	1	1

Microsystem: Educational Aspirations for the Tenth Grade Child: Attend Some College/No 4-year Degree. This variable, *educational aspirations for the tenth grade child: attend some college/no 4-year degree*, was measured by the highest educational aspirations for the tenth grader reported by either the student's father or mother. The NCES ELS:2002 composite variable, parents' educational aspirations for tenth grade child (BYPARASP), was based on the NCES ELS:2002 Base Year Parent Questionnaire (BYP79): "How far in school do you want your tenth grader to go?" As presented in Table 22, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 22: Educational Aspirations for the Tenth Grade Child: Attend Some College/No 4-year Degree: Variable Information for Analysis

Category Label	Description	Recode in SPSS Syntax File	Dummy Code in AM Statistical Software
Achieve less than high school graduation	Parent expects the tenth grade child to achieve less than high school graduation	1	0
Attain a high school diploma or GED	Parent expects the tenth grade child to attain a high school diploma or GED	1	0
Attend or complete a 2-year college/school	Parent expects the tenth grade child to attend or complete a 2-year college/school	2	1
Attend college, 4-year degree incomplete	Parent expects the tenth grade child to attend a 4-year college, but fall short of obtaining a bachelor's degree	2	1
Graduate from college	Parent expects the tenth grade child to graduate from college with a Bachelor's degree	3	2
Obtain a Master's degree, or equivalent	Parent expects the tenth grade child to obtain a Master's degree, or equivalent	3	2
Obtain a PhD, MD, or other advanced degree	Parent expects the tenth grade child to obtain a PhD, MD, or an advanced degree	3	2

Microsystem: Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher. This variable, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree of higher*, was measured by the highest educational aspirations for the tenth grader reported by either the student's father or mother. The NCES ELS:2002 composite variable, parents' educational aspirations for tenth grade child (BYPARASP), was based on the NCES ELS:2002 Base

Year Parent Questionnaire (BYP79): “How far in school do you want your tenth grader to go?” As presented in Table 23, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 23: Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher: Variable Information for Analysis

Category Label	Description	Recode in SPSS Syntax File	Dummy Code in AM Statistical Software
Achieve less than high school graduation	Parent expects the tenth grade child to achieve less than high school graduation	1	0
Attain a high school diploma or GED	Parent expects the tenth grade child to attain a high school diploma or GED	1	0
Attend or complete a 2-year college/school	Parent expects the tenth grade child to attend or complete a 2-year college/school	2	1
Attend college, 4-year degree incomplete	Parent expects the tenth grade child to attend a 4-year college, but fall short of obtaining a bachelor’s degree	2	1
Graduate from college	Parent expects the tenth grade child to graduate from college with a Bachelor’s degree	3	2
Obtain a Master’s degree, or equivalent	Parent expects the tenth grade child to obtain a Master’s degree, or equivalent	3	2
Obtain a PhD, MD, or other advanced degree	Parent expects the tenth grade child to obtain a PhD, MD, or an advanced degree	3	2

Mesosystem: Participation in Extra-curricular School Activities. This variable, *participation in extra-curricular school activities*, was based on a student’s response to the following question from the NCES ELS:2002 Base Year Student Questionnaire

(BYS42): “In a typical week, how much time do you spend on school-sponsored extra-curricular activities (for example, sports, school clubs)?” This variable was treated as a continuous variable.

Mesosystem: Use of Resources for College Entrance Requirements. This variable, *use of resources for college entrance requirements*, was a composite measure based on the student’s response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS59A-J): “Where have you gone for information about the entrance requirements of various colleges (a) guidance counselor; (b) teacher; (c) coach; (d) parent; (e) friend; (f) brother or sister; (g) other relative; (h) college publications or website; (i) college representative; and (j) college search guides, publications, or websites?” The composite measure was based on the sum of positive student response concerning the number of resources the student used for information about the entrance requirements of various colleges (yes/no). As presented in Table 24, this variable was treated as a continuous variable and recoded in a SPSS syntax file with the following formula:

“compute resourc=SUM(bys59a, bys59b, bys59c, bys59d, bys59e, bys59f, bys59g, bys59h, bys59i, bys59j).

Table 24: Use of Resources for College Entrance Requirements: Variables for Composite Measure

Questionnaire Item	Description	Questionnaire Item	Description
BYS59A	Guidance Counselor	BYS59F	Brother or sister
BYS59B	Teacher	BYS59G	Other relative
BYS59C	Coach	BYS59H	College publications/websites
BYS59D	Parent	BYS59I	College representative
BYS59E	Friend	BYS59J	College search guides, publications, or websites

Mesosystem: PSAT/PACT Plans in Grade 10. This variable, *PSAT/PACT plans in grade 10*, was measured by the student’s response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55A): “Have you taken or are you planning to take any of the following tests in the next two years (a) Pre-SAT (PSAT) or Preliminary American College Testing Test (PACT)?” As presented in Table 25, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 25: PSAT/PACT Plans in Grade 10: Variable Information for Analysis

Category Label	Description	Recode in SPSS Syntax File	Dummy Code in AM Statistical Software
I haven’t thought about it	Student has not thought about taking the PSAT/PACT	1	0
No, I don’t plan to	Student does not plan to take the PSAT/PACT	1	0
Yes, this school year	Student plans to take the PACT/PSAT in grade 10	2	1
Yes, next school year	Student plans to take the PSAT/PACT in grade 11	3	2
Yes, in 12th grade	Student plans to take the PSAT/PACT in grade 12	4	3

Mesosystem: PSAT/PACT Plans in Grade 11. This variable, *PSAT/PACT plans in grade 11*, was measured by the student’s response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55A): “Have you taken or are you planning to take any of the following tests in the next two years (a) Pre-SAT (PSAT) or Preliminary American College Testing Test (PACT)?” As presented in Table 26, this

variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 26: PSAT/PACT Plans in Grade 11: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Code in AM Statistical Software
I haven't thought about it	Student has not thought about taking the PSAT/PACT	1	0
No, I don't plan to	Student does not plan to take the PSAT/PACT	1	0
Yes, this school year	Student plans to take the PACT/PSAT in grade 10	2	1
Yes, next school year	Student plans to take the PSAT/PACT in grade 11	3	2
Yes, in 12th grade	Student plans to take the PSAT/PACT in grade 12	4	3

Mesosystem: PSAT/PACT Plans in Grade 12. This variable, *PSAT/PACT plans in grade 12*, was measured by the student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55A): "Have you taken or are you planning to take any of the following tests in the next two years (a) Pre-SAT (PSAT) or Preliminary American College Testing Test (PACT)?" As presented in Table 27, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 27: PSAT/PACT Plans in Grade 12: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Code in AM Statistical Software
I haven't thought about it	Student has not thought about taking the PSAT/PACT	1	0
No, I don't plan to	Student does not plan to take the PSAT/PACT	1	0
Yes, this school year	Student plans to take the PACT/PSAT in grade 10	2	1
Yes, next school year	Student plans to take the PSAT/PACT in grade 11	3	2
Yes, in 12th grade	Student plans to take the PSAT/PACT in grade 12	4	3

Mesosystem: SAT/ACT Plans in Grade 10. This variable, *SAT/ACT plans in grade 10*, was measured by the student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55B): "Have you taken or are you planning to take any of the following tests in the next two years (b) College Board Scholastic Assessment Test (SAT) or American College Testing Service (ACT)?" As presented in Table 28, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 28: SAT/ACT Plans in Grade 10: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Code in AM Statistical Software
I haven't thought about it	Student has not thought about taking the SAT/ACT	1	0
No, I don't plan to	Student does not plan to take the SAT/ACT	1	0
Yes, this school year	Student plans to take the SAT/ACT in grade 10	2	1
Yes, next school year	Student plans to take the SAT/ACT in grade 11	3	2
Yes, in 12th grade	Student plans to take the SAT/ACT in grade 12	4	3

Mesosystem: SAT/ACT Plans in Grade 11. This variable, *SAT/ACT plans in grade 11*, was measured by the student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55B): "Have you taken or are you planning to take any of the following tests in the next two years (b) College Board Scholastic Assessment Test (SAT) or American College Testing Service (ACT)?" As presented in Table 29, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 29: SAT/ACT Plans in Grade 11: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Code in AM Statistical Software
I haven't thought about it	Student has not thought about taking the SAT/ACT	1	0
No, I don't plan to	Student does not plan to take the SAT/ACT	1	0
Yes, this school year	Student plans to take the SAT/ACT in grade 10	2	1
Yes, next school year	Student plans to take the SAT/ACT in grade 11	3	2
Yes, in 12th grade	Student plans to take the SAT/ACT in grade 12	4	3

Mesosystem: SAT/ACT Plans in Grade 12. This variable, *SAT/ACT plans in grade 12*, was measured by the student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55B): "Have you taken or are you planning to take any of the following tests in the next two years (b) College Board Scholastic Assessment Test (SAT) or American College Testing Service (ACT)?" As presented in Table 30, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 30: SAT/ACT Plans in Grade 12: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Coded in AM Statistical Software
I haven't thought about it	Student has not thought about taking the SAT/ACT	1	0
No, I don't plan to	Student does not plan to take the SAT/ACT	1	0
Yes, this school year	Student plans to take the SAT/ACT in grade 10	2	1
Yes, next school year	Student plans to take the SAT/ACT in grade 11	3	2
Yes, in 12th grade	Student plans to take the SAT/ACT in grade 12	4	3

Mesosystem: AP Test Plans in Grade 10. This variable, *AP Test plans in grade 10*, was measured by the student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55C): "Have you taken or are you planning to take any of the following tests in the next two years (c) Advanced Placement (AP) Test?" As presented in Table 31, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 31: AP Test Plans in Grade 10: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Code in AM Statistical Software
I haven't thought about it	Student has not thought about taking an AP Test	1	0
No, I don't plan to	Student does not plan to take an AP Test	1	0
Yes, this school year	Student plans to take an AP Test in grade 10	2	1
Yes, next school year	Student plans to take an AP Test in grade 11	3	2
Yes, in 12th grade	Student plans to take an AP Test in grade 12	4	3

Mesosystem: AP Test Plans in Grade 11. This variable, *AP Test plans in grade 11*, was measured by the student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55C): "Have you taken or are you planning to take any of the following tests in the next two years (c) Advanced Placement (AP) Test?" As presented in Table 32, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 32: AP Test Plans in Grade 11: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Code in AM Statistical Software
I haven't thought about it	Student has not thought about taking an AP Test	1	0
No, I don't plan to	Student does not plan to take an AP Test	1	0
Yes, this school year	Student plans to take an AP Test in grade 10	2	1
Yes, next school year	Student plans to take an AP Test in grade 11	3	2
Yes, in 12th grade	Student plans to take an AP Test in grade 12	4	3

Mesosystem: AP Test Plans in Grade 12. This variable, *AP Test plans in grade 12*, was measured by the student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS55C): "Have you taken or are you planning to take any of the following tests in the next two years (c) Advanced Placement (AP) Test?" As presented in Table 33, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 33: AP Test Plans in Grade 12: Variable Information for Analysis

Category Label	Description	Recode in a SPSS Syntax File	Dummy Code in AM Statistical Software
I haven't thought about it	Student has not thought about taking an AP Test	1	0
No, I don't plan to	Student does not plan to take an AP Test	1	0
Yes, this school year	Student plans to take an AP Test in grade 10	2	1
Yes, next school year	Student plans to take an AP Test in grade 11	3	2
Yes, in 12th grade	Student plans to take an AP Test in grade 12	4	3

Mesosystem: Participation in an AP Program. This variable, *participation in an AP program*, was based on a student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS33A): "Have you ever been in any of the following kinds of courses or programs in high school?" The measure was based on a positive student response concerning their participation in an AP program (yes/no). As presented in Table 34, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 34: Participation in an AP Program: Variable Information for Analysis

Category Label	Description	Recode in SPSS Syntax File	Dummy Code in AM Statistical Software
No	No, a student did not participate in an AP program	0	0
Yes	Yes, a student did participate in an AP program	1	1

Mesosystem: Participation in a College Preparation Program. This variable, *participation in a college preparation program*, was based on a student's response to the following question from the ELS:2002 Base Year Student Questionnaire (BYS33L): "Have you ever been in any of the following kinds of courses or programs in high school?" The measure was based on a positive student response concerning their participation in a special program to help students plan or prepare for college (yes/no). As presented in Table 35, this variable was treated as a categorical variable and recoded in a SPSS syntax file. After the SPSS syntax file was imported to AM Statistical Software, the variable was dummy coded.

Table 35: Participation in a College Preparation Program: Variable Information for Analysis

Category Label	Description	Recode in SPSS Syntax File	Dummy Code in AM Statistical Software
No	No, a student did not participate in a special program to help students plan or prepare for college	0	0
Yes	Yes, a student did participate in a special program to help students plan or prepare for college	1	1

Mesosystem: Importance of Schooling Among Friends. This variable, *importance of schooling among friends*, was treated as a continuous variable and was a composite measure based on a student's response to the following question from the NCES ELS:2002 Base Year Student Questionnaire (BYS90A,B,D,F, H): "Among your closest friends, how important is it to them that they (a) attend classes regularly; (b) study; (d) get good grades; (f) finish high school; (h) continue their education past high school?"

The composite measure was based on a factor analysis. As presented in Table 36, the result was a one factor solution. One factor explains 61% of the variance ($\alpha = .839$).

Table 36: Importance of Schooling Among Friends: Factor Analysis with Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.049	60.971	60.971	3.049	60.971	60.971
2	.707	14.135	75.107			
3	.453	9.057	84.136			
4	.428	8.564	92.728			
5	.364	7.272	100.000			

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis.

Factor loadings range from .710 to .815. In creating the composite variable, each category label, or item, was multiplied by the respective factor loading, as presented in Table 37.

Table 37: Importance of Schooling Among Friends: Component Matrix

	Component 1
Attend class regularly	.806
Study	.775
Get good grades	.815
Finish high school	.710
Continue their education past high school	.793

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis. One component was extracted. The solution cannot be rotated.

Following the factor analysis, as presented in Table 38, this variable was recoded in a SPSS syntax file with the following formula:

“compute friends=

$$((.806*bys90a)+(.775*bys90b)+(.815*bys90d)+(.710*bys90f)+(.793*bys90h)).$$

Table 38: Importance of Schooling Among Friends: Variables Used in Factor Analysis for Composite Measure

Questionnaire Item	Description	Factor Analysis: Weight Assigned to Variable
BYS90A	Attend class regularly	.806
BYS90B	Study	.775
BYS90D	Get good grades	.815
BYS90F	Finish high school	.710
BYS90H	Continue their education past high school	.793

Exosystem: Use of a Computer for Learning. This variable, *use of a computer for learning*, was treated as a continuous variable and was a composite measure based on the student’s response to the following question from the NCES ELS:2002 Base Year Student Questionnaire (BYS45B&C): “Whether at home, school, or some place else, how often do you use a computer (b) for school or work assignments; and (c) as a resource to learn things of interest to you on your own?” The composite measure was based on a factor analysis. As presented in Table 39, the result was a one factor solution. One factor explains 74% of the variance ($\alpha = .633$).

Table 39: Use of a Computer for Learning: Factor Analysis with Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.468	73.412	73.412	1.468	73.412	73.412
2	.532	26.588	100.000			

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis.

The factor loading for each variable was .857. In creating the composite variable, each category label, or item, was multiplied by the respective factor loading, as presented in Table 40.

Table 40: Use of a Computer for Learning: Component Matrix

	Component 1
How often a student uses a computer for school work or assignments	.857
How often a student uses a computer as a resource to learn things of interest	.857

Results were estimated by SPSS software. Extraction Method: Principal Component Analysis. One component was extracted. The solution cannot be rotated.

Following the factor analysis, as presented in Table 41, this variable was recoded in a SPSS syntax file with the following formula:

“compute tech=((.857*bys45b)+(.857*bys45c)).

Table 41: Use of a Computer for Learning: Variables Used in Factor Analysis for Composite Measure

Questionnaire Item	Description	Factor Analysis: Weight Assigned to Variable
BYS45B	...for school work or assignments?	.857
BYS45C	...as a resource to learn things of interest to you on your own?	.857

Macrosystem: Students' Socioeconomic Status. This variable, *students' socioeconomic status*, was taken directly from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System, (BYSES2). This variable is a composite measure of socioeconomic status constructed using the following data from the parent and/or student questionnaire: 1) mother's occupation; 2) father's occupation; 3) mother's

education; 4) father's education; and 5) family income. The variable, BYSES2, taken directly from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System, was treated as a continuous variable.

Confounding Variables

To answer the secondary research questions, three confounding variables were identified during the data analysis: 1) parents' highest educational attainment (BYPARED); 2) high school location (BYURBAN); and 3) high school type (BYSCTRL). Each of these variables was identified with the fourth layer, or the macrosystem, of Bronfenbrenner's (1979) ecological context.

Level of Parental Education. The level of parental education variable was a measure of the highest education reported by either the student's father or mother. This variable was defined by five levels: 1) did not finish high school; 2) graduated from high school or obtained a GED; 3) attended a 2-year school/no degree; 4) graduated from a 2-year school; and 5) attended college/no 4-year degree. This variable, (BYPARED), taken directly from the NCES ELS:2002/04 Data Files and Electronic Codebook System, was used to answer research question 1C:

1A. Among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and level of parental education?

1B. If there is a nonsignificant relationship based on level of parental education, among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

1C. If there is a significant relationship based on level of parental education, among first-generation college-bound students and for each level of parental education, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

This variable was coded the following way in the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System. As presented in Table 42 and for this analysis, the NCES ELS:2002 codes were used and recoded in a SPSS syntax file, with the variable label "PARED2".

Table 42: Parents' Highest Educational Attainment: Variable Information for Analysis

Category Label	Electronic Codebook Code	Recode in SPSS Syntax File
Did not finish high school	1	1
Graduated from high school or obtained a GED	2	2
Attended a 2-year school/no degree	3	3
Graduated from a 2-year school	4	4
Attended college/no 4-year degree	5	5

High School Location. The high school location variable (BYURBAN) was a measure of metropolitan status as urban, suburban, or rural. This variable was taken directly from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System. The high school location variable (BYURBAN) was used to answer research question 2C:

2A. Among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and high school location?

2B. If there is a nonsignificant relationship based on high school location, among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

2C. If there is a significant relationship based on high school location, among first-generation college-bound students and for each high school location, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

This variable was coded the following way in the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System. As presented in Table 43 and for this analysis, the NCES ELS:2002 codes were used.

Table 43: High School Location (BYURBAN): Variable Information for Analysis

Category Label	Electronic Codebook Code
Urban	1
Suburban	2
Rural	3

High School Type. The high school type variable (BYSCTRL) was a measure of high school type defined as either a public or private school. This variable was taken from the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System.

The high school type variable (BYSCTRL) was used to answer research question 3C:

3A. Among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and high school type?

3B. If there is a nonsignificant relationship based on high school type, among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

3C. If there is a significant relationship based on high school type, among first-generation college-bound students and for each school type, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

As presented in Table 44 and for this analysis, high school type variable (BYSCTRL), were aggregated in the following way with the category labels. The category labels were recoded in a SPSS syntax file, with the variable label “SCTRL”.

Table 44: High School Type (BYSCTRL): Variable Information for Analysis

Category Label	Electronic Codebook Code	Recode in SPSS Syntax File
Public	1	1
Catholic	2	2
Other Private	3	2

Design Variables

In order to take into account the stratified sample design and Taylor series approximation techniques of the ELS:2002 survey, three design variables taken directly from the NCES ELS:2002/04 Data Files and Electronic Codebook System were used during the data analysis: 1) Primary Sampling Unit (PSU); 2) Stratus (STRAT_ID); and 3) Student Weight (BYSTUWT). SPSS and AM Statistical Software, statistical software for analyzing data from complex samples, especially large-scale assessments, were used during the data analysis.

Instrumentation

The purpose of this study was to determine whether student, parent, and peer engagement factors contribute to first-generation college-bound students’ intent to attend a 4-year college or university directly after high school. The data collection instruments for the NCES ELS:2002 base year consisted of five separate questionnaires (student, parent, teacher, school administrator, and library media center), two achievement tests

with assessments in reading and mathematics, and a school observation facilities checklist (Ingels, et al. 2004). Specifically for this analysis, the composite score from the achievement tests and two data collection survey instruments were used: 1) Base Year Student Questionnaire (2002) and 2) Base Year Parent Questionnaire (2002).

NCES ELS:2002 Reading and Mathematics Assessment Test

The NCES ELS:2002 reading and mathematics assessment test specifications were adopted from previous NCES studies. The math test specifications emphasized practical applications and problem solving and focused on arithmetic, algebra, geometry, data/probability, and advanced topics. The reading test specifications were categorized as being a reproduction of detail, comprehension, or inference/evaluation. The reading and mathematics assessment test questions were selected from three previous NCES assessments: 1) the National Education Longitudinal Study of 1988 (NELS:88); 2) the National Assessment of Educational Progress (NAEP); and 3) and the Program for International Student Assessment (PISA). To test the validity and reliability of the assessment tests, items were field tested one year prior to the tenth grade survey, and as a result of the field tests, some items were modified. The mathematics and reading assessment tests were administered in two stages, and the test scores were normalized (Ingels, et al. 2004).

NCES ELS:2002 Base Year Student and Parent Questionnaires

The NCES ELS:2002 instrument design, content, and questions for the base year student and parent questionnaires drew heavily on previous NCES studies, the National

Longitudinal Study of the High School Class of 1972, the High School and Beyond Longitudinal Study, and the National Education Longitudinal Study of 1988. The instruments were designed to collect data over a period of time and support intercohort and cross-study comparisons. Additionally, NCES ELS:2002 added new items regarding educational technology and psychological scales and removed other previously-used topic areas due to changes in the Protection of Pupil Rights Amendment (PPRA) and in the *No Child Left Behind Act of 2001* (Ingels, et al. 2004). To test the validity and reliability of the instruments, the development and review process for each of the questionnaires consisted of an eight-step process. Table 45 illustrates this process (Ingels, et al. 2004, p. 13).

Table 45: Development and Review Process for Instrumentation

Step	Development and Review Description
1	<i>Sharing of the Draft Data Elements.</i> Draft elements of the questionnaires were shared with other government agencies, policy groups, and interested parties.
2	<i>Technical Review Panel (TRP) Review.</i> The ELS:2002 TRP, a specially appointed, independent group of substantive, methodological, and technical experts, reviewed the questionnaires.
3	<i>National Center for Education Statistics (NCES) Review.</i> The questionnaires underwent interdivisional review at NCES.
4	<i>Questionnaire Revision.</i> The survey instruments were revised based on reviewer comments.
5	<i>Writing of Justification.</i> A justification was written for the components of the instruments.
6	<i>Office of Management and Budget (OMB) Review.</i> The federal OMB reviewed the instruments.
7	<i>Questionnaire Revision.</i> The questionnaires were revised based on OMB comments.
8	<i>Field Testing and Revision.</i> The instruments were field tested and revised based on field test results.

NCES ELS:2002 Base Year Student Questionnaire (2002)

The NCES ELS:2002 Base Year Student Questionnaire was a 45-minute self-administered instrument during which high school sophomore sample members typically completed the questionnaire in a group in their school classrooms during spring term. The student questionnaire consisted of 98 questions and was divided into seven sections: 1) locating information; 2) school experiences and activities; 3) plans for the future; 4) non-English language use; 5) money and work; 6) family; and 7) beliefs and opinions about self (Ingels, et al. 2004). For this analysis, the variables used in this study come from sections two, three, and six, and seven.

NCES ELS:2002 Base Year Parent Questionnaire (2002)

Linked to the NCES ELS:2002 Base Year Student Questionnaire was the NCES ELS:2002 Base Year Parent Questionnaire, provided in both English and Spanish. The parent questionnaire was completed by one parent or guardian most familiar and knowledgeable about the child's education, school situation, and experience. The parent questionnaire consisted of 99 questions and was divided into six sections: 1) family background; 2) tenth grader's school life; 3) tenth grader's family life; 4) opinions about tenth grader's school; 5) tenth grader's future plans; and 6) information for future follow-up (Ingels, et al. 2004). For this analysis, the variables used in the study come from sections one, two, and five.

Data Collection

NCES ELS:2002/04 pre-data collection activities began during the field test of the base year. Table 46 lists the major pre-data collection activities (Ingels, et al. 2004).

Table 46: NCES ELS:2002/04 Pre-data Collection Activities

Step	Activity
1	Secured endorsements from various organizations which were felt to be influential in promoting the study
2	Contacted the Chief State School officers of each state to obtain permission to contact the schools
3	Sent an information packet to each superintendent within each district/diocese that had sampled schools in the state
4	Sent an information packet to each school for each approval which had been obtained
5	Scheduled a Survey Day and two make-up days with each participating school
6	Determined the type of parental consent with each participating school
7	Sent a study notebook to a designated coordinator at each school outlining the procedures for providing an enrollment list of 10th grade students
8	Sampled students based upon enrollment lists
9	Trained 136 survey administrators to conduct data collection in the schools
10	Coordinated Survey Day logistical arrangements at each participating school
11	Mailed reminder postcards to the sampled students

Student data collection began on January 21, 2002 and ended in the schools in June 2002. Telephone interviews with nonresponding students ended on August 4, 2004. Trained survey administrators managed the student questionnaires in the targeted schools. On the Survey Day, the survey administrator checked to ensure that parental consent forms had been signed, checked-in students on the student roster, and tried to locate students who were not present. The survey administrator governed the achievement tests and student questionnaire in a group setting. When less than 100 percent of the eligible students participated on a Survey Day, the survey administrator confirmed a make-up day

and continued with nonrespondent follow-up by conducting the survey through computer-assisted telephone interviews (Ingels, et al. 2004).

Parent questionnaire packets were mailed to all parents, and the packets included a cover letter and brochure which explained the study, the parent questionnaire, and a postage paid return envelope. For nonresponding parents, follow-up techniques included a thank you/reminder postcard, a telephone call, and a mailed abbreviated parent questionnaire. Parent data collection ended on October 17, 2002 (Ingels, et al. 2004).

Data collection response rates for the base year of the NCES ELS:2002 are presented in Table 47 (Ingels, et al. 2004, p. 109).

Table 47: NCES ELS:2002 Base Year Response Rates

Instrument	Selected	Participated	Weighted percent	Unweighted percent
Student questionnaire	17,591	15,362	87.28	87.33
Student assessment	15,362	14,543	95.08	94.67
Parent questionnaire	15,362	13,488	87.45	87.80

Analysis

Description of Logistic Regression

A goal, or outcome, of logistic regression is to predict the outcome of a dichotomous dependent variable with the use of continuous and/or categorical independent variables. Logistic regression calculates changes in the log odds of the dependent variable and estimates the probability of a certain event occurring (Menard, 2002; Pampel, 2000). In this study, one focus was to determine which student, parent, and peer engagement factors are useful in predicting tenth grade first-generation college-

bound students' stated intentions to attend a 4-year college or university directly after high school.

Why Logistic Regression was Chosen for this Study

Logistic regression was used in this research study for four reasons: 1) the type of dependent variable; 2) the relationship between independent variables and a dichotomous dependent variable; 3) the inferences possible with a dichotomous variable; and 4) the linearization of Y using logits. As cited by Pampel (2000), Lewis-Beck, the Series Editor of Sage University Papers Series in Quantitative Applications in the Social Sciences, stated that "logistic regression has pretty much come to replace ordinary least square (OLS) regression as the data analytic tool of choice when the equation to be estimated has a dichotomous dependent variable" (p. v). In this study the dependent variable was a measure based upon students' self-reported intentions to attend a 4-year college or university directly after high school. The dependent variable, which is called a binomial or binary random variable, was dichotomous (0=No; 1=Yes).

Second, the dependent variable will only take values of 0 and 1, but the independent, or predictor, variables in logistic regression can take any form, meaning that logistic regression makes no assumption about the distribution of the independent variables. Accordingly, the independent variables do not have to be normally distributed, linearly related, or of equal variance within each group. In logistic regression, the relationship between the dependent variable and independent variable is not a linear function (Pampel, 2000). In contrast, as stated by Pampel, "linear regression assumes that the conditional proportions or probabilities define a straight line for values of X ," (p. 2)

and Pampel described the conceptual problem with linear regression with a dichotomous dependent variable:

The conceptual problem with linear regression with a dichotomous dependent variable stems from the fact that probabilities have maximum and minimum values of 1 and 0. By definition, probabilities and proportions cannot exceed 1 or fall below 0. Yet, the linear regression line can extend upward toward positive infinity as the values of the independent variables increase indefinitely, and extend downward toward negative infinity as the values of the independent variables decrease indefinitely. Depending on the slope of the line and the observed X values, a model can give predicted values of the dependent variables above 1 and below 0. Such values make no sense, and have little predictive use. (p. 3)

Third, in addition to problems of functional form in relation to linear regression with a dichotomous dependent variable, Pampel (2000) described the problem of statistical inference:

Even if a straight line approximates the nonlinear relationship in some instances, some problems emerge that, despite leaving the estimates unbiased, reduce their efficiency. The problems involve the fact that regression with a dummy dependent variable violates the assumptions of normality and homoscedasticity. Both these problems stem from the existence of only two observed values for the dependent variable. Linear regression assumes that in the population a normal distribution of error values around the predicted Y is associated with each X value, and that the dispersion of the error values for each X value is the same. The assumptions imply normal and similarly dispersed error distribution. Yet, with a dummy variable, only two Y values and only two residuals exist for any single X value....Even in the population, the distribution of errors for an X value cannot be normal when the distribution has only two values. (pp. 8-9)

Finally, logistic regression transforms probabilities of an event into logits. The probability of an event occurring is P , where as $P/(1 - P)$ is the odds. The logit is defined to be the natural log of the odds (log odds). The logit transforms a dependent variable having inherent nonlinear relationships with a set of independent variables into a dependent variable having linear relationships with the same set of independent variables.

Simply stated, logistic regression is regression on a dependent variable that transforms nonlinear relationships into a linear relationship (Pampel, 2000). In contrast to a regression line being straight, Pampel (2002) presented a S-shaped curve and described why the transformation is important.

We need a transformation of the dependent variable to allow for the decreasing effects of X on Y as the predicted Y value approaches the floor or ceiling. We need, in other words, to eliminate the floor and ceiling inherent in probabilities. (p. 10)

As described by Pampel (2000), this transformation deals with the ceiling (ceiling = 1) and floor (floor = 0) problems of modeling a dichotomous dependent variable:

Although the probabilities vary between 0 and 1, logits or the logged odds of the probabilities have no such limits – they vary from negative to positive infinity. Many other transformations also eliminate the ceiling and floor of probabilities. . . . The logit transformation used in logistic regression has the advantage of relative simplicity, and finds use most commonly. (p. 54)

Description of Stepwise Logistic Regression

As defined by Menard (2002), stepwise logistic regression is “the use of decision made by computer algorithm, rather than choices made directly by the researcher, to select a set of predictors for inclusion or removal from a linear or logistic regression model” (p. 63). However, in this study, the researcher selected a set of independent variables, or predictors, based not only on p -values but historical knowledge of the independent variables, rather than having the computer do it.

Specifically, the analysis of a backward stepwise logistic regression began with a full model of all variables. Independent variables were eliminated from the model in an iterative process. The fit of the model was tested after the elimination of each

independent variable to ensure that the model still adequately fit the data. When no more variables could be eliminated from the model, the analysis was completed. In addition, the researcher also had the authority to choose not to eliminate some of the variables.

In contrast, the analysis of a forward inclusion stepwise logistic regression begins with the researcher entering variables into the model, with the fit of the model tested after each coefficient is added (Menard, 2002). Menard (2002) recommended backward elimination over forward inclusion:

With backward elimination, because both variables will already be in the model, there is less risk of failing to find a relationship when one exists. Usually, the results of backward elimination and forward inclusion methods of stepwise... regression will produce the same results, but when the results differ, backward elimination may uncover relationships missed by former inclusion. (p. 64)

Why Backward Stepwise Logistic Regression Was Chosen for This Study

Menard (2002) offered the following arguments about the stepwise procedure:

Without going too deeply into the arguments about the use of stepwise procedures, there appears to be general agreement that the use of computer-controlled step-wise procedures to select variables is inappropriate for theory testing because it capitalized on random variations in the data, and produces results that tend to be idiosyncratic and difficult to replicate in any sample other than the sample in which they originally were obtained. Proponents of the use of the stepwise procedures suggest that they may be useful in two contexts: purely predictive research and exploratory research. In purely predictive research, there is no concern with causality, only with identifying a model, including a set of predictors, that provides accurate predictions of some phenomenon....In exploratory research, there may a concern with theory construction and development to predict and explain a phenomenon, when the phenomenon is so new or so little studies that existing 'theory' amounts to little more than empirically unsupported hunches about explanations for the phenomenon. (p. 63)

A review of the literature indicated that previous studies have focused on a social capital theory, with an examination of relationships between independent variables related to

parental involvement and the dependent variables of students' academic achievement and college aspirations. The interest of this study was to expand thinking about a child's development, and specifically tenth grade first-generation college-bound students' college aspirations (Bronfenbrenner, 1979). Based on the literature review, it appeared that the variables most associated with Bronfenbrenner's microsystem had been studied within the context of a social capital theory. However, it appeared that the variables which will define and measure Bronfenbrenner's exosystem and macrosystem had not been previously studied in depth. Accordingly, backward stepwise regression was chosen for this study.

First, one context of this study was predictive research. Logistic regression calculates changes in the log odds of the dependent variable and estimates the probability of a certain event occurring. First, if an independent variable is related to the dependent variable, scores on the independent variable can be used to predict scores on the dependent variable. Prediction studies may facilitate continued research in the area of college access, with an emphasis on the activities that are important for college preparation.

Another context for this study was exploratory research in terms of selecting Bronfenbrenner's 'Ecological System Theory' (1979) as the theoretical framework for this study. Backward stepwise logistic regression can be used to rank the relative importance of the independent variables.

Data Analysis

The data analysis consisted of four major phases. First, using the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System, the variables which were used in this study were selected. A tag file was created to generate a record of all selected items. A tag file was necessary to create a SPSS import/syntax file, or card file. To utilize the NCES ELS:2002/04 Public Use Data Files and Electronic Codebook System, the creation of the card file was essential. This card file was used to extract the data from the electronic codebook. During the data analysis, SPSS read the card file, as the electronic codebook could not be used to extract variables directly (Ingels et al. 2004). Then, using SPSS, a software package used for conducting statistical analysis and manipulating data, the handling and coding of each variable began. All negative codes associated with a variable (-1 to -9) were eliminated from the analysis: 1) (-1) don't know; 2) (-2) refused; 3) (-3) item legitimate skip/NA; 4) (-4) nonrespondent; 5) (-5) out of range; 6) (-6) multiple response; 7) (-7) partial interview-break off; 8) (-8) survey component legitimate skip/NA; and 9) (-9) missing. SPSS and AM Statistical Software, statistical software for analyzing data from complex samples, especially large-scale assessments, were used during the data analysis.

As an exploratory data analysis, a Chi-square test of independence was conducted to test the relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the level of parental education. Correspondingly, this same exploratory analysis was used with the following

independent variables: 1) high school location; and 2) high school type. The level of significance was set at $\alpha = 0.05$.

Because the dependent variable, or outcome measure, in this study was dichotomous (0=No, 1=Yes), logistic regression models were constructed to test the relationship with each of the independent variables. To determine if the independent variables may be interrelated, a logistic regression model developed from a backward stepwise regression analysis was used to illustrate relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Associations between the independent variables and the dependent variable were tested by calculating the Wald statistic which has an asymptotic Chi-square distribution (Pampel, 2000). The level of significance was set at $\alpha = 0.05$. First, the full model included all of the independent variables. If the p -value for an individual independent variable was larger than 0.05, then that variable was eliminated, and the next model included all variables except the one eliminated. After fitting the first model with all independent variables and eliminating the variable with the largest p -value, this process was repeated, until only those variables that were significant (p -values less than 0.05) were included in the model. With this process, the researcher eliminated one variable at time; throughout the backward stepwise logistic regression process, the variable which was eliminated had the greatest p -value.

Additionally, for each independent variable that was found to be significant at the 0.05 level, the estimated logit, "Estimate", was interpreted by converting it to an

estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel. The results were presented in an estimated odds ratio. If an estimated odds ratio was less than 1.0, another calculation was performed ($1 \div$ initial estimated odds ratio), and the results were analyzed in an inverse manner.

In this study, the null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school.

Limitations and Delimitations of the Study

The following limitations and delimitations were inherent in this study:

1. A limitation was the actual college attendance and college persistence patterns of the high school students. At the time of this study, these NCES ELS:2002 data sets were not available.
2. A limitation was the students' academic preparations for postsecondary education, curriculum path, course-taking sequence, and high school transcript information. At the time of this study, these NCES ELS:2002 data sets were not available.
3. A limitation was the length of time students had to complete the NCES ELS:2002 Base Year Student Questionnaire. Students were allowed 45 minutes to complete the survey which consisted of 98 questions. Due to the time limitation, some students may not have been able to complete the survey in its entirety.

4. In assessing potential relationships between students' intent to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers, any relationships that were identified cannot be interpreted as cause-effect relationships.
5. A delimitation was that this study was limited to tenth grade students who attended public or private schools. Consequently, students who were home schooled were not considered for analysis in this study.
6. The NCES ELS:2002 is an integrated multilevel study that involves multiple respondent populations. The respondents included students, their parents or legal guardian, their teachers, and their schools, with data collected from the principal, the librarian, and a facilities checklist. A delimitation was that this study was limited to data collected from the students and their parents. Accordingly, data collected from the Base-year School Administrator Questionnaire, Teacher Questionnaire, Library Media Center Questionnaire, and Facilities Checklist were not included in this study.

Chapter Summary

This chapter provided a detailed explanation of the research methodology which was employed in this study. The explanation included a description of the population studied, sampling method, variables, instrumentation, data collection procedures, analysis, and important delimitations and limitations inherent in this study. In the remainder of this study, a review of the results of the study are presented in Chapter 4,

followed by Chapter 5 which offers conclusions drawn from the results of the study and recommendations for further research.

CHAPTER 4

RESULTS

Introduction

The study was inspired by the premise that the transition to college experiences, between first-generation students, or students who come from a family where no parent or guardian has earned a baccalaureate degree, and their non-first generation counterparts are different (Choy, 2001; Horn et. al., 2000; Torrez, 2004). In applying this premise to first-generation college-bound students' stated intentions regarding postsecondary education, this study was intended to address the general question: "What is the relative importance of various influences on college aspirations among tenth grade students?" More specifically, this study was intended to extend previous research by considering a new generation of students, the Net Generation/Millennials, who are now entering colleges and universities.

The purpose of this study was to examine the relationships between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, tenth grade students in which no parent or guardian earned a baccalaureate degree was the focus of this study. Toward fulfilling this purpose, the primary research question for this study was:

“What relationships exist between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?”

To answer this primary research question, the following secondary research questions were specifically addressed in this study:

1A. Among first-generation college-bound students, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and level of parental education?

1B. If there is a nonsignificant relationship based on level of parental education, among first-generation college-bound students, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

1C. If there is a significant relationship based on level of parental education, among first-generation college-bound students and for each level of parental education, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

2A. Among first-generation college-bound students, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and high school location?

2B. If there is a nonsignificant relationship based on high school location, among first-generation college-bound students, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

2C. If there is a significant relationship based on high school location, among first-generation college-bound students and for each high school location, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

3A. Among first-generation college-bound students, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and high school type?

3B. If there is a nonsignificant relationship based on high school type, among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

3C. If there is a significant relationship based on high school type, among first-generation college-bound students and for each school type, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

This chapter begins with a brief review of the foundations of the data analysis, followed by an overview of the results of this study including an analysis of the Chi-square test of independence used to address questions 1A, 2A, and 3A within each of the secondary research questions. As a result of the analysis of the Chi-square test of independence, it was not necessary to investigate questions 1B, 2B, and 3B. Therefore, the logistic regression models developed from a backward stepwise regression analysis, which were used to address questions 1C.1; 1C.2, 1C.3, 1C.4, 1C.5, 2C.1; 2C.2, 2C.3, 3C.1 and 3C.2, within each of the secondary research questions, are also included in the results. The reporting of the results is separated into four sections. First, the overall results are presented. Then, the reporting of the results are separated into three sections, one for each of the secondary research questions, with each section including the following: 1) question A results; 2) question C results: student engagement factors; 3) question C results: parent engagement factors; 4) question C results: peer engagement factor; and 5) question C: summary. Finally, the chapter will conclude with a discussion of the results relative to the study's primary research question and a summary of the results.

Foundations of Data Analysis

Each of the research questions addressed in this study involves an examination of the relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Each research question focused on the same dependent variable: first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school.

The Chi-square test of independence, which was used to address questions 1A, 2A, and 3A within each of the secondary research questions, involved an analysis of different independent variables. The independent variables for question 1A were the five levels of parental education: 1) did not finish high school; 2) graduated from high school or obtained a GED; 3) attended a 2-year school/no degree; 4) graduated from a 2-year school; and 5) attended college/no 4-year degree. The independent variables for question 2A were the three high school locations: 1) urban setting; 2) suburban setting; and 3) rural setting. Finally, the independent variables for question 3A were the two high school types: 1) public high school; and 2) private high school.

The logistic regression models developed from a backward stepwise regression analysis were used to address the following questions: 1C.1, 1C.2, 1C.3, 1C.4, 1C.5, 2C.1, 2C.2, 2C.3, 3C.1, and 3C.2 within each of the secondary research questions. As described in Chapter 3 and presented in Table 48, this involved an analysis of the same twenty-two independent variables which were categorized by student, parent, or peer engagement factors.

Table 48: Independent Variables Used in the Logistic Regression Models Developed From a Backward Stepwise Regression Analysis

Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

Additionally, each secondary research question beginning with a letter “C” focused on a different confounding variable, or area of analysis. The confounding variables for questions 1C.1 through 1C.5 were the five levels of parental education: 1) did not finish high school; 2) graduated from high school or obtained a GED; 3) attended a 2-year school/no degree; 4) graduated from a 2-year school; and 5) attended college/no

4-year degree. The confounding variables for question 2C.1 through 2C.3 were the three high school locations: 1) urban setting; 2) suburban setting; and 3) rural setting. Finally, the confounding variables for questions 3C.1 and 3C.2 were the two high school types: 1) public high school; and 2) private high school.

Results of Data Analysis

Overall Results: Student, Parent, and Peer Engagement Factors

With regard to the student, parent, and peer engagement factors, the overall results of the backward stepwise logistic regression analysis, associated with each research question, or area of analysis, are presented in Tables 49 and 50. Organized by research question, the top row of the table lists the ten areas of analysis, with a reference to each research question. Classified by engagement factor, the left column lists each of the independent variables which were used in this study. As described in detail in the following sections, for each independent variable and the intercept that were found to be significant at the 0.05 level, the estimated logit, “Estimate”, was interpreted by converting it to an estimated odds ratio. The numbers presented in Tables 49 and 50 represent the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level. A grey-shaded cell presented in Tables 49 and 50 represents that the independent variable and the intercept were found to be not significant at the 0.05 level. Specifically, Table 49 presents the results with regard to Student Engagement Factors, followed by Table 50 which presents the results with regard to Parent Engagement Factors and the Peer Engagement Factor.

Table 49: Independent Variables by Student Engagement Factors: Overall Results by Estimated Odds Ratio for Each Research Question

Research Question	Level of Parental Education					High School Location			High School Type	
	Q1C.1	Q1C.2	Q1C.3	Q1C.4	Q1C.5	Q2C.1	Q2C.2	Q2C.3	Q3C.1	Q3C.2
Confounding Variable	Did not finish HS	HS diploma or GED	Attended 2-year school/no degree	Graduated from a 2-year school	Attended college/no degree	Urban Setting	Suburban Setting	Rural Setting	Public HS	Private HS
Student Engagement Factors										
Socioeconomic status						1.41				
Standardized math and reading composite test score		1.04	1.03	1.03	1.02		1.04	1.06	1.03	1.04
Participation in extra-curricular school activities		1.04			1.08	1.05	1.04		1.04	
Use of a computer for learning			0.86 (1.16)							
Use of resources for college entrance requirements	1.18		1.12	1.16	1.17	1.07	1.10	1.11	1.09	
PSAT/PACT in grade 10		1.72	2.68	2.41	1.93	1.45	2.34	1.45	1.87	
PSAT/PACT in grade 11		1.83	1.64	1.73			1.91		1.49	
PSAT/PACT in grade 12										0.22 (4.54)
SAT/ACT in grade 10		1.62			1.89			2.08	1.60	2.75
SAT/ACT in grade 11	2.95	2.02	1.71	2.11	2.21	1.75	1.53	2.57	1.97	3.39
SAT/ACT in grade 12					1.62				1.31	3.25
AP Test plans in grade 10			1.99							
AP Test plans in grade 11			2.47			2.40	1.57		1.52	2.07
AP Test plans in grade 12			1.99			2.12	1.72		1.78	
Participation in an AP Program		1.82		2.34			1.69	1.69	1.59	
Participation in a college preparation program										

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function EXP {}, in Microsoft Excel.

Table 50: Independent Variables by Parent and Peer Engagement Factors: Overall Results by Estimated Odds Ratio for Each Research Question

	Level of Parental Education					High School Location			High School Type	
Research Question	Q1C.1	Q1C.2	Q1C.3	Q1C.4	Q1C.5	Q2C.1	Q2C.2	Q2C.3	Q3C.1	Q3C.2
Confounding Variable	Did not finish HS	HS diploma or GED	Attended 2-year school/no degree	Graduated from a 2-year school	Attended college/no degree	Urban Setting	Suburban Setting	Rural Setting	Public HS	Private HS
Parent Engagement Factors										
Checking of school work										
Offering advice about academics			1.22				1.16		1.14	
Financial savings for tenth grade child's postsecondary education										
Educational aspirations for tenth grade child: attend some college/no 4-year degree				0.25 (4.00)	0.15 (6.25)			0.21 (4.76)	0.51 (1.92)	0.25 (4.00)
Educational aspirations for tenth grade child: graduate from college with a BA/BS degree		3.41	4.28			3.75	2.16		1.82	
	Level of Parental Education					High School Location			High School Type	
Research Question	Q1C.1	Q1C.2	Q1C.3	Q1C.4	Q1C.5	Q2C.1	Q2C.2	Q2C.3	Q3C.1	Q3C.2
Confounding Variable	Did not finish HS	HS diploma or GED	Attended 2-year school/no degree	Graduated from a 2-year school	Attended college/no degree	Urban Setting	Suburban Setting	Rural Setting	Public HS	Private HS
Peer Engagement Factor										
Importance of schooling among friends	1.27	1.17	1.23	1.26		1.19	1.21	1.15	1.16	1.24

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function $EXP\{\}$, in Microsoft Excel.

Question 1A Results

The first research question addressed in this study was: “Among first-generation college-bound students, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and level of parental education?”

To answer this question, an exploratory data analysis using a Chi-square test of independence was conducted to test the relationship between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and level of parental education. The level of significance was set at $\alpha = 0.05$. The results suggest that first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and level of parental education are not independent (Pearson Chi-square = 0.00). In essence, there was a significant relationship between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and level of parental education.

The null hypothesis was defined as no relationship between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and level of parental education ($\alpha = 0.05$). Therefore, when considering the results based of the Chi-square test of independence included in Table 51, the null hypothesis was rejected.

Table 51: Chi-square Test of Independence for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	101.782 ^(a)	4	.000

^a. Zero cells have expected counts less than 5. The minimum expected count is 283.37. Results were estimated by SPSS software.

As a result of this exploratory data analysis, it was not necessary to investigate research question 1B. Logistic regression models developed from a backward stepwise regression analysis were conducted to answer research question 1C:

If there is a significant relationship based on level of parental education, among first-generation college-bound students and for each level of parental education, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

The five levels of parental education were coded as a subset of research question 1C:

- Question 1C.1: Did not finish high school
- Question 1C.2: Graduated from high school or obtained a GED
- Question 1C.3: Attended a 2-year school/no degree
- Question 1C.4: Graduated from a 2-year school
- Question 1C.5: Attended college/no 4-year degree.

Question 1C.1: Highest Level of Students' Parental Education:

Did Not Finish High School

To answer this question with regard to the level of students' parental education in which the parent *did not finish high school*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix A provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high

school. As illustrated in Table 52, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 52: Level of Students' Parental Education: Did Not Finish High School: All Independent Variables

Observations: N = 233
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated nineteen times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the

backward stepwise logistic regression analysis in Table 53 indicated that three independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, “Estimate”, in Table 53, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel.

Table 53: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and Level of Students’ Parental Education: Did Not Finish High School: Variables that were Significant

Observations: N = 397				
Parameter Name	Estimate	Standard Error	p > t	$EXP\{\text{Estimate}\}$ = Estimated Odds Ratio
Student Engagement Factors				
Use of resources for college entrance requirements	0.165	0.061	0.008	1.18
SAT/ACT plans in grade 11	1.083	0.267	0.000	2.95
Peer Engagement Factor				
Importance of schooling among friends	0.241	0.060	0.000	1.27

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, “Estimate” was interpreted by converting it to an estimated odds ratio, using the exponential function $EXP\{\}$, in Microsoft Excel.

With regard to the level of students’ parental education: *did not finish high school*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the ‘Overall Results Tables,’ or Tables 49 and 50. Specifically, for research question 1C.1, the results are presented in the first column under the heading, ‘Level of Parental Education’.

Student Engagement Factors

Use of Resources for College Entrance Requirements. The estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.18. This means that among tenth grade students whose parent *did not finish high school*, for every one unit increase in the use of resources for college entrance requirements, students were about 1.18 times, or 18 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 53 were included in the analysis.

SAT/ACT Plans in Grade 11. Most notably, the estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 2.95. This means that among tenth grade students whose parent *did not finish high school*, students who plan to take the SAT/ACT in grade 11 were about 2.95 times more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 53 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.27. This means that among tenth grade students whose parent *did not finish high school*, for every one unit increase in the importance of schooling among friends, students were about 1.27

times, or 27 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 53 were included in the analysis.

Question 1C.1 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students and their peers. Specifically, the results imply that three significant positive relationships exist. Among the three independent variables that suggest a positive relationship, one of the independent variables has an estimated odds ratio above 1.50. The estimated odds ratio implies that the independent variable, students' plans to take the SAT/ACT test in grade 11, is the most important.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the level of students' parental education: *did not finish high school*, the null hypothesis was rejected.

Question 1C.2: Highest Level of Students' Parental Education: Graduated from High School or Obtained a GED

To answer this question with regard to the level of students' parental education in which the parent *graduated from high school or obtained a GED*, a series of logistic

regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix B provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 54, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 54: Level of Students' Parental Education: Graduated from High School or Obtained a GED: All Independent Variables

Observations: N = 1063
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated thirteen times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the backward stepwise logistic regression analysis in Table 55 indicated that nine independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, “Estimate”, in Table 55, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel.

Table 55: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and Level of Students’ Parental Education: Graduated from High School or Obtained a GED: Variables that were Significant

Parameter Name	Estimate	Standard Error	$p > t $	$EXP\{\text{Estimate}\}$ = Estimated Odds Ratio
Observations: N = 1545				
Student Engagement Factors				
Standardized math and reading composite test score	0.036	0.008	0.000	1.04
Participation in extra-curricular school activities	0.036	0.013	0.004	1.04
PSAT/PACT plans in grade 10	0.540	0.182	0.003	1.72
PSAT/PACT plans in grade 11	0.604	0.142	0.000	1.83
SAT/ACT plans in grade 10	0.480	0.235	0.042	1.62
SAT/ACT plans in grade 11	0.705	0.149	0.000	2.02
Participation in an AP program	0.601	0.214	0.005	1.82
Parent Engagement Factor				
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher	1.226	0.200	0.000	3.41
Peer Engagement Factor				
Importance of schooling among friends	0.154	0.041	0.000	1.17

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, “Estimate” was interpreted by converting it to an estimated odds ratio, using the exponential function $EXP\{\}$, in Microsoft Excel.

With regard to the level of students' parental education: *graduated from high school or obtained a GED*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the 'Overall Results Tables,' or Tables 49 and 50. Specifically, for research question 1C.2, the results are presented in the second column under the heading, 'Level of Parental Education.'

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.04. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, for every one unit increase in the standardized math and reading composite test score, students were about 1.04 times, or 4 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category are independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value was significant at the 0.05 level, this may not be an important relationship.

Participation in Extra-curricular School Activities. Similarly, the estimated odds ratio associated with the continuous variable, *participation in extra-curricular school activities*, was 1.04. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, for every one unit increase in participation in extra-

curricular school activities, students were about 1.04 times, or 4 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category are independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 10*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 1.72. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, students who plan to take the PSAT/PACT in grade 10 were about 1.72 times, or 72 percent, more likely than students who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis.

PSAT/PACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 11*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 11 was 1.83. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, students who plan to take the PSAT/PACT in grade 11 were about 1.83 times, or 83 percent, more likely than students

who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis.

SAT/ACT Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 10*, included the comparison group, no plans to take the SAT/ACT. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 10 was 1.62. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, students who plan to take the SAT/ACT in grade 10 were about 1.62 times, or 62 percent, more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis.

SAT/ACT Plans in Grade 11. Similarly, the estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 2.02. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, students who plan to take the SAT/ACT in grade 11 were about 2.02 times more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis.

Participation in an AP Program. The estimated odds ratio associated with the categorical variable, *participation in an AP program*, included the comparison group, no participation in an AP program. The estimated odds ratio of a student who participates in an AP program was 1.82. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, students who participate in an AP program were about 1.82, or 82 percent, times more likely than students who do not participate in an AP program, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis.

Parent Engagement Factor

Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher*, included the comparison group, no postsecondary educational aspirations for the tenth grade child. Most notably, the estimated odds ratio of a student whose parent aspires for him/her to graduate from college with a BA/BS degree or higher was 3.41. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, students whose parent aspires them to graduate from college with a BA/BS degree or higher were about 3.41 times more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.17. This means that among tenth grade students whose parent *graduated from high school or obtained a GED*, for every one unit increase in the importance of schooling among friends, students were about 1.17 times, or 17 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 55 were included in the analysis.

Question 1C.2 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that nine significant positive relationships exist. Among the nine independent variables that suggest a positive relationship, six of the independent variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variable, parents' educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, is the most important, followed by students' plans to take the SAT/ACT in grade 11. The remaining four independent variables with an estimated odds ratio above 1.50 focus on two main themes: 1) students' participation in an AP program; and 2) students' plans to take college entrance exams.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the level of students' parental education: *graduated from high school or obtained a GED*, the null hypothesis was rejected.

Question 1C.3: Highest Level of Students' Parental Education:
Attended a 2-year School/No Degree

To answer this question with regard to the level of students' parental education in which the parent *attended a 2-year school/no degree*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix C provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 56, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 56: Level of Students' Parental Education: Attended a 2-year School/No Degree:
All Independent Variables

Observations: N = 773
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated ten times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the backward stepwise logistic regression analysis in Table 57 indicated that twelve independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, "Estimate", in Table 57, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel. Additionally, because the

“Estimate” was a negative number (−0.150)* for the independent variable, use of a computer for learning, another calculation was performed which divided 1 by the estimated odds ratio: 1/0.861. This calculation resulted in an estimated odds ratio of 1.16**.

Table 57: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and the Level of Students’ Parental Education: Attended a 2-year School/No Degree: Variables that were Significant

Parameter Name	Estimate	Standard Error	p > t	EXP {Estimate} = Estimated Odds Ratio
Observations: N = 779				
Student Engagement Factors				
Standardized math and reading composite test score	0.031	0.013	0.015	1.03
Use of a computer for learning	−0.150*	0.059	0.011	0.86 1.16**
Use of resources for college entrance requirements	0.112	0.044	0.011	1.12
PSAT/PACT plans in grade 10	0.984	0.263	0.000	2.68
PSAT/PACT plans in grade 11	0.494	0.247	0.047	1.64
SAT/ACT plans in grade 11	0.536	0.226	0.019	1.71
AP Test plans in grade 10	0.690	0.456	0.132	1.99
AP Test plans in grade 11	0.902	0.271	0.001	2.47
AP Test plans in grade 12	0.686	0.346	0.048	1.99
Parent Engagement Factor				
Offering advice about academics	0.199	0.070	0.005	1.22
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher	1.453	0.380	0.000	4.28
Peer Engagement Factor				
Importance of schooling among friends	0.209	0.062	0.001	1.23

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, “Estimate” was interpreted by converting it to an estimated odds ratio, using the exponential function EXP {}, in Microsoft Excel.

With regard to the level of students' parental education: *attended a 2-year school/no degree*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the 'Overall Results Tables,' or Tables 49 and 50. Specifically, for research question 1C.3, the results are presented in the third column under the heading, 'Level of Parental Education.'

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.03. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, for every one unit increase in the standardized math and reading composite test score, students were about 1.03 times, or 3 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category are independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

Use of a Computer for Learning. The estimated odds ratio associated with the continuous variable, *use of a computer for learning*, was 0.86. The estimated odds ratio represented a negative relationship between the dependent variable and this independent variable. Because the estimated odds ratio was less than 1.0, another calculation was

performed (1/0.86), which resulted in an estimated odds ratio of 1.16. The results were analyzed in an inverse manner. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, for every one unit increase in the use of a computer for learning, students were about 1.16 times more likely to express the intention of not attending a 4-year college or university directly after high school than having this intention, given that the variables in Table 57 were included in the analysis.

Use of Resources for College Entrance Requirements. The estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.12. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, for every one unit increase in the use of resources for college entrance requirements, students were about 1.12 times, or 12 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 10*, included the comparison group, no PSAT/PACT plans. Most notably, the estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 2.68. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, students who plan to take the PSAT/PACT in grade 10 were about 2.68 times more likely than students who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or

university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

PSAT/PACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 11*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 11 was 1.64. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, students who plan to take the PSAT/PACT in grade 11 were about 1.64 times, or 64 percent, more likely than students who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

SAT/ACT Plans in Grade 11. The estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 1.71. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, students who plan to take the SAT/ACT in grade 11 were about 1.71 times, or 71 percent, more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

AP Test Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *AP Test plans in grade 10*, included the comparison group, no AP

Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 10 was 1.99. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, students who plan to take an AP Test in grade 10 were about 1.99 times, or 99 percent, more likely than students who do not plan to take an AP Test, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

AP Test Plans in Grade 11. Likewise, the estimated odds ratio associated with the categorical variable, *AP Test Plans in grade 11*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 11 was 2.47. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, students who plan to take an AP Test in grade 11 were about 2.47 times more likely than students who do not plan to take an AP Test, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

AP Test Plans in Grade 12. Moreover, the estimated odds ratio associated with the categorical variable, *AP Test plans in grade 12*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 12 was 1.99. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, students who plan to take an AP Test in grade 12 were about 1.99 times, or 99 percent, more likely than students who do not plan to take an AP Test, to express the intention of attending a 4-year college or university directly after high school

than not having this intention, given the variables in Table 57 were included in the analysis.

Parent Engagement Factors

Offering Advice about Academics. The estimated odds ratio associated with the continuous variable, *offering advice about academics*, was 1.22. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, for every one unit increase in offering advice about academics, students were about 1.22 times, or 22 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher*, included the comparison group, no postsecondary educational aspirations for the tenth grade child. Most notably, the estimated odds ratio of a student whose parent aspires for him/her to graduate from college with a BA/BS degree or higher was 4.28. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, students whose parent aspires them to graduate from college with a BA/BS degree or higher were about 4.28 times more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.23. This means that among tenth grade students whose parent *attended a 2-year school/no degree*, for every one unit increase in the importance of schooling among friends, students were about 1.23 times, or 23 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 57 were included in the analysis.

Question 1C.3 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that eleven significant positive relationships exist and one significant negative relationship exists. Among the eleven independent variables which suggest a positive relationship, seven of the independent variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variable, parents' educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, is the most important, followed by students' plans to take the PSAT/PACT in grade 10. The remaining five independent variables with an estimated odds ratio above 1.50 focus on two main themes: 1) students' plans to take an AP Test; and 2) students' plans to take college entrance exams. The independent variable associated with students' use of a computer for learning was found

to be significant at the 0.05 level. However, a negative correlation was found. This variable was treated and analyzed in an inverse manner.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the level of students' parental education: *attended a 2-year school/no degree*, the null hypothesis was rejected.

Question 1C.4: Level of Students' Parental Education:
Graduated from a 2-year School

To answer this question with regard to the level of students' parental education in which the parent *graduated from a 2-year school*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix D provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bounded students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 58, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 58: Level of Students' Parental Education: Graduated from a 2-year School: All Independent Variables

Observations: N = 700
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated fourteen times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the backward stepwise logistic regression analysis in Table 59 indicated that eight independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, "Estimate", in Table 59, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel. Additionally, because the

“Estimate” was a negative number (-1.377)* for the independent variable, educational aspirations for the tenth grade child: attend some college/no 4-year degree, another calculation was performed which divided 1 by the estimated odds ratio: 1/0.252. This calculation resulted in an estimated odds ratio of 4.00**.

Table 59: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and Level of Students’ Parental Education: Graduated from a 2-year School: Variables that were Significant

Parameter Name	Estimate	Standard Error	p > t	EXP {Estimate} = Estimated Odds Ratio
Observations: N = 904				
Student Engagement Factors				
Standardized math and reading composite test score	0.025	0.012	0.031	1.03
Use of resources for college entrance requirements	0.147	0.042	0.001	1.16
PSAT/PACT plans in grade 10	0.881	0.259	0.001	2.41
PSAT/PACT plans in grade 11	0.549	0.236	0.001	1.73
SAT/ACT plans in grade 11	0.746	0.223	0.001	2.11
Participation in an AP program	0.850	0.311	0.007	2.34
Parent Engagement Factor				
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	-1.377*	0.311	0.000	0.25 4.00**
Peer Engagement Factor				
Importance of schooling among friends	0.232	0.055	0.000	1.26

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, “Estimate” was interpreted by converting it to an estimated odds ratio, using the exponential function EXP {}, in Microsoft Excel.

With regard to the level of students’ parental education: *graduated from a 2-year school*, the estimated odds ratio associated with each independent variable and the

intercept that were found to be significant at the 0.05 level was also presented in the ‘Overall Results Tables,’ or Tables 49 and 50. Specifically, for research question 1C.4, the results are presented in the fourth column under the heading, ‘Level of Parental Education’.

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.03. This means that among tenth grade students whose parent *graduated from a 2-year school*, for every one unit increase in the standardized math and reading composite test score, students were about 1.03 times, or 3 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 59 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable’s category are independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

Use of Resources for College Entrance Requirements. The estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.16. This means that among tenth grade students whose parent *graduated from a 2-year school*, for every one unit increase in the use of resources for college entrance requirements, students were about 1.16 times, or 16 percent, more likely to express the intention of attending a 4-year college or university directly after high

school than not having this intention, given that the variables in Table 59 were included in the analysis.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 10*, included the comparison group, the PSAT/PACT plans. Most notably, the estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 2.41. This means that among tenth grade students whose parent *graduated from a 2-year school*, students who plan to take the PSAT/PACT in grade 10 were about 2.41 times more likely than students who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 59 were included in the analysis.

PSAT/PACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 11*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 11 was 1.73. This means that among tenth grade students whose parent *graduated from a 2-year school*, students who plan to take the PSAT/PACT in grade 11 were about 1.73 times, or 73 percent, more likely than students who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 59 were included in the analysis.

SAT/ACT Plans in Grade 11. The estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 11*, included the comparison group, no

SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 2.11. This means that among tenth grade students whose parent *graduated from a 2-year school*, students who plan to take the SAT/ACT in grade 11 are about 2.11 times more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 59 were included in the analysis.

Participation in an AP Program. The estimated odds ratio associated with the categorical variable, *participation in an AP program*, included the comparison group, no participation in an AP program. The estimated odds ratio of a student who participates in an AP program was 2.34. This means that among tenth grade students whose parent *graduated from a 2-year school*, students who participate in an AP program were about 2.34 times more likely than students who do not participate in an AP program, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 59 were included in the analysis.

Parent Engagement Factor

Educational Aspirations for the Tenth Grade Child: Attend Some College/No 4-year Degree. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: attend some college/no 4-year degree*, was 0.25. The estimated odds ratio represented a negative relationship between the dependent variable and this independent variable. Because the estimated odds ratio was less than 1.0 another calculation was performed ($1/0.25$), which resulted in an estimated odds ratio of 4.00. This variable included the comparison group, no postsecondary

educational aspirations for the tenth grade child, and the results were analyzed in an inverse manner. This means that among tenth grade students whose parent *graduated from a 2-year school*, students whose parent aspires them to attend some college/no 4-year degree were about 4.00 times more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of not attending a 4-year college or university directly after high school than having this intention, given that the variables in Table 59 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.26. This means that among tenth grade students whose parent *graduated from a 2-year school*, for every one unit increase in the importance of schooling among friends, individuals were about 1.26 times, or 26 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 59 were included in the analysis.

Question 1C.4 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that seven significant positive relationships exist and one significant negative relationship exists. Among the seven independent

variables that suggest a positive relationship, four of the independent variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variable, students' plans to take the PSAT/PACT in grade 10, is the most important, followed by students' participation in an AP program. The remaining two independent variables with an estimated odds ratio above 1.50 focus on one main theme, students' plans to take college entrance exams. The independent variable associated with parents' educational aspirations for the tenth grade child: attend some college/no 4-year degree was found to be significant at the 0.05 level. However, a negative correlation was found. This variable was treated and analyzed in an inverse manner.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the level of students' parental education: *graduated from a 2-year school*, the null hypothesis was rejected.

Question 1C.5: Highest Level of Students' Parental Education:
Attended College/No Degree

To answer this question with regard to the level of students' parental education in which the parent *attended college/no 4-year degree*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix E provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound

students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 60, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 60: Level of Students' Parental Education: Attended College/No Degree: All Independent Variables

Observations: N = 836
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated fourteen times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the backward stepwise logistic regression analysis in Table 61 indicated that eight independent variables and the intercept were significant at the 0.05 level. For each

independent variable that was found to be significant at the 0.05 level, the estimated logit, “Estimate”, in Table 61, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel. Additionally, because the “Estimate” was a negative number (-1.852)* for the independent variable, educational aspirations for the tenth grade child: attend some college/no 4-year degree/no degree, another calculation was performed which divided 1 by the estimated odds ratio: $(1/0.16)$. This calculation resulted in an estimated odds ratio of 6.25^{**} .

Table 61: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and the Level of Students’ Parental Education: Attended College/No Degree: Variables That are Significant

Parameter Name	Estimate	Standard Error	$p > t $	$EXP\{\text{Estimate}\}$ = Estimated Odds Ratio
Observations: N = 1377				
Student Engagement Factors				
Standardized math and reading composite test score	0.022	0.009	0.015	1.02
Participation in extra-curricular school activities	0.075	0.015	0.000	1.08
Use of resources for college entrance requirements	0.158	0.030	0.000	1.17
PSAT/PACT plans in grade 10	0.658	0.189	0.001	1.93
SAT/ACT plans in grade 10	0.636	0.292	0.030	1.89
SAT/ACT plans in grade 11	0.793	0.184	0.000	2.21
SAT/ACT plans in grade 12	0.481	0.215	0.026	1.62
Parent Engagement Factor				
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	-1.852^*	0.318	0.000	0.16 6.25^{**}

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, “Estimate” was interpreted by converting it to an estimated odds ratio, using the exponential function $EXP\{\}$, in Microsoft Excel.

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.02. This means that among tenth grade students whose parent *attended college/no 4-year degree*, for every one unit increase in the standardized math and reading composite test score, students were about 1.02 times, or 2 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 61 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

Participation in Extra-curricular School Activities. Similarly, the estimated odds ratio associated with the continuous variable, *participation in extra-curricular school activities*, was 1.08. This means that among tenth grade students whose parent *attended college/no 4-year degree*, for every one unit increase in participation in extra-curricular school activities, students were about 1.08, or 8 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 61 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical

independence. Therefore, while the p -value is significant at the 0.05 level, this may not be an important relationship.

Use of Resources for College Entrance Requirements. The estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.17. This means that among tenth grade students whose parent *attended college/no 4-year degree*, for every one unit increase in the use of resources for college entrance requirements, students were about 1.17 times, or 17 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 61 were included in the analysis.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 10*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 1.93. This means that among tenth grade students whose parent *attended college/no 4-year degree*, students who plan to take the PSAT/PACT in grade 10 were about 1.93 times, or 93 percent, more likely than students who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 61 were included in the analysis.

SAT/ACT Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 10*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in

grade 10 was 1.89. This means that among tenth grade students whose parent *attended college/no 4-year degree*, students who plan to take the SAT/ACT in grade 10 were about 1.89 times, or 89 percent, more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 61 were included in the analysis.

SAT/ACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. Most notably, the estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 2.21. This means that among tenth grade students whose parent *attended college/no 4-year degree*, students who plan to take the SAT/ACT in grade 11 were about 2.21 times more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 61 were included in the analysis.

SAT/ACT Plans in Grade 12. Moreover, the estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 12*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 12 was 1.62. This means that among tenth grade students whose parent *attended college/no 4-year degree*, students who plan to take the SAT/ACT in grade 12 were about 1.62 times, or 62 percent, more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly

after high school than not having this intention, given that the variables in Table 61 were included in the analysis.

Parent Engagement Factor

Educational Aspirations for the Tenth Grade Child: Attend Some College/No Degree. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: attend some college/no 4-year degree*, was 0.16. The estimated odds ratio represented a negative relationship between the dependent variable and this independent variable. Because the estimated odds ratio was less than 1.0 another calculation was performed ($1/0.16$), which resulted in an estimated odds ratio of 6.25. This variable included the comparison group, no postsecondary educational aspirations for the tenth grade child, and the results were analyzed in an inverse manner. This means that among tenth grade students whose parent *attended college/no 4-year degree*, students whose parent aspires them to attend some college/no 4-year degree were about 6.25 times more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of not attending a 4-year college or university directly after high school than having this intention, given that the variables in Table 61 were included in the analysis.

Question 1C.5 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents,

and their peers. Specifically, the results imply that seven significant positive relationships exist and one significant negative relationship exists. Among the seven independent variables that suggest a positive relationship, four of the independent variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variable, students' plans to take the SAT/ACT in grade 11, is the most important, followed by students' plans to take the PSAT/PACT in grade 10. The remaining two independent variables with an estimated odds ratio above 1.50 focus on one main theme, students' plans to take college entrance exams. The independent variable associated with parents' educational aspirations for the tenth grade child: attend some college/no 4-year degree was found to be significant at the 0.05 level. However, a negative correlation was found. This variable was treated and analyzed in an inverse manner.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the level of students' parental education: *attended college/no 4-year degree*, the null hypothesis was rejected.

Question 2A Results

The second research question addressed in this study was: "Among first-generation college-bound students, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and high school location?"

To answer this question, an exploratory data analysis using a Chi-square test of independence was conducted to test the relationship between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and high school location. The level of significance was set at $\alpha = 0.05$. The results suggest that first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and high school location are not independent (Pearson Chi-square = 0.00). In essence, there was a significant relationship between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and high school location.

The null hypothesis was defined as no relationship between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and high school location ($\alpha = 0.05$). Therefore, when considering the results of the Chi-square test of independence included in Table 62, the null hypothesis was rejected.

Table 62: Chi-square Test of Independence for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	46.910 ^(a)	2	.000

^a. Zero cells have expected counts less than 5. The minimum expected count is 645.09. Results were estimated by SPSS software.

As a result of this exploratory data analysis, it was not necessary to investigate research question 2B. Logistic regression models developed from a backward stepwise regression analysis were conducted to answer research question 2C:

If there is a significant relationship based on high school location, among first-generation college-bound students and for each high school location, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

The three settings for high school location were coded as a subset of research question

2C:

Question 2C.1: Urban setting

Question 2C.2: Suburban setting

Question 2C.3: Rural setting

Question 2C.1: High School Location: Urban Setting

To answer this question with regard to high school location in an *urban setting*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix F provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 63, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 63: High School Location: Urban Setting: All Independent Variables

Observations: N = 1002
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated thirteen times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the backward stepwise logistic regression analysis in Table 64 indicated that nine independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, "Estimate", in Table 64, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel.

Table 64: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Urban Setting: Variables that were Significant

Observations: N = 1422				
Parameter Name	Estimate	Standard Error	p > t	EXP{Estimate} = Estimated Odds Ratio
Student Engagement Factors				
Socioeconomic status	0.346	0.135	0.012	1.41
Participation in extra-curricular school activities	0.051	0.016	0.002	1.05
Use of resources for college entrance requirements	0.068	0.033	0.042	1.07
PSAT/PACT plans in grade 10	0.373	0.194	0.056	1.45
SAT/ACT plans in grade 11	0.560	0.181	0.002	1.75
AP Test plans in grade 11	0.877	0.211	0.000	2.40
AP Test plans in grade 12	0.753	0.319	0.020	2.12
Parent Engagement Factor				
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher	1.322	0.289	0.000	3.75
Peer Engagement Factor				
Importance of schooling among friends	0.176	0.045	0.000	1.19

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function EXP {}, in Microsoft Excel.

With regard to the high school location: *urban setting*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the 'Overall Results Tables,' or Tables 49 and 50. Specifically, for research question 2.C.1, the results are presented in the first column under the heading, 'High School Location'.

Student Engagement Factors

Socioeconomic Status. The estimated odds ratio associated with the continuous variable, *socioeconomic status*, was 1.41. This means that among tenth grade students who attend a high school located in an *urban setting*, for every one unit increase in socioeconomic status, students were about 1.41 times, or 41 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis.

Participation in Extra-curricular School Activities. The estimated odds ratio associated with the continuous variable, *participation in extra-curricular school activities*, was 1.05. This means that among tenth grade students who attend a high school located in an *urban setting*, for every one unit increase in participation in extra-curricular school activities, students were about 1.05 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

Use of Resources for College Entrance Requirements. Similarly, the estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.07. This means that among tenth grade students who attend a high

school located in an *urban setting*, for every one unit increase in the use of resources for college entrance requirements, students were about 1.07 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 10*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 1.45. This means that among tenth grade students who attend a high school located in an *urban setting*, students who plan to take the PSAT/PACT in grade 10 were about 1.45 times, or 45 percent, more likely than students who do not plan to take the PSAT/PACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis.

SAT/ACT Plans in Grade 11. The estimated odds ratio associated with the categorical variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 1.75. This means that among tenth grade students who attend a high school located in an *urban setting*, students who plan to take the SAT/ACT in grade 11 were

about 1.75 times, or 75 percent, more likely than students who do not plan to take the SAT/ACT, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis.

AP Test Plans in Grade 11. The estimated odds ratio associated with the categorical variable, *AP Test plans in grade 11*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 11 was 2.40. This means that among tenth grade students who attend a high school located in an *urban setting*, students who plan to take an AP Test in grade 11 were about 2.40 times more likely than students who do not plan to take an AP Test, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis.

AP Test Plans in Grade 12. Likewise, the estimated odds ratio associated with the categorical variable, *AP Test plans in grade 12*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 12 was 2.12. This means that among tenth grade students who attend a high school located in an *urban setting*, students who plan to take an AP Test in grade 12 were about 2.12 times more likely than students who do not plan to take an AP Test, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis.

Parent Engagement Factor

Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher*, included the comparison group, no postsecondary educational aspirations for the tenth grade child. Most notably, the estimated odds ratio of a student whose parent aspires for him/her to graduate from college with a BA/BS degree or higher was 3.75. This means that among tenth grade students who attend a high school located in an *urban setting*, students whose parent aspires them to graduate from college with a BA/BS degree or higher were about 3.75 times more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.19. This means that among tenth grade students who attend a high school located in an *urban setting*, for every one unit increase in the importance of schooling among friends, students were about 1.19 times, or 19 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 64 were included in the analysis.

Question 2C.1 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that nine significant positive relationships exist. Among the nine independent variables that suggest a positive relationship, four of the estimated odds ratios are above 1.50. The estimated odds ratios imply that the independent variable, parents' educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, is the most important, followed by students' plans to take an AP Test in grade 11. The remaining two independent variables with an estimated odds ratio above 1.50 focus on two main themes: 1) students' plans to take an AP Test; and 2) students' plans to take college entrance exams.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the high school location: *urban setting*, the null hypothesis was rejected.

Question 2C.2: High School Location: Suburban Setting

To answer this question with regard to high school location in a *suburban setting*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix G provides an illustration

of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 65, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 65: High School Location: Suburban Setting: All Independent Variables

Observations: N = 1783
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated ten times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the backward stepwise logistic regression analysis in Table 66 indicated that twelve independent variables and the intercept were significant at the 0.05 level. For each

independent variable that was found to be significant at the 0.05 level, the estimated logit, “Estimate”, in Table 66 was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel.

Table 66: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Suburban Setting: Variables that were Significant

Observations: N = 1860				
Parameter Name	Estimate	Standard Error	p > t	$EXP\{\text{Estimate}\}$ = Estimated Odds Ratio
Student Engagement Factors				
Standardized math and reading composite test score	0.038	0.008	0.000	1.04
Participation in extra-curricular school activities	0.036	0.013	0.007	1.04
Use of resources for college entrance requirements	0.096	0.025	0.000	1.10
PSAT/PACT plans in grade 10	0.848	0.171	0.000	2.34
PSAT/PACT plans in grade 11	0.646	0.148	0.000	1.91
SAT/ACT plans in grade 11	0.426	0.135	0.002	1.53
AP Test plans in grade 11	0.451	0.187	0.017	1.57
AP Test plans in grade 12	0.541	0.249	0.038	1.72
Participation in an AP program	0.525	0.201	0.010	1.69
Parent Engagement Factor				
Offering advice about academics	0.145	0.047	0.003	1.16
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher	0.771	0.199	0.000	2.16
Peer Engagement Factor				
Importance of schooling among friends	0.190	0.035	0.000	1.21

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, “Estimate” was interpreted by converting it to an estimated odds ratio, using the exponential function $EXP\{\}$, in Microsoft Excel.

With regard to the high school location: *suburban setting*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the ‘Overall Results Tables,’ or Tables 49 and 50. Specifically, for research question 2C.2, the results are presented in the second column under the heading, ‘High School Location’.

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.04. This means that among tenth grade students who attend a high school located in a *suburban setting*, for every one unit increase in the standardized math and reading composite test score, students were about 1.04 times, or 4 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable’s category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

Participation in Extra-curricular School Activities. Similarly, the estimated odds ratio associated with the continuous variable, *participation in extra-curricular school activities*, was 1.04. This means that among tenth grade students who attend a high school located in a *suburban setting*, for every one unit increase in participation in extra-curricular school activities, students were about 1.04 times, or 4 percent, more likely to

express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the p -value is significant at the 0.05 level, this may not be an important relationship.

Use of Resources for College Entrance Requirements. The estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.10. This means that among tenth grade students who attend a high school located in a *suburban setting*, for every one unit increase in use of resources for college entrance requirements, students were about 1.10 times, or 10 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the variable, *PSAT/PACT plans in grade 10*, included the comparison group, no PSAT/PACT plans. Most notably, the estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 2.34. This means that among tenth grade students who attend a high school located in a *suburban setting*, students who plan to take the PSAT/PACT in grade 10 were about 2.34 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

PSAT/PACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the variable, *PSAT/PACT plans in grade 11*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 11 was 1.91. This means that among tenth grade students who attend a high school located in a *suburban setting*, students who plan to take the PSAT/PACT in grade 11 were about 1.91 times, or 91 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the model.

SAT/ACT Plans in Grade 11. The estimated odds ratio associated with the variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 1.53. This means that among tenth grade students who attend a high school located in a *suburban setting*, students who plan to take the SAT/ACT in grade 11 were about 1.53 times, or 53 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

AP Test Plans in Grade 11. The estimated odds ratio associated with the variable, *AP Test plans in grade 11*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 11 was 1.57. This means that among tenth grade students who attend a high school located in a *suburban setting*, students who plan to take an AP Test in grade 11 were about 1.57 times, or 57 percent, more likely to express the intention of attending a 4-year college or university

directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

AP Test Plans in Grade 12. Similarly, the estimated odds ratio associated with the variable, *AP Test plans in grade 12*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 12 was 1.72. This means that among tenth grade students who attend a high school located in a *suburban setting*, students who plan to take an AP Test in grade 12 were about 1.72 times, or 72 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

Participation in an AP Program. The estimated odds ratio associated with the variable, *participation in an AP program*, included the comparison group, no participation in an AP program. The estimated odds ratio of a student who participates in an AP program was 1.69. This means that among tenth grade students who attend a high school located in a *suburban setting*, students who participate in an AP program were about 1.69 times, or 69 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

Parent Engagement Factors

Offering Advice about Academics. The estimated odds ratio associated with the continuous variable, *offering advice about academics*, was 1.16. This means that among tenth grade students who attend a high school located in a *suburban setting*, for every one

unit increase in offering advice about academics, students were about 1.16 times, or 16 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher*, included the comparison group, no postsecondary aspirations for their tenth grade child. The estimated odds ratio of a student whose parent aspires for him/her to graduate from college from with a BA/BS degree or higher was 2.16. This means that among tenth grade students who attend a high school located in a *suburban setting*, students whose parent aspires them to graduate from college with a BA/BS degree or higher were about 2.16 times more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.21. This means that among tenth grade students who attend a high school located in a *suburban setting*, for every one unit increase in the importance of schooling among friends, students were about 1.21 times, or 21 percent, more likely to express the intention of

attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 66 were included in the analysis.

Question 2C.2 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that twelve significant positive relationships exist. Among these twelve independent variables that suggest a positive relationship, seven of the independent variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variable, students' plans to take the PSAT/PACT in grade 10 is the most important, followed by parents' educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher. The remaining five independent variables with an estimated odds ratio above 1.50 focus on three main themes: 1) students' plans to take college entrance exams; 2) students' plans to take an AP Test; and 3) students' participation in an AP program.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the high school location: *suburban setting*, the null hypothesis was rejected.

Question 2C.3: High School Location: Rural Setting

To answer this question with regard to the high school location in a *rural setting*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix H provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 67, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 67: High School Location: Rural Setting: All Independent Variables

Observations: N = 780

Student Engagement Factors

Socioeconomic status
 Standardized math and reading composite test score
 Participation in extra-curricular school activities
 Use of a computer for learning
 Use of resources for college entrance requirements
 PSAT/PACT plans in grade 10
 PSAT/PACT plans in grade 11
 PSAT/PACT plans in grade 12
 SAT/ACT plans in grade 10
 SAT/ACT plans in grade 11
 SAT/ACT plans in grade 12
 AP Test plans in grade 10
 AP Test plans in grade 11
 AP Test plans in grade 12
 Participation in an AP program
 Participation in a college preparation program

Parent Engagement Factors

Checking of school work
 Offering advice about academics
 Financial savings for the tenth grade child's postsecondary education
 Educational aspirations for the tenth grade child: attend some college/no 4-year degree
 Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher

Peer Engagement Factor

Importance of schooling among friends

This process was repeated fourteen times, until only those variables that were significant (p -value less than 0.05) were include in the analysis. The results of the backward stepwise logistic regression analysis in Table 68 indicated that eight independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, “Estimate”, in Table 68 was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel. Additionally, because the “Estimate” was a negative number (-1.549)* for the independent variable, educational aspirations for the tenth grade child: attend some college/no 4-year degree, another calculation was performed which divided 1 by the estimated odds ratio: $1/0.21$. This calculation resulted in an estimated odds ratio of 4.76^{**} .

Table 68: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Rural Setting: Variables that were Significant

Observations: N = 1006

Parameter Name	Estimate	Standard Error	$p > t $	$EXP\{\text{Estimate}\}$ = Estimated Odds Ratio
Student Engagement Factors				
Standardized math and reading composite test score	0.058	0.012	0.000	1.06
Use of resources for college entrance requirements	0.104	0.039	0.009	1.11
PSAT/PACT plans in grade 10	0.368	0.179	0.044	1.45
SAT/ACT plans in grade 10	0.733	0.297	0.016	2.08
SAT/ACT plans in grade 11	0.942	0.189	0.000	2.57
Participation in an AP program	0.525	0.269	0.055	1.69
Parent Engagement Factor				
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	-1.549*	0.286	0.000	0.21 4.76**

Table 68: Continued

Peer Engagement Factor				
Importance of schooling among friends	0.138	0.050	0.007	1.15

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function $EXP\{\}$, in Microsoft Excel.

With regard to the high school location: *rural setting*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the 'Overall Results Tables,' or Tables 49 and 50. Specifically, for research question 2C.3, the results are presented in the third column under the heading, 'High School Location'.

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.06. This means that among tenth grade students who attend a high school located in a *rural setting*, for every one unit increase in the standardized math and reading composite test score, students were about 1.06 times, or 6 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 68 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

Use of Resources for College Entrance Requirements. The estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.11. This means that among tenth grade students who attend a high school located in a *rural setting*, for every one unit increase in use of resources for college entrance requirements, students were about 1.11 times, or 11 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 68 were included in the analysis.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the variable, *PSAT/PACT plans in grade 10*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 1.45. This means that among tenth grade students who attend a high school located in a *rural setting*, students who plan to take the PSAT/PACT in grade 10 were about 1.45 times, or 45 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 68 were included in the analysis.

SAT/ACT Plans in Grade 10. The estimated odds ratio associated with the variable, *SAT/ACT plans in grade 10*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 10 was 2.08. This means that among tenth grade students who attend a high school located in a *rural setting*, students who plan to take the SAT/ACT in grade 10 were about 2.08 times more likely to express the intention of attending a 4-year college or university

directly after high school than not having this intention, given that the variables in Table 68 were included in the analysis.

SAT/ACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. Most notably, the estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 2.57. This means that among tenth grade students who attend a high school located in a *rural setting*, students who plan to take the SAT/ACT in grade 11 were about 2.57 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 68 were included in the analysis.

Participation in an AP Program. The estimated odds ratio associated with the variable, *participation in an AP program*, included the comparison group, no participation in an AP program. The estimated odds ratio of a student who participates in an AP program was 1.69. This means that among tenth grade students who attend a high school located in a *rural setting*, students who participate in an AP program were about 1.69 times, or 69 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 68 were included in the analysis.

Parent Engagement Factor

Educational Aspirations for the Tenth Grade Child: Attend Some College/No Degree. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: attend some college/no 4-year degree*, was 0.21.

The estimated odds ratio represented a negative relationship between the dependent variable and this independent variable. Because the estimated odds ratio was less than 1.0 another calculation was performed ($1/0.21$), which resulted in an estimated odds ratio of 4.76. This variable included the comparison group, no postsecondary educational aspirations for the tenth grade child, and the results were analyzed in an inverse manner. This means that among tenth grade students who attend a high school located in a *rural setting*, students whose parent aspires them to attend some college/no 4-year degree were about 4.76 times more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of not attending a 4-year college or university directly after high school than having this intention, given that the variables in Table 68 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.15. This means that among tenth grade students who attend a high school located in a *rural setting*, for every one unit increase in the importance of schooling among friends, students were about 1.15 times, or 15 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 68 were included in the analysis.

Question 2C.3 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that seven significant positive relationships exist and one significant negative relationship exists. Among the seven independent variables that suggest a positive relationship, three of the independent variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variable, students' plans to take the SAT/ACT in grade 11, is the most important, followed by students' plans to take the SAT/ACT in grade 10. The remaining independent variable with an estimated odds ratio above 1.50 focuses on one main theme, students' participation in an AP program. The independent variable associated with parents' educational aspirations for the tenth grade child: attend some college/no 4-year degree was found to be significant at the 0.05 level. However, a negative correlation was found. This variable was treated and analyzed in an inverse manner.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the high school location: *rural setting*, the null hypothesis was rejected.

Question 3A Results

The third research question addressed in this study was: “Among first-generation college-bound students, what relationships exist between students’ stated intentions to attend a 4-year college or university directly after high school and high school type?”

To answer this question, an exploratory data analysis using a Chi-square test of independence was conducted to test the relationship between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and high school type. The results suggest that first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and high school type are not independent (Pearson Chi-square = 0.00). In essence, there was a significant relationship between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and high school type.

The null hypothesis was defined as no relationship between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and high school type ($\alpha = 0.05$). Therefore, when considering the results of the Chi-square test of independence included in Table 69, the null hypothesis was rejected.

Table 69: Chi-square Test of Independence for First-generation College-bound Students’ Stated Intentions to attend a 4-year College or University directly after High School and High School Type

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	147.735 ^(a)	1	.000

^a. Zero cells have expected counts less than 5. The minimum expected count is 442.56. Results were estimated by SPSS software.

As a result of this exploratory data analysis, it was not necessary to investigate research question 3B. Logistic regression models developed from a backward stepwise regression analysis were conducted to answer research question 3C:

If there is a significant relationship based on high school type, among first-generation college-bound students and for each high school location, what relationships exist between students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?

The two types of high school type were coded as a subset of research question 2C:

Question 3C.1: Public high school
Question 3C.2: Private high school

Question 3C.1: High School Type: Public High School

To answer this question with regard to high school type, *public high school*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix I provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 70, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 70: High School Type: Public High School: All Independent Variables

Observations: N = 2965
Student Engagement Factors
Socioeconomic status
Standardized math and reading composite test score
Participation in extra-curricular school activities
Use of a computer for learning
Use of resources for college entrance requirements
PSAT/PACT plans in grade 10
PSAT/PACT plans in grade 11
PSAT/PACT plans in grade 12
SAT/ACT plans in grade 10
SAT/ACT plans in grade 11
SAT/ACT plans in grade 12
AP Test plans in grade 10
AP Test plans in grade 11
AP Test plans in grade 12
Participation in an AP program
Participation in a college preparation program
Parent Engagement Factors
Checking of school work
Offering advice about academics
Financial savings for the tenth grade child's postsecondary education
Educational aspirations for the tenth grade child: attend some college/no 4-year degree
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
Peer Engagement Factor
Importance of schooling among friends

This process was repeated seven times. The results of the backward stepwise logistic regression analysis in Table 71 indicated that fifteen independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, "Estimate", in Table 71, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel. Additionally, because the "Estimate" was a negative number $(-0.660)^*$ for the independent variable, educational aspirations for the tenth grade child:

attend some college/no 4-year degree, another calculation was performed which divided 1 by the estimated odds ratio: 1/0.51. This calculation resulted in an estimated odds ratio of 1.92**.

Table 71: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and School Type: Public High School: Variables that were Significant

Observations: N = 1422				
Parameter Name	Estimate	Standard Error	p > t	EXP {Estimate} = Estimated Odds Ratio
Student Engagement Factors				
Standardized math and reading composite test score	0.028	0.006	0.000	1.03
Participation in extra-curricular school activities	0.037	0.010	0.000	1.04
Use of resources for college entrance requirements	0.085	0.020	0.000	1.09
PSAT/PACT plans in grade 10	0.623	0.141	0.000	1.87
PSAT/PACT plans in grade 11	0.400	0.125	0.001	1.49
SAT/ACT plans in grade 10	0.471	0.180	0.009	1.60
SAT/ACT plans in grade 11	0.676	0.135	0.000	1.97
SAT/ACT plans in grade 12	0.270	0.138	0.052	1.31
AP Test plans in grade 11	0.420	0.136	0.002	1.52
AP Test plans in grade 12	0.576	0.203	0.005	1.78
Participation in an AP program	0.461	0.152	0.003	1.59
Parent Engagement Factor				
Offering advice about academics	0.129	0.035	0.000	1.14
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	-0.660*	0.333	0.049	1.92**
Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher	0.601	0.281	0.033	1.82
Peer Engagement Factor				
Importance of schooling among friends	0.151	0.027	0.000	1.16

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function EXP {}, in Microsoft Excel.

With regard to the high school type: *public high school*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the ‘Overall Results Tables,’ or Tables 49 and 50. Specifically, for research question 3C.1, the results are presented in the first column under the heading, ‘High School Type’.

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.03. This means that among tenth grade students who attend a *public high school*, for every one unit increase in the standardized math and reading composite test score, students were about 1.03 times, or 3 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable’s category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

Participation in Extra-curricular School Activities. Similarly, the estimated odds ratio associated with the continuous variable, *participation in extra-curricular school activities*, was 1.04. This means that among tenth grade students who attend a *public high school*, for every one unit increase in participation in extra-curricular school activities, students were about 1.04 times, or 4 percent, more likely to express the intention of

attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the p -value is significant at the 0.05 level, this may not be an important relationship.

Use of Resources for College Entrance Requirements. Moreover, the estimated odds ratio associated with the continuous variable, *use of resources for college entrance requirements*, was 1.09. This means that among tenth grade students who attend a *public high school*, for every one unit increase in use of resources for college entrance requirements, students were about 1.09 times, or 9 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the p -value is significant at the 0.05 level, this may not be an important relationship.

PSAT/PACT Plans in Grade 10. The estimated odds ratio associated with the variable, *PSAT/PACT plans in grade 10*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 10 was 1.87. This means that among tenth grade students who attend a *public high school*, students who plan to take the PSAT/PACT in grade 10 are about 1.87 times, or 87

percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

PSAT/PACT Plans in Grade 11. Similarly, the estimated odds ratio associated with the variable, *PSAT/PACT plans in grade 11*, included the comparison group, no PSAT/PACT plans. The estimated odds ratio of a student who plans to take the PSAT/PACT in grade 11 was 1.49. This means that among tenth grade students who attend a *public high school*, students who plan to take the PSAT/PACT in grade 11 were about 1.49 times, or 49 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

SAT/ACT Plans in Grade 10. The estimated odds ratio associated with the variable, *SAT/ACT plans in grade 10*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 10 is 1.60. This means that among tenth grade students who attend a *public high school*, students who plan to take the SAT/ACT in grade 10 were about 1.60 times, or 60 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

SAT/ACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. Most notably, the estimated odds ratio of a student who plans to take the

SAT/ACT in grade 11 was 1.97. This means that among tenth grade students who attend a *public high school*, students who plan to take the SAT/ACT in grade 11 were about 1.97 times, or 97 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

SAT/ACT Plans in Grade 12. Moreover, the estimated odds ratio associated with the variable, *SAT/ACT plans in grade 12*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 12 was 1.31. This means that among tenth grade students who attend a *public high school*, students who plan to take the SAT/ACT in grade 12 were about 1.31 times, or 31 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

AP Test Plans in Grade 11. The estimated odds ratio associated with the variable, *AP Test plans in grade 11*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 11 was 1.52. This means that among tenth grade students who attend a *public high school*, students who plan to take an AP Test in grade 11 were about 1.52 times, or 52 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

AP Test Plans in Grade 12. Similarly, the estimated odds ratio associated with the variable, *AP Test plans in grade 12*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 12 was 1.78. This means that among tenth grade students who attend a *public high school*, students who plan to take an AP Test in grade 12 were about 1.78 times, or 78 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

Participation in an AP Program. The estimated odds ratio associated with the variable, participation in an AP program, included the comparison group, no participation in an AP program. The estimated odds ratio of a student who participates in an AP program was 1.59. This means that among tenth grade students who attend a *public high school*, individuals who participate in an AP program were about 1.59 times, or 59 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

Parent Engagement Factors

Offering Advice about Academics. The estimated odds ratio associated with the continuous variable, *offering advice about academics*, was 1.14. This means that among tenth grade students who attend a *public high school*, for every one unit increase in offering advice about academics, students were about 1.14 times, or 14 percent, more likely to express the intention of attending a 4-year college or university directly after

high school than not having this intention, given that the variables in Table 71 were included in the analysis.

Educational Aspirations for the Tenth Grade Child: Attend Some College/No 4-year Degree. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: attend some college/no 4-year degree*, was 0.51. The estimated odds ratio represented a negative relationship between the dependent variable and this independent variable. Because the estimated odds ratio was less than 1.0 another calculation was performed ($1/0.51$), which resulted in an estimated odds ratio of 1.92. This variable included the comparison group, no postsecondary educational aspirations for the tenth grade child, and the results were analyzed in an inverse manner. This means that among tenth grade students who attend a *public high school*, students whose parent aspires them to attend some college/no 4-year degree were about 1.92 times, or 92 percent, more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of not attending a 4-year college or university directly after high school than having this intention, given that the variables in Table 71 were included in the analysis.

Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher*, included the comparison group, no postsecondary aspirations for their tenth grade child. The estimated odds ratio of a student whose parent aspires for him/her to graduate from college from with a BA/BS degree or higher was 1.82. This

means that among tenth grade students who attend a *public high school*, students whose parent aspires them to graduate from college with a BA/BS degree or higher were about 1.82 times, or 82 percent, more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.16. This means that among tenth grade students who attend a *public high school*, for every one unit increase in the importance of schooling among friends, students were about 1.16 times, or 16 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 71 were included in the analysis.

Question 3C.1 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that fourteen significant positive relationships exist and one significant negative relationship exists. Among the fourteen independent variables that suggest a positive relationship, seven of the independent

variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variable, students' plans to take the SAT/ACT in grade 11, is the most important, followed by students' plans to take the PSAT/PACT in grade 10. The remaining five independent variables with an estimated odds ratio above 1.50 focus on four main themes: 1) parents' educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher; 2) students' plans to take college entrance exams; 3) students' plans to take an AP Test; and 4) students' participation in an AP program. The independent variables associated with parents' educational aspirations for the tenth grade child brought mixed results: 1) the aspiration associated with 'graduate from college with a BA/BS degree' was found to be significant at the 0.05 level, with a positive relationship; and 2) the aspiration associated with 'attend some college/no 4-year degree' was found to be significant at the 0.05 level, with a negative relationship. Correspondingly, with regard to the independent variable, attend some college/no 4-year degree, a negative correlation was found. This independent variable was treated and analyzed in an inverse manner.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the high school type: *public high school*, the null hypothesis was rejected.

Question 3C.2: High School Type: Private High School

To answer this question with regard to high school type, *private high school*, a series of logistic regression models developed from a backward stepwise regression analysis were conducted, as described in Chapter 3. Appendix J provides an illustration of the sequence in which the independent variables were eliminated. The dependent variable was first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school. As illustrated in Table 72, the first backward stepwise logistic regression analysis included all of the independent variables.

Table 72: High School Type: Private High School: All Independent Variables

Observations: N = 600

Student Engagement Factors

Socioeconomic status
 Standardized math and reading composite test score
 Participation in extra-curricular school activities
 Use of a computer for learning
 Use of resources for college entrance requirements
 PSAT/PACT plans in grade 10
 PSAT/PACT plans in grade 11
 PSAT/PACT plans in grade 12
 SAT/ACT plans in grade 10
 SAT/ACT plans in grade 11
 SAT/ACT plans in grade 12
 AP Test plans in grade 10
 AP Test plans in grade 11
 AP Test plans in grade 12
 Participation in an AP program
 Participation in a college preparation program

Parent Engagement Factors

Checking of school work
 Offering advice about academics
 Financial savings for the tenth grade child's postsecondary education
 Educational aspirations for the tenth grade child: attend some college/no 4-year degree
 Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher

Peer Engagement Factor

Importance of schooling among friends

This process was repeated fourteen times, until only those variables that were significant (p -value less than 0.05) were included in the analysis. The results of the backward stepwise logistic regression analysis in Table 73 indicated that eight independent variables and the intercept were significant at the 0.05 level. For each independent variable that was found to be significant at the 0.05 level, the estimated logit, “Estimate”, in Table 73, was interpreted by converting it to an estimated odds ratio, using the exponential function, $EXP\{\}$, in Microsoft Excel. Additionally, because the “Estimate” was a negative number (-1.506)* for the independent variable, plans to take the PSAT/PACT in grade 12, another calculation was performed which divided 1 by the estimated odds ratio: $1/0.22$. This calculation resulted in an estimated odds ratio of 4.54^{**} . Correspondingly, because the “Estimate” was a negative number (-1.374)*** for the independent variable, educational aspirations for the tenth grade child: attend some college/no 4-year degree, another calculation was performed which divided 1 by the estimated odds ratio: $1/0.25$. This calculation resulted in an estimated odds ratio of 4.00^{***} .

Table 73: Logistic Regression Results and Estimated Odds Ratio Results for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Type: Private High School: Variables that were Significant

Observations: N = 769				
Parameter Name	Estimate	Standard Error	p > t	EXP{Estimate} = Estimated Odds Ratio
Student Engagement Factors				
Standardized math and reading composite test score	0.034	0.017	0.053	1.04
PSAT/PACT plans in grade 12	-1.506*	0.477	0.002	0.22 4.54**
SAT/ACT plans in grade 10	1.013	0.421	0.018	2.75
SAT/ACT plans in grade 11	1.221	0.294	0.000	3.39
SAT/ACT plans in grade 12	1.178	0.358	0.001	3.25
AP Test plans in grade 11	0.726	0.379	0.058	2.07
Parent Engagement Factor				
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	-1.374***	0.482	0.005	0.25 4.00****
Peer Engagement Factor				
Importance of schooling among friends	0.212	0.075	0.006	1.24

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function EXP {}, in Microsoft Excel.

With regard to the high school type: *private high school*, the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level was also presented in the 'Overall Results Tables,' Tables 49 and 50. Specifically, for research question 3C.2, the results are presented in the second column under the heading, 'High School Type'.

Student Engagement Factors

Standardized Math and Reading Composite Test Score. The estimated odds ratio associated with the continuous variable, *standardized math and reading composite test score*, was 1.04. This means that among tenth grade students who attend a *private high school*, for every one unit increase in the standardized math and reading composite test score, students were about 1.04 times, or 4 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 73 were included in the analysis. Notably, the closer the estimated odds ratio is to 1.0, the more the independent variable's category is independent of the dependent variable, with 1.0 representing full statistical independence. Therefore, while the *p*-value is significant at the 0.05 level, this may not be an important relationship.

PSAT/PACT Plans in Grade 12. The estimated odds ratio associated with the categorical variable, *PSAT/PACT plans in grade 12*, was 0.22. The estimated odds ratio represented a negative relationship between the dependent variable and this independent variable. Because the estimated odds ratio was less than 1.0, another calculation was performed ($1/0.22$), which resulted in an estimated odds ratio of 4.54. This variable included the comparison group, no PSAT/PACT plans, and the results were analyzed in an inverse manner. This means that among tenth grade students who attend a *private high school*, students who plan to take the PSAT/PACT in grade 12 were 4.54 times more likely than students who do not plan to take the PSAT/PACT, to express the intention of

not attending a 4-year college or university directly after high school than having this intention, given that the variables in Table 73 were included in the analysis.

SAT/ACT Plans in Grade 10. The estimated odds ratio associated with the variable, *SAT/ACT plans in grade 10*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 10 was 2.75. This means that among tenth grade students who attend a *private high school*, students who plan to take the SAT/ACT in grade 10 were about 2.75 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 73 were included in the analysis.

SAT/ACT Plans in Grade 11. Likewise, the estimated odds ratio associated with the variable, *SAT/ACT plans in grade 11*, included the comparison group, no SAT/ACT plans. Most notably, the estimated odds ratio of a student who plans to take the SAT/ACT in grade 11 was 3.39. This means that among tenth grade students who attend a *private high school*, students who plan to take the SAT/ACT in grade 11 were about 3.39 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 73 were included in the analysis.

SAT/ACT Plans in Grade 12. Similarly, the estimated odds ratio associated with the variable, *SAT/ACT plans in grade 12*, included the comparison group, no SAT/ACT plans. The estimated odds ratio of a student who plans to take the SAT/ACT in grade 12 was 3.25. This means that among tenth grade students who attend a *private high school*,

students who plan to take the SAT/ACT in grade 12 were about 3.25 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 73 were included in the analysis.

AP Test Plans in Grade 11. The estimated odds ratio associated with the variable, *AP Test plans in grade 11*, included the comparison group, no AP Test plans. The estimated odds ratio of a student who plans to take an AP Test in grade 11 was 2.07. This means that among tenth grade students who attend a *private high school*, students who plan to take an AP Test in Grade 11 were about 2.07 times more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 73 were included in the analysis.

Parent Engagement Factor

Educational Aspirations for The Tenth Grade Child: Attend Some College/No Degree. The estimated odds ratio associated with the categorical variable, *educational aspirations for the tenth grade child: attend some college/no 4-year degree*, was 0.25. The estimated odds ratio represented a negative relationship between the dependent variable and this independent variable. Because the estimated odds ratio was less than 1.0 another calculation was performed ($1/0.25$), which resulted in an estimated odds ratio of 4.00. This variable included the comparison group, no postsecondary educational aspirations for the tenth grade child, and the results were analyzed in an inverse manner. This means that among tenth grade students who attend a *private high school*, students whose parent aspires them to attend some college/no 4-year degree are about 4.00 times

more likely than students whose parent does not aspire them to pursue postsecondary education, to express the intention of not attending a 4-year college or university directly after high school than having this intention, given that the variables in Table 73 were included in the analysis.

Peer Engagement Factor

Importance of Schooling Among Friends. The estimated odds ratio associated with the continuous variable, *importance of schooling among friends*, was 1.24. This means that among tenth grade students who attend a *private high school*, for every one unit increase in the importance of schooling among friends, students were about 1.24 times, or 24 percent, more likely to express the intention of attending a 4-year college or university directly after high school than not having this intention, given that the variables in Table 73 were included in the analysis.

Question 3C.2 Summary

In summary, these results suggest that relationships exist between tenth grade first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, the results imply that six significant positive relationships exist and two significant negative relationships exist. Among the six independent variables that suggest a positive relationship, four of the independent variables have an estimated odds ratio above 1.50. The estimated odds ratios imply that the independent variables associated with students' plans to take the SAT/ACT were the most important.

Specifically, students' plans to take the SAT/ACT in grade 11 was the most important, followed by students' plans to take the SAT/ACT in grade 12, then students' plans to take the SAT/ACT in grade 10. The remaining independent variable with an estimated odds ratio above 1.50 focuses on one main theme, students' plans to take an AP Test in grade 11. The independent variables associated with students' plans to take the PSAT/PACT in grade 12 and parents' educational aspirations for the tenth grade child: attend some college/no 4-year degree were found to be significant at the 0.05 level. However, for each of these variables, a negative correlation was found. Both of these variables were treated and analyzed in an inverse manner.

The null hypothesis was defined as no linear combination of the 22 independent variables, or subset of the 22 independent variables, considered in this study was significantly ($\alpha = 0.05$) related to first-generation college-bound students' stated intent to attend a 4-year college or university directly after high school. Therefore, when considering the results based upon the high school type: *private school*, the null hypothesis was rejected.

Discussion of the Results

To answer each of the secondary research questions, the data analysis described in the preceding section was two-fold. First, an exploratory data analysis using a Chi-square test of independence was conducted to test the relationship between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and each the following three independent variables: 1) level of parental

education; 2) high school location; and 3) high school type. Second, the same twenty-two independent variables were examined, with a focus on specific areas of analysis: 1) five levels of parental education; 2) three high school locations; and 3) two high school types. Ten logistic regression models developed from a backward stepwise regression analysis were conducted. With reference to the ‘Overall Results Tables, or Table 49 and Table 50, the preceding sections analyzed the results associated with each independent variable specific to a research question, or one area of analysis. Therefore, using Tables 49 and 50 as a guide, the analysis of the results occurred in a vertical manner.

Because it is assumed that there are interactions among the confounding variables, or ten areas of analysis, the analysis of the results will be expanded to include all areas of analysis. Therefore, with reference to the ‘Overall Results Table, or Tables 49 and 50, this section will analyze the results associated with each independent variable across all ten areas of analysis. Therefore, using Tables 49 and 50 as a guide, the following discussion of the results will occur in a horizontal manner. To gain some sense of the relative importance among the independent variables, the independent variables are categorized by counting the number of times each independent variable and the intercept were found to be significant at the 0.05 level, as illustrated in Table 74.

Table 74: Ranking of Independent Variables: Sum of Ten Areas of Analysis

Sum	Independent Variable
10	SAT/ACT plans in grade 11
9	Importance of schooling among friends
8	Standardized math and reading composite test score
8	Use of resources for college entrance requirements
8	PSAT/ACT plans in grade 10
8	Participation in extra-curricular school activities
5	PSAT/PACT plans in grade 11
5	SAT/ACT plans in grade 10
5	AP Test plans in grade 11
5	Participation in an AP program
5	Educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher
5	Educational aspirations for the tenth grade child: attend some college/no 4-year degree
4	AP Test plans in grade 12
3	SAT/ACT plans in grade 12
3	Offering advice about academics
1	Socioeconomic status
1	Use of a computer for learning
1	SAT/ACT plans in grade 12
1	AP Test plans in grade 10
0	Checking of school work
0	Financial savings for tenth grade child's postsecondary education
0	Participation in a college preparation program

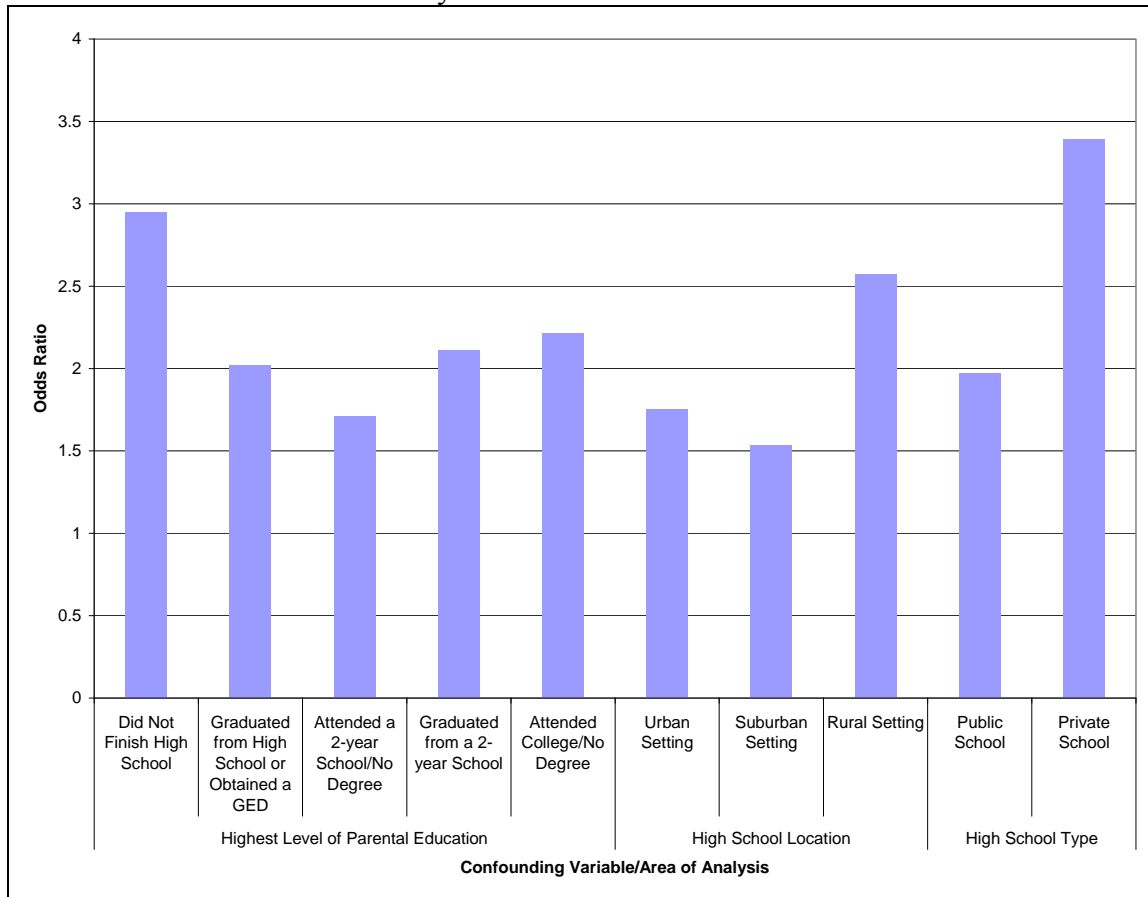
The discussion of the results with regard to the independent variables and the intercept which were significant at the 0.05 level in at least five, or fifty percent, of the ten areas of analysis is first presented. This discussion is followed by a brief discussion with regard to the independent variables and the intercept which were significant in less than five, or fifty percent, of the ten areas of analysis. While this discussion may present an interesting way to understand the significant relationships between first-generation college-bound students' stated intention to attend a 4-year college or university directly after high school and the independent variables, some caution should be taken, as the

estimated odds ratios presented below reflect the final results of the backward stepwise logistic regression analysis for each research question, given that the variables in the associated tables were included in the analysis.

Independent Variables Significant in Five or More Areas of Analysis

SAT/ACT Plans in Grade 11. The graph in Figure 2 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *SAT/ACT plans in grade 11*. This variable was classified as a student engagement factor. As illustrated, students' SAT/ACT plans in grade 11 and the intercept were significant at the 0.05 level in all ten, or 100 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. The estimated odds ratios associated with this variable range from 1.53 to 3.39. Notably, the highest estimated odds ratio was associated with the high school type, private school. Also, among the twenty-two independent variables included in this study, students' SAT/ACT plans in grade 11 was the only independent variable and intercept that were found to be significant at the 0.05 level in all ten areas of analysis.

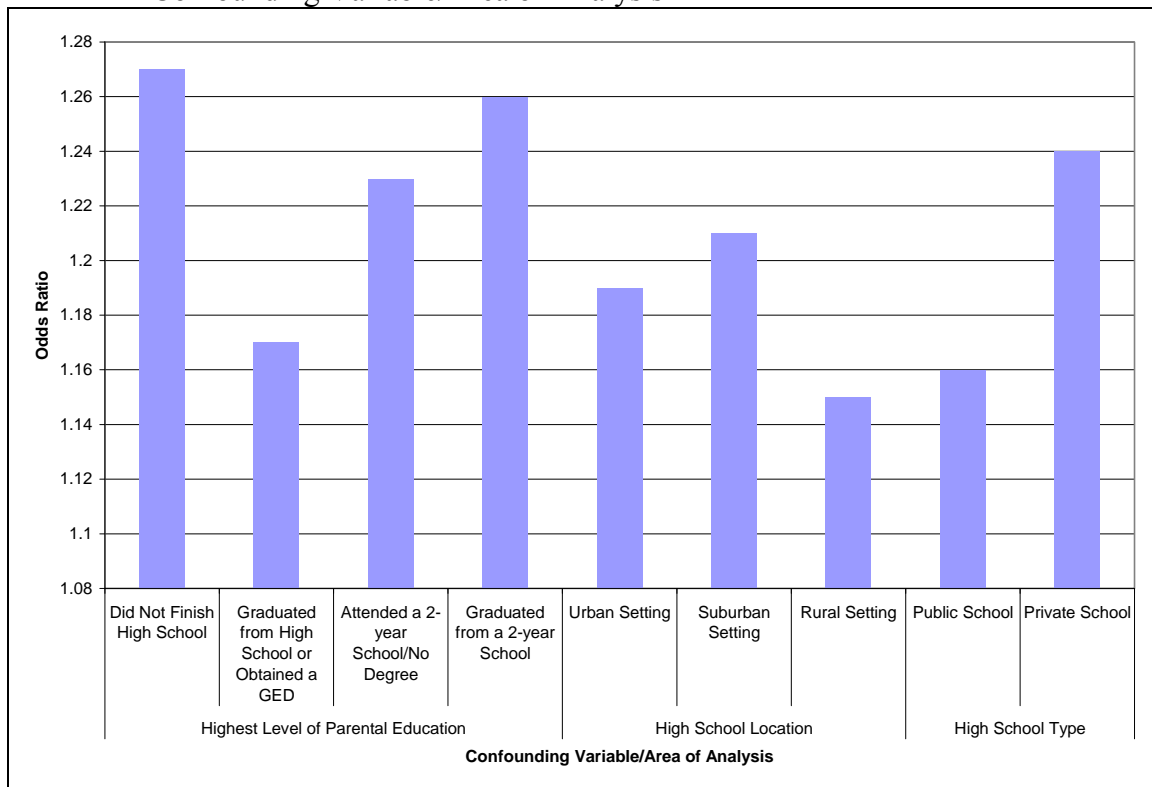
Figure 2: Estimated Odds Ratios: SAT/ACT Plans in Grade 11 by Each Confounding Variable/Area of Analysis



Importance of Schooling Among Friends. The graph in Figure 3 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *importance of schooling among friends*. This variable was classified as a peer engagement factor. As illustrated, importance of schooling among friends and the intercept were significant at the 0.05 level in nine, or 90 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this variable. The estimated odds ratios associated with this variable range from 1.15 to 1.27. Notably, the estimated odds ratios are relatively consistent across the

nine areas of analysis. Also, in this study, only one of the twenty-two independent variables, students' plans to take the SAT/ACT in grade 11 and the intercept that were found to be significant at the 0.05 level in more than 9 areas of analysis, or in all ten areas of analysis.

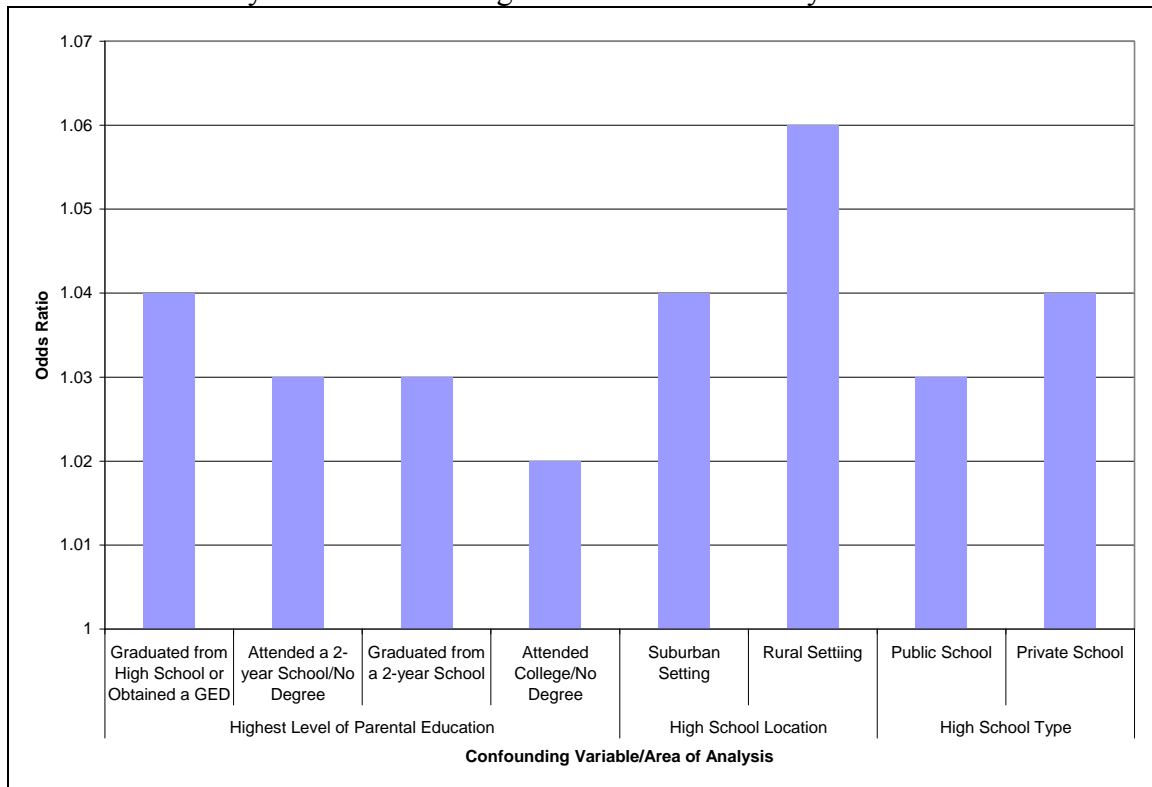
Figure 3: Estimated Odds Ratios: Importance of Schooling Among Friends by Each Confounding Variable/Area of Analysis



Standardized Math and Reading Composite Test Score. The graph in Figure 4 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *standardized math and reading composite test score*. This variable was classified as a student engagement factor. As illustrated, the students' standardized math and reading composite test score and the intercept were significant at the 0.05 level

in eight, or 80 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. However, all of the estimated odds ratios associated with this variable are very low, with a range from 1.02 to 1.06. As presented in the preceding section, while the p -value was significant at the 0.05 level, this may not be an important relationship, except to note that the estimated odds ratios are relatively consistent across the eight areas of analysis.

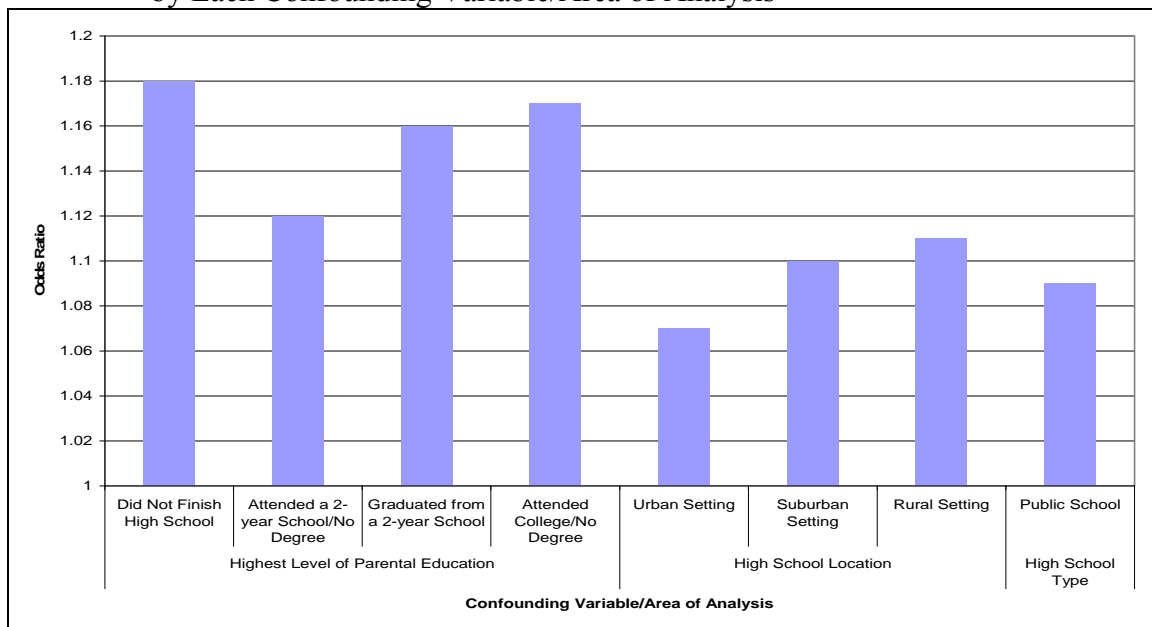
Figure 4: Estimated Odds Ratios: Standardized Math and Reading Composite Test Score by Each Confounding Variable/Area of Analysis



Use of Resources for College Entrance Requirements. The graph in Figure 5 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *use of resources for college entrance requirements*. This variable

was classified as a student engagement factor. As illustrated, students' use of resources for college entrance requirements and the intercept were significant at the 0.05 level in eight, or 80 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. The estimated odds ratios associated with this variable range from 1.07 to 1.18. While the estimated odds ratios are low, they were relatively consistent across the eight areas of analysis related to the level of parental education. Notably, the highest estimated odds ratio was associated with the lowest level of parental education. Moreover, across both high school locations and high school types, the estimated odds ratios were relatively consistent.

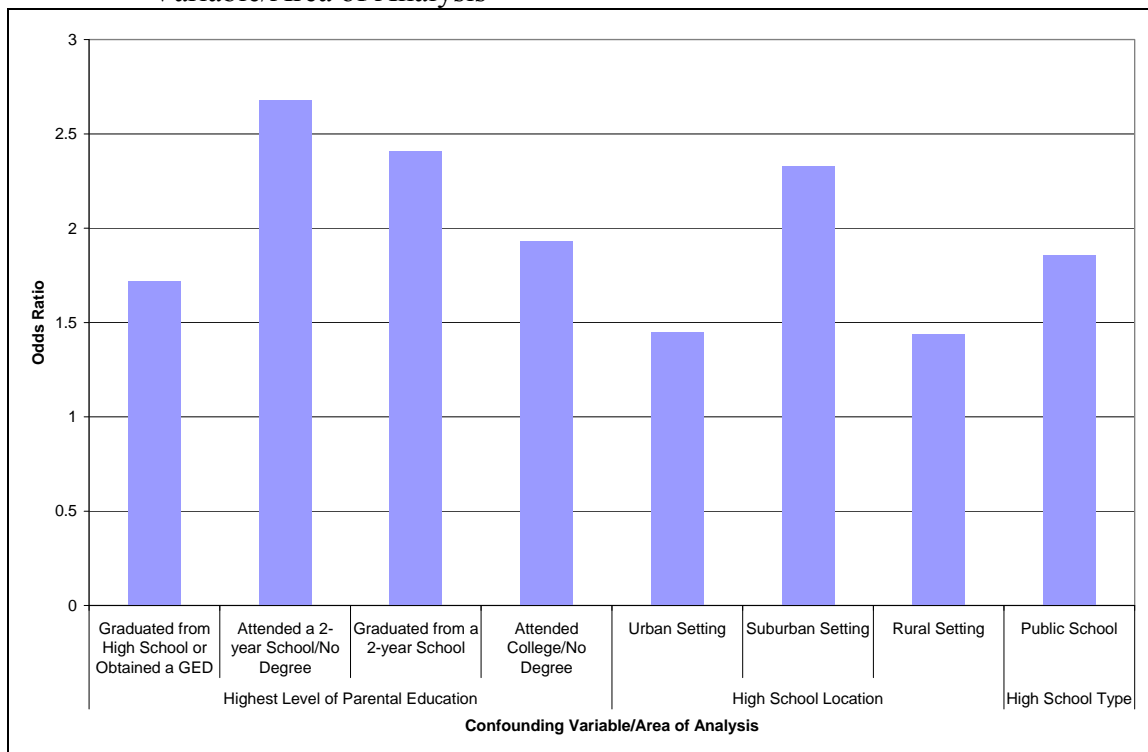
Figure 5: Estimated Odds Ratios: Use of Resources for College Entrance Requirements by Each Confounding Variable/Area of Analysis



PSAT/PACT Plans in Grade 10. The graph in Figure 6 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable,

PSAT/PACT plans in grade 10. This variable was classified as a student engagement factor. As illustrated, students' PSAT/PACT plans in grade 10 and the intercept were significant at the 0.05 level in eight, or 80 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. The estimated odds ratios associated with this variable range from 1.45 to 2.68.

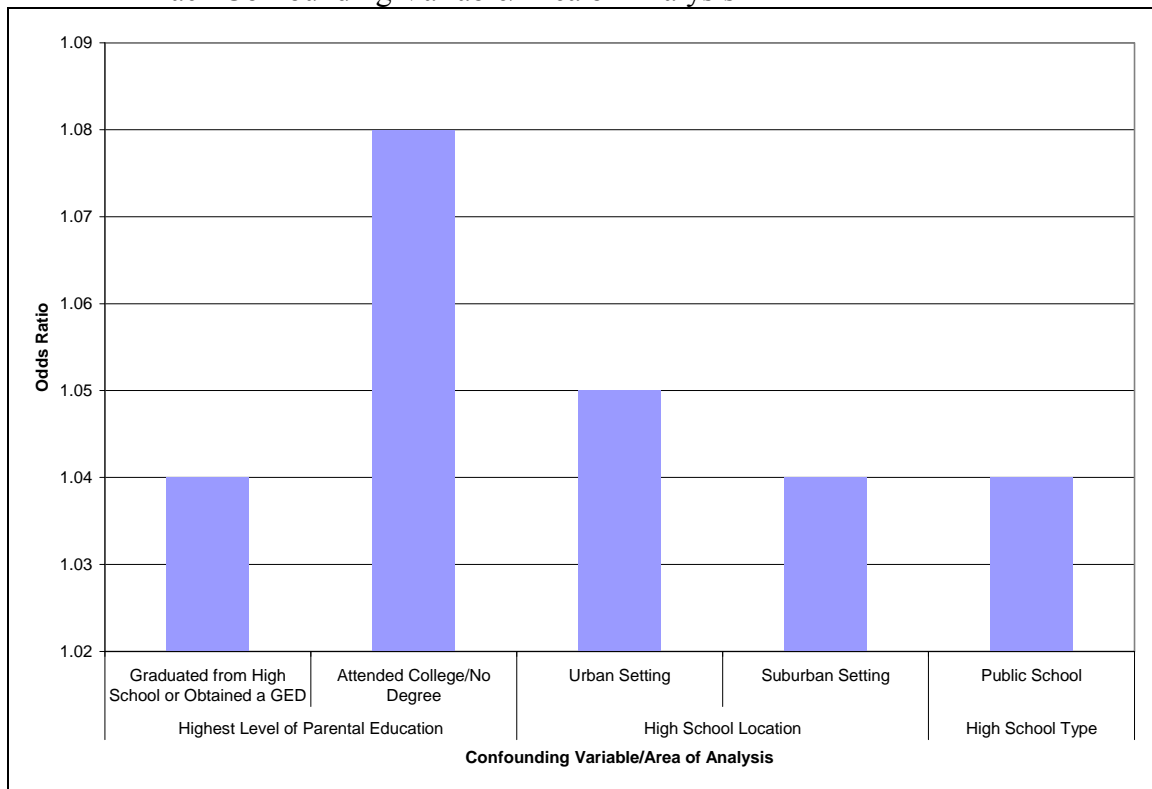
Figure 6: Estimated Odds Ratios: PSAT/PACT Plans in Grade 10 by Each Confounding Variable/Area of Analysis



Participation in Extra-curricular School Activities. The graph in Figure 7 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *participation in extra-curricular school activities*. This variable was classified as a student engagement factor. As illustrated, students' participation in

extra-curricular school activities and the intercept were significant at the 0.05 level in five, or 50 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. However, all of the estimated odds ratios associated with this variable are very low, with a range from 1.04 to 1.08. As presented in the preceding section, while the p -value was significant at the 0.05 level, this may not be an important relationship, except to note that the estimated odds ratios are relatively consistent across the five areas of analysis.

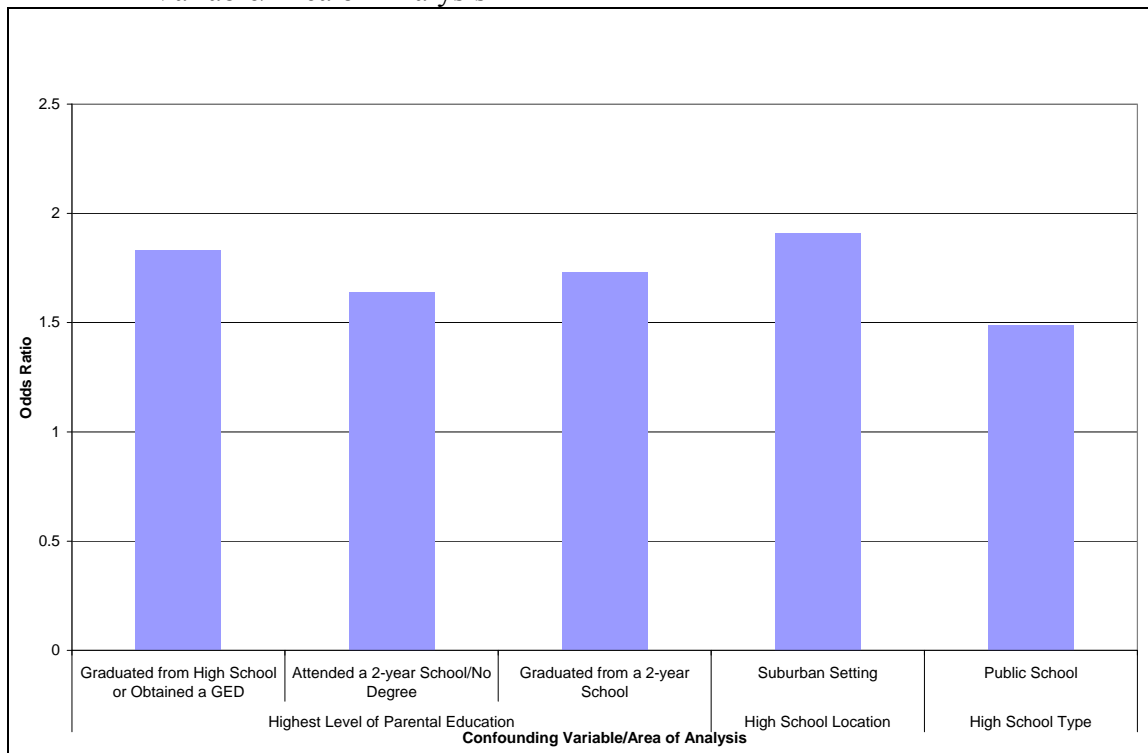
Figure 7: Estimated Odds Ratios: Participation in Extra-curricular School Activities by Each Confounding Variable/Area of Analysis



PSAT/PACT Plans in Grade 11. The graph in Figure 8 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable,

PSAT/PACT plans in grade 11. This variable was classified as a student engagement factor. As illustrated, students' PSAT/PACT plans in grade 11 and the intercept were significant at the 0.05 level in five, or fifty percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. The estimated odds ratios associated with this variable range from 1.49 to 1.91. Across the five areas of analysis, the estimated odds ratios were relatively consistent.

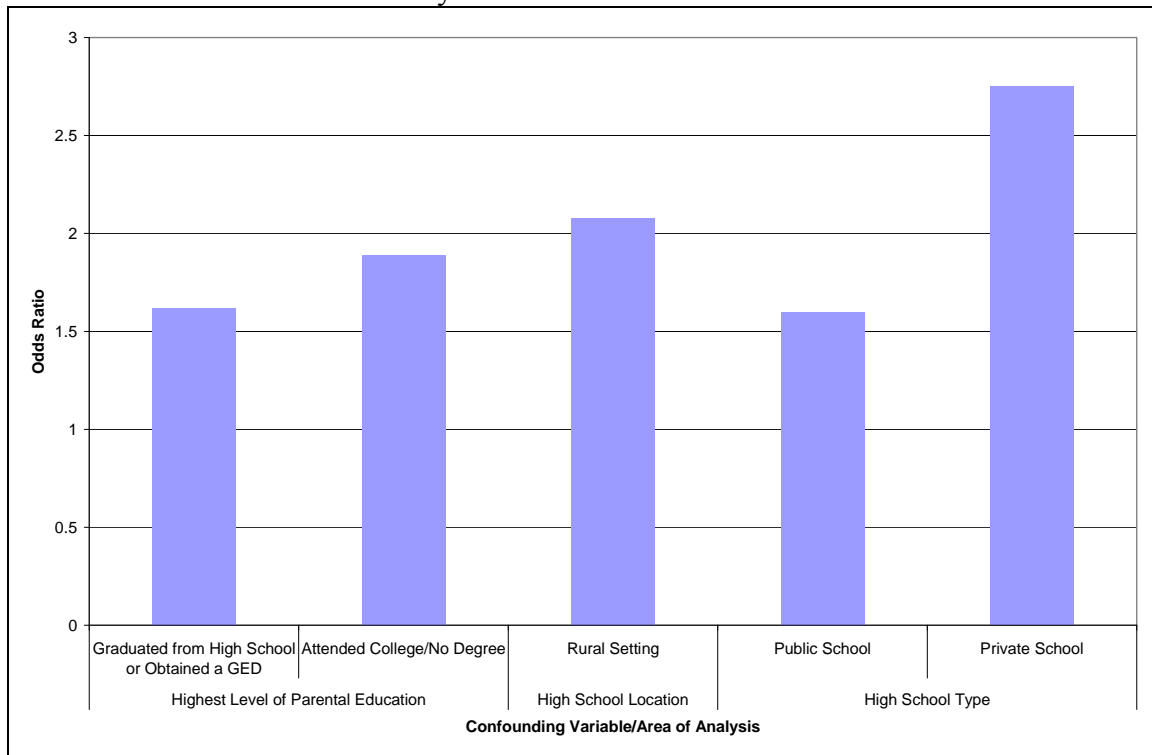
Figure 8: Estimated Odds Ratios: PSAT/PACT Plans in Grade 11 by Each Confounding Variable/Area of Analysis



SAT/ACT Plans in Grade 10. The graph in Figure 9 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *SAT/ACT plans in grade 10*. This variable was classified as a student engagement factor.

As illustrated, students' SAT/ACT plans in grade 10 and the intercept were significant at the 0.05 level in five, or fifty percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. The estimated odds ratios associated with this variable range from 1.60 to 2.75. Notably, the highest estimated odds ratio was associated with the high school type, private school.

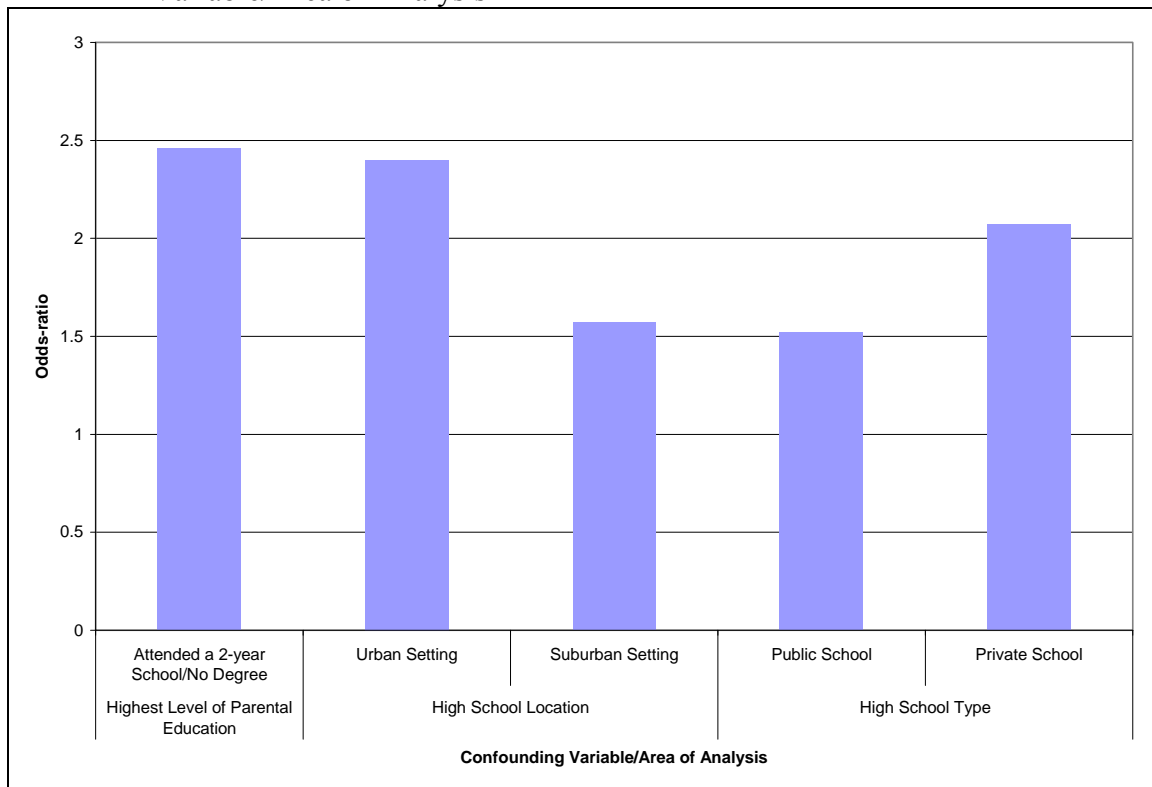
Figure 9: Estimated Odds Ratios: SAT/ACT Plans in Grade 10 by Each Confounding Variable/Area of Analysis



AP Test Plans in Grade 11. The graph in Figure 10 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *AP Test plans in grade 11*. This variable was classified as a student engagement factor. As illustrated, students' AP Test plans in grade 11 and the intercept were significant at

the 0.05 level in five, or 50 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this independent variable. The estimated odds ratios associated with this variable range from 1.52 to 2.47.

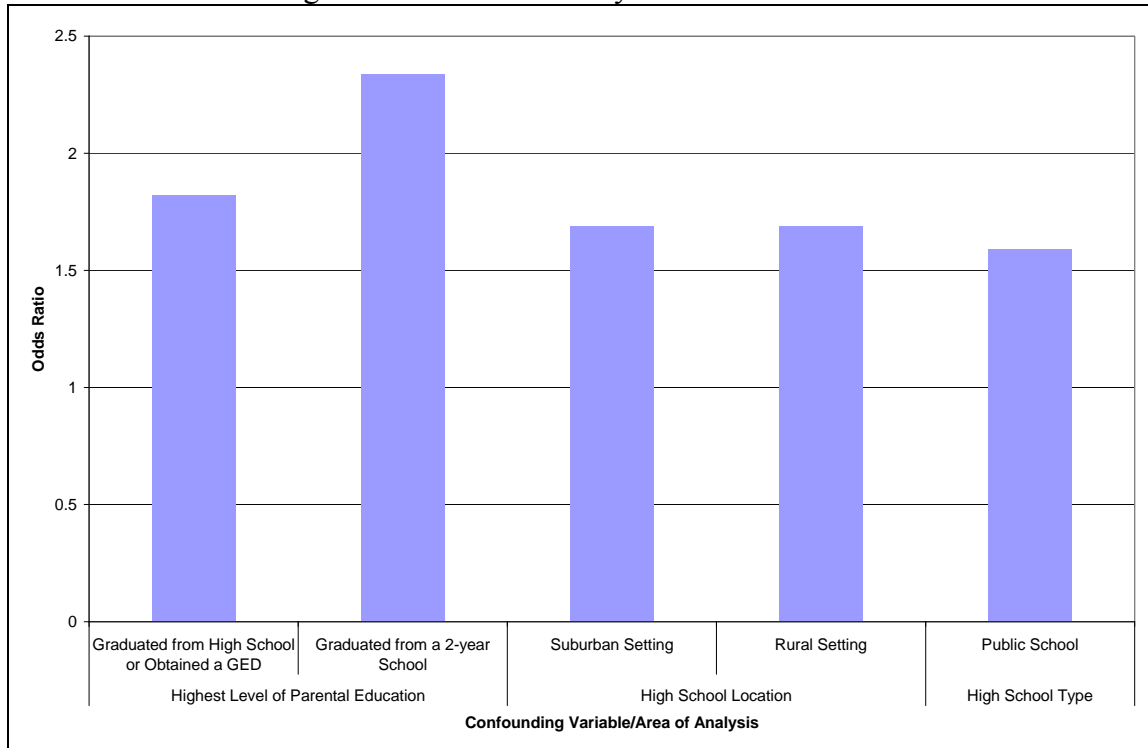
Figure 10: Estimated Odds Ratios: AP Test Plans in Grade 11 by Each Confounding Variable/Area of Analysis



Participation in an AP Program. The graph in Figure 11 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *participation in an AP program*. This variable was classified as a student engagement factor. As illustrated, students' participation in an AP program and the intercept were significant at the 0.05 level in five, or 50 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this

independent variable. The estimated odds ratios associated with this variable range from 1.59 to 2.34.

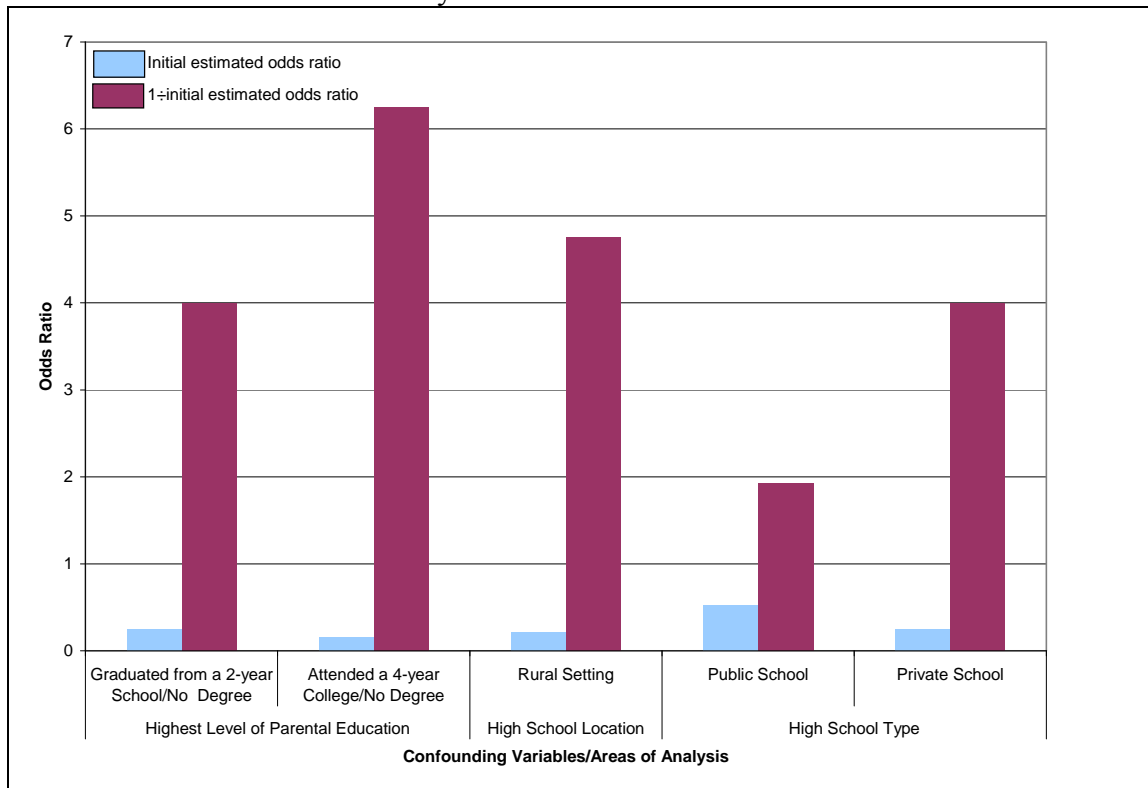
Figure 11: Estimated Odds Ratios: Students' Participation in an AP Program by Each Confounding Variable/Area of Analysis



Educational Aspirations for the Tenth Grade Child: Attend Some College/No 4-year Degree. The graph in Figure 12 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *educational aspirations for the tenth grade child: attend some college/no 4-year degree*. This variable was classified as a parent engagement factor. As illustrated, parents' educational aspirations for the tenth grade child: attend some college/no 4-year degree and the intercept were significant at the 0.05 level in five, or 50 percent, of the research questions. The results suggest a significant negative relationship between the dependent variable and this independent

variable. Correspondingly, because the estimated odds ratios were less than 1.0 another calculation was performed for each variable ($1 \div$ initial estimated odds ratio). The estimated odds ratios associated with this variable range from 1.92 to 6.25, and the results were interpreted in an inverse manner.

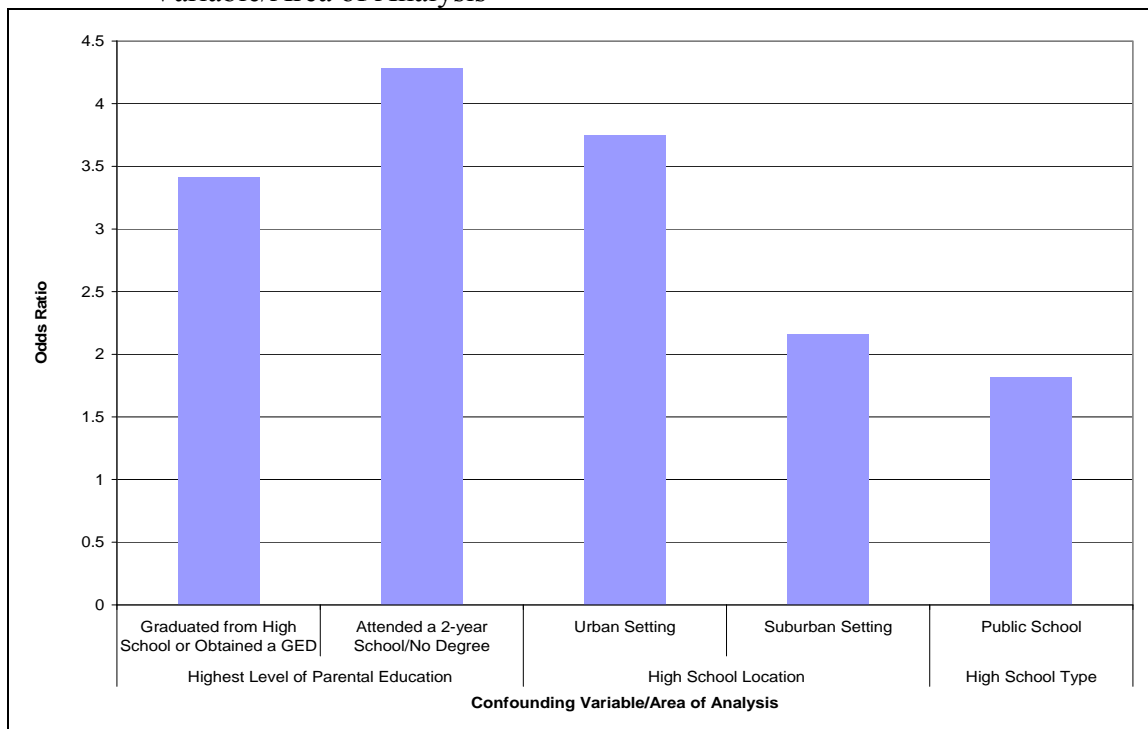
Figure 12: Estimated Odds Ratios: Parents' Educational Aspirations for the Tenth Grade Child: Attend Some College/No 4-year Degree by Each Confounding Variable/Area of Analysis



Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree of Higher. The graph in Figure 13 shows the results of the backward stepwise logistic regression analysis with regard to the independent variable, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher*. This variable was classified as a parent engagement factor. As illustrated, parents'

educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher and the intercept were significant at the 0.05 level in five, or 50 percent, of the research questions. The results suggest a significant positive relationship between the dependent variable and this variable. The estimated odds ratios associated with this variable range from 1.82 to 4.28. Notably, the estimated odds ratio of 4.28 was the highest estimated odds ratio among the twenty-two independent variables included in this study.

Figure 13: Estimated Odds Ratios: Educational Aspirations for the Tenth Grade Child: Graduate from College with a BA/BS Degree or Higher by Each Confounding Variable/Area of Analysis



Independent Variables Significant in Four or Fewer Areas of Analysis

The preceding section focused on each independent variable and the intercept which were significant at the 0.05 level in at least five of the secondary research questions. Given the twenty-two independent variables which were included in this study and across all confounding variables/areas of analysis, with the exception of the independent variable, parent' educational aspirations for the tenth grade child: attend some college/no 4-year degree, the results suggest that eleven independent variables can be used to predict first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school. As described above, these independent variables are: 1) SAT/ACT plans in grade 11; 2) importance of schooling among friends; 3) standardized math and reading composite test score; 4) use of resources for college entrance requirements; 5) PSAT/PACT plans in grade 10; 6) participation in extra-curricular school activities; 7) PSAT/PACT plans in grade; 8) SAT/ACT plans in grade 10; 9) AP Test plans in Grade 11; 10) participation in an AP program; and 11) educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher.

Interestingly, and as important, is an understanding of each independent variable and the intercept which were significant at the 0.05 level in four or fewer of the research questions. In essence, these results suggest that each of the independent variables discussed below is a less significant predictor of first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school. Notably, some caution should be taken, as the estimated odds ratios presented below

reflect the final results of the backward stepwise logistic regression analysis for each research question, given that the variables in the associated tables were included in the analysis.

Four Areas of Analysis: Significant Positive Relationship. Given the twenty-two independent variables which were included in this study and across all areas of analysis, the results from the backward stepwise logistic regression analysis suggest that the student engagement factor, *AP Test plans in grade 12* and the intercept, were found to be significant at the 0.05 in four areas of analysis, or for 40 percent of the confounding variables. The results suggest that a significant positive relationship between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and this independent variable was found. Notably, the estimated odds ratios associated with this variable range from 1.72 to 1.99 and are relatively consistent across the analysis of the four confounding variables.

Three Areas of Analysis: Significant Positive Relationship. Moreover, given the twenty-two independent variables which were included in this study and across all confounding variables/areas of analysis, the results from the backward stepwise logistic regression analysis suggest that one student engagement factor, *SAT/ACT plans in grade 12* and the intercept and one parent engagement factor, *offering advice about academics* and the intercept were found to be significant at the 0.05 level in only three areas of analysis, or for 30 percent of the confounding variables. The results suggest that significant positive relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and these two

independent variables were found. Notably, the estimated odds ratios associated with the independent variable, students' SAT/ACT plans in grade 12, range from 1.31 to 3.25, with high school type, private school, indicating the highest estimated odds ratio. Also, the estimated odds ratios associated with the independent variable, offering advice about academics, range from 1.14 to 1.22.

One Area of Analysis: Significant Positive Relationship. Among the twenty-two independent variables which were included in this study and across all confounding variables/areas of analysis, the results from backward stepwise logistic regression analysis suggest that two student engagement factors: 1) *socioeconomic status*; and 2) *AP Test plans in grade 10* and the intercept were found to be significant at the 0.05 level in only one area of analysis, or for 10 percent, of the confounding variables. The results suggest that significant positive relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and these two independent variables were found.

One Area of Analysis: Significant Negative Relationship. Also, among the twenty-two independent variables which were included in this study and across all confounding variables/areas of analysis, the results from the backward stepwise logistic regression analysis suggest that two student engagement factors: 1) *computer use for learning*; and 2) *PSAT/PACT Plans in Grade 12* and the intercept were found to be significant at the 0.05 level in only one area of analysis, or for 10 percent, of the confounding variables. However, the results suggest that significant negative relationships between first-generation college-bound students' stated intentions to attend

a 4-year college or university directly after high school and these independent variables were found.

Zero Areas of Analysis: No Significant Positive or Negative Relationship. Given the twenty-two independent variables which were included in this study and across all confounding variables/areas of analysis, the results from the backward stepwise logistic regression analysis suggest that three of the independent variables and the intercept are found to be not significant at the 0.05 level. Two of these independent variables are parent engagement factors: 1) *checking of school work*; and 2) *financial savings for college*. The remaining independent variable, *students' participation in a college preparation program*, is a student engagement factor. For each of these three variables, there were no occurrences of an estimated odds ratio, or for zero percent, of the confounding variables. Correspondingly, the results suggest that neither significant positive or negative relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and these independent variables were found.

Chapter Summary

This chapter provided an overview of the results of this study, including an analysis of the Chi-square test of independence and the logistic regression models developed from a backward stepwise regression analysis. The overview included a discussion of meaning of the results relative to the study's primary research question.

Conclusions drawn from the results of the study and recommendations for further research are provided next in Chapter 5.

CHAPTER 5

CONCLUSIONS

Introduction

Based on the literature review, the problem addressed in this study is that researchers, policymakers, educators, and administrators have limited information concerning the relative importance of various influences on college aspirations among a new generation of students, the Net Generation/Millennials. The Net Generation/Millennials were born between 1982 and 1992 and are now entering colleges and universities (Oblinger et al., 2005).

The purpose of this study was to examine the relationships between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. Specifically, tenth grade students from families in which no parent or guardian earned a baccalaureate degree were the focus of this study. These students were defined as first-generation college-bound students.

This study focused on answering the primary research question: "What relationships exist between first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers?" Data collected by the Research Triangle Institute for the NCES ELS:2002 were used in this study. The population for this study was tenth grade students in 2002. The NCES ELS:2002 is a nationally representative

sample of that population. The data analysis consisted of a Chi-square test of independence and a logistic regression model developed from a backward stepwise regression analysis.

In this study, the dependent variable was first-generation college-bound students' stated intentions to attend a 4-year college or university directly after high school. For the purposes of this chapter, "first-generation college-bound students" will be referred to as '*students*'. Additionally, "stated intentions to attend a 4-year college or university directly after high school" will be referred to as '*intentions*'. This chapter begins with the Overall Results Table, as described and presented in Chapter 4, followed by an evaluation of how the results compare to the literature review and a discussion of conclusions based on the findings of this study. Finally, the chapter ends with a discussion of recommendations based on the results.

Overall Results Table

As an exploratory data analysis, a Chi-square test of independence was conducted to test the relationships between students' intentions and the following independent variables: 1) level of parental education; 2) high school location; and 3) high school type. The level of significance was set at $\alpha = 0.05$. With regard to each independent variable, the results suggest similar findings: 1) students' intentions and level of parental education were not independent; 2) students' intentions and high school location were not independent; and 3) students' intentions and high school type were not independent (Pearson Chi-square = 0.00).

As a result of this exploratory data analysis, logistic regression models developed from a backward stepwise regression analysis were conducted for each area of analysis, or equation. The data analysis of the logistic regression models has focused on the interpretation of the estimated logit, “Estimate” by converting it to an estimated odds ratio, using the exponential function (EXP) in Microsoft Excel. Logistic regression calculates changes in the log odds of the dependent variable and estimates the probability of a certain event occurring. Therefore, if an independent variable is related to the dependent variable, scores on the independent variable can be used to predict scores on the dependent variable (Menard, 2002; Pampel, 2000). Although the results of this study provide insights about the extent to which students within the Millennial generation prepare for college, the results should not be used to infer causality.

With regard to the student, parent, and peer engagement factors, the overall results of the backward stepwise logistic regression analysis, associated with each research question, or area of analysis, are presented in Tables 75 and 76. Organized by research question, the top row of the table lists the ten areas of analysis, or equations, with a reference to each research question. Classified by engagement factor, the left column lists each of the independent variables which were used in this study. As described in detail in Chapter 4, for each independent variable and the intercept that were found to be significant at the 0.05 level, the estimated logit, “Estimate”, was interpreted by converting it to an estimated odds ratio, using the exponential function (EXP) in Microsoft Excel.

The numbers presented in Tables 75 and 76 represent the estimated odds ratio associated with each independent variable and the intercept that were found to be significant at the 0.05 level. A grey-shaded cell presented in Tables 75 and 76 represents that the independent variable and the intercept were found to be not significant at the 0.05 level. Specifically, Table 75 presents the results with regard to Student Engagement Factors, followed by Table 76 which presents the results with regard to Parent Engagement Factors and the Peer Engagement Factor.

Table 75: Independent Variables by Student Engagement Factors: Overall Results by Estimated Odds Ratio for Each Research Question

Research Question	Level of Parental Education					High School Location			High School Type	
	Q1C.1	Q1C.2	Q1C.3	Q1C.4	Q1C.5	Q2C.1	Q2C.2	Q2C.3	Q3C.1	Q3C.2
Confounding Variable	Did not finish HS	HS diploma or GED	Attended 2-year school/no degree	Graduated from a 2-year school	Attended college/no degree	Urban Setting	Suburban Setting	Rural Setting	Public HS	Private HS
Student Engagement Factors										
Socioeconomic status						1.41				
Standardized math and reading composite test score		1.04	1.03	1.03	1.02		1.04	1.06	1.03	1.04
Participation in extra-curricular school activities		1.04			1.08	1.05	1.04		1.04	
Use of a computer for learning			0.86 (1.16)							
Use of resources for college entrance requirements	1.18		1.12	1.16	1.17	1.07	1.10	1.11	1.09	
PSAT/PACT in grade 10		1.72	2.68	2.41	1.93	1.45	2.34	1.45	1.87	
PSAT/PACT in grade 11		1.83	1.64	1.73			1.91		1.49	
PSAT/PACT in grade 12										0.22 (4.54)
SAT/ACT in grade 10		1.62			1.89			2.08	1.60	2.75
SAT/ACT in grade 11	2.95	2.02	1.71	2.11	2.21	1.75	1.53	2.57	1.97	3.39
SAT/ACT in grade 12					1.62				1.31	3.25
AP Test plans in grade 10			1.99							
AP Test plans in grade 11			2.47			2.40	1.57		1.52	2.07
AP Test plans in grade 12			1.99			2.12	1.72		1.78	
Participation in an AP Program		1.82		2.34			1.69	1.69	1.59	
Participation in a college preparation program										

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function EXP {}, in Microsoft Excel.

Table 76: Independent Variables by Parent and Peer Engagement Factors: Overall Results by Estimated Odds Ratio for Each Research Question

	Level of Parental Education					High School Location			High School Type	
Research Question	Q1C.1	Q1C.2	Q1C.3	Q1C.4	Q1C.5	Q2C.1	Q2C.2	Q2C.3	Q3C.1	Q3C.2
Confounding Variable	Did not finish HS	HS diploma or GED	Attended 2-year school/no degree	Graduated from a 2-year school	Attended college/no degree	Urban Setting	Suburban Setting	Rural Setting	Public HS	Private HS
Parent Engagement Factors										
Checking of school work										
Offering advice about academics			1.22				1.16		1.14	
Financial savings for tenth grade child's postsecondary education										
Educational aspirations for tenth grade child: attend some college/no 4-year degree				0.25 (4.00)	0.15 (6.25)			0.21 (4.76)	0.51 (1.92)	0.25 (4.00)
Educational aspirations for tenth grade child: graduate from college with a BA/BS degree		3.41	4.28			3.75	2.16		1.82	
	Level of Parental Education					High School Location			High School Type	
Research Question	Q1C.1	Q1C.2	Q1C.3	Q1C.4	Q1C.5	Q2C.1	Q2C.2	Q2C.3	Q3C.1	Q3C.2
Confounding Variable	Did not finish HS	HS diploma or GED	Attended 2-year school/no degree	Graduated from a 2-year school	Attended college/no degree	Urban Setting	Suburban Setting	Rural Setting	Public HS	Private HS
Peer Engagement Factor										
Importance of schooling among friends	1.27	1.17	1.23	1.26		1.19	1.21	1.15	1.16	1.24

Results were estimated by AM Statistical Software Beta Version 0.06.03 (c) the American Institutes for Research and Jon Cohen, using the weight BYSTUWT. Relationships between the independent variables and the dependent variable were tested using a logistic regression model developed from a backward stepwise regression analysis. The level of significance was set at $\alpha = 0.05$. The estimated logit, "Estimate" was interpreted by converting it to an estimated odds ratio, using the exponential function $EXP\{\}$, in Microsoft Excel.

Based on the results of this study, the central conclusion that can be made in relation to the primary research question is that many significant positive relationships, and to a substantially lesser extent, significant negative relationships or no relationships, were found to exist between students' intentions and the engagement factors of students, their parents, and their peers. Although conclusions with regard to each of the independent variables are discussed later in greater detail, in summary, four broad conclusions can be made.

First, the results suggest that early planning for college matters. Students who stated intentions were more likely to make arrangements regarding college entrance tests by the end of grade 11. Notably, across all ten equations, the estimated odds ratios associated with the independent variable, students' SAT/ACT plans in grade 11, remained very strong. Additionally, students' who stated intentions were more likely to participate in an AP program and have AP Test plans. It appears that PSAT plans in grade 11 or PSAT plans in grade 12 is too late for college preparation to a 4-year college or university directly after high school. Additionally, it appears that AP Test plans in grade 10 is too early in the college preparation process.

Second, the results suggest that parent aspirations matter. The results suggest a significant *positive* relationship between students' intentions and the parental engagement factor: educational aspirations for the tenth grade child: *graduate from college with a BA/BS degree or higher*. Significant across five equations, the estimated odds ratios associated with this variable range from 1.82 to 4.28. When considering the highest positive odds ratio among all twenty-two variables included in this study, 4.28, the results

suggest that the parent engagement factor, educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, stands out as the strongest predictor of students' intentions. Also, the results suggest a significant *negative* relationship between students' intentions and the parental engagement factor: *educational aspirations for the tenth grade child: attend some college/no 4-year degree*. It appears that when parents' aspirations are higher, students' are more likely to state the intention of attending a 4-year college or university directly after high school. Similarly, it appears that when parents' aspirations are lower, students' are less likely to state the intention of attending a 4-year college or university directly after high school.

More so than parents' offering advice about academics and parents' checking of school work, the results suggest that peer influences matter. Across nine equations, the estimated odds ratios associated with the peer engagement factor, importance of schooling among friends, remained steady. Students who stated intentions were more likely to have friends who feel it is important to attend classes regularly, study, get good grades, finish high school, and continue their education past high school.

Providing additional insight into this study, the results also suggest that three independent variables were not found to be predictors of students' intentions: 1) student engagement factor: participation in a college preparation program; 2) parent engagement factor: checking of school work; and 3) parent engagement factor: financial savings for the tenth grade child's postsecondary education. Also, the results suggest that the following two student engagement factors: 1) socioeconomic status; and 2) use of a computer for learning were not found to be strong predictors of students' intentions. With

regard to the research question, the results suggest that these independent variables do not relate to students' intentions.

Comparison of Results to the Literature Review

This study was inspired by the premise that the transition to college experiences, between first-generation students, or students who come from a family where no parent or guardian has earned a baccalaureate degree, and their non-first generation counterparts are different (Choy, 2001; Horn et al. 2000; Torrez, 2004). Although this study focused on a nationally representative sample of a new generation of students, the Net Generation/Millennials, who are now entering colleges and universities, most of the research findings from this study are consistent with findings by previous research. Six examples are presented below.

First, in this study, across all ten equations, the independent variable, students' participation in a college preparation program, and the intercept were not found to be significant at the 0.05 level. The findings of this study associated with the student engagement factor, participation in a college preparation program, are inconsistent with previous research. Horn et al. (1998) found that students' participation in a college preparation program, or an outreach program, had a beneficial affect on students' transition to and persistence through college. However, this inconsistency may be due to the limitation associated with the independent variable, participation in a college preparation program. This variable was based on students' response to the following question from the NCES ELS:2002 Base Year Student Questionnaire (BYS33): "Have

you ever been in [a special program to help students plan or prepare for college] in high school?” This question focused only on students’ participation in a college preparation program in high school; however, Swail (2000) reported that students enter a college preparation program as early as elementary school and as late as after high school graduation. Therefore, students may have previously participated in an outreach program, prior to high school, or they may participate in an outreach program in the future, after the tenth grade. If pre-high school participation was included in this study, the results may be different, with the independent variable, students’ participation in a college preparation program, and the intercept significant at the 0.05 level.

Second, the results of this study suggest very low odds ratios for the independent variable, students’ participation in extra-curricular school activities, with a range of 1.04 to 1.08, across five equations. The findings of this study associated with the student engagement factor, participation in extra-curricular activities, are relatively consistent with previous research in which at-risk students and factors contributing to the transition from high school to postsecondary education were studied. Researchers have reported findings which suggest that students’ participation in extra-curricular activities have positive effects on students’ transition to college (Horn et al. 1998; Hao et al. 1998; Smith-Maddox, 1999; Mahoney et al. 1993; & Fan, 2001). While the results of this study are relatively consistent with previous research, the low odds ratios may be due to the limitation associated with the independent variable, students’ participation in extra-curricular school activities. This variable was based on students’ response to the following question from the NCES ELS:2002 Base Year Student Questionnaire (BYS42):

“In a typical week, how much time do you spend on school-sponsored extra-curricular activities (for example, sports, school clubs)?” This question focused only on school-sponsored activities; therefore, information with regard to students who participated in ‘non-school related’ activities, such as individual lessons or community service activities, was not captured in this study. If both school-sponsored and non-school-sponsored activities were included in this study, the results may be different, with greater estimated odds ratios.

Third, the results of this study suggest somewhat low odds ratios for the independent variable, students’ use of resources for college entrance requirements, with a range of 1.09 to 1.18, across eight equations. The findings of this study associated with the student engagement factor, use of resources for college entrance requirements, are fairly consistent with previous research in which factors contributing to how students obtain college information to help them prepare for college were studied. Researchers have reported findings which suggest that students utilize a variety of sources, including in-school resources, family members, peers, and relatives, to help them learn about the college process and requirements and to make informed decisions (Cabrera et al. 2000; Gibbons et al. 2004; Horn et al. 2002; & Venezia et al. 2005).

Fourth, in this study and across all ten equations, the independent variable, parents’ checking of school work, and the intercept were not found to be significant at the 0.05 level. Similarly, in this study and occurring in only three equations, the estimated odds ratios associated with the independent variable, parents’ offering advice about academics, were fairly low, with a range of 1.14 to 1.22. The findings of this study

associated with the two parent engagement factors: 1) checking of school work; and 2) offering advice about academics, are fairly inconsistent with previous research in which parental discussions about school-related matters with their child were studied.

Researchers have reported findings which suggest that parental involvement is an important influence having a positive effect on their child's transition to college (Hao et al. 1998; Smith-Maddox, 1999; Mahoney et al. 1993; Fan, 2001; & Horn et al. 1998).

Fifth, in this study and occurring in five equations, with an estimated odds ratios range of 1.82 to 4.28, the estimated odds ratios associated with the parent engagement factor: educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, was exceptionally large in comparison to the estimated odds ratios associated with the other independent variables. The findings of this study associated with the parent engagement factor, educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, are strongly consistent with previous research in which the affect of parental educational aspirations for their children were studied. Researchers have reported findings which suggest that a parental desire for the child's education was the strongest relationship in influencing the child's postsecondary educational aspirations (Hossler, 1999; Mahoney et al. 1993; Hossler et al. 1992; & Fan, 2001).

Finally, the results of this study show relatively steady odds ratios for the independent variable, importance of schooling among friends, with a range of 1.15 to 1.27, across nine equations. The findings of this study associated with the peer engagement factor, importance of schooling among friends, are consistent with previous

research in which the effect of peer influences on academic choices and college plans were studied. Horn et al. (1998) reported that peer influences and the number of students' friends with college plans, were important predictors of students' transition to college. Similarly, previous findings (Hallinan et al. 1990; Zietz et al. 2005; & Sokatch, 2006) indicated that the influences of students' close friends and peers affect students' college aspirations and students' choice of academic programs.

Conclusions and Discussion

Based on the results of this study, the central conclusion that can be made in relation to the primary research question is that many significant positive relationships, and to a substantially lesser extent, significant negative relationships or no relationships, were found to exist between students' intentions and the engagement factors of students, their parents, and their peers. The data analysis of the logistic regression models has focused on the interpretation of the estimated logit, "Estimate" by converting it to an estimated odds ratio, using the exponential function (EXP) in Microsoft Excel. As illustrated in Tables 75 and 76, the results are presented in an estimated odds ratio.

Although the results of this study provide insights about the extent to which students within the Millennial generation prepare for college, the results should not be used to infer causality. However, the findings and respective conclusions may offer important implications for other researchers, policymakers, educators, and administrators. Accordingly, what follows is a discussion of the conclusions that can be made based on these findings. Using Tables 75 and 76 as a reference, the information presented is

organized as follows: 1) conclusions related to the student engagement factors; 2) conclusions related to the parent engagement factors; and 3) conclusions related to the peer engagement factor. Finally, conclusions related to the theoretical framework are discussed.

Conclusions Related to Student Engagement Factor:
Socioeconomic Status

From a policy and budgetary perspective, perhaps one of the most interesting findings in this study was the results associated with the independent variable, students' socioeconomic status. Although a positive significant relationship was found between students' intentions and students' socioeconomic status, the estimated odds ratio associated with this variable was rather low and significant for only one of ten equations. Specifically, with regard to high school location, urban setting, the estimated odds ratio was 1.41. Therefore, students' socioeconomic status may not be an important predictor of students' intentions. It appears that further exploration is required to better understand or explain the findings associated with this independent variable.

Conclusions Related to Student Engagement Factor:
Standardized Math and Reading Composite Test Score

The standardized math and reading composite test score provides a norm-referenced measurement of achievement which is an estimate of achievement relative to the population of spring 2002 tenth graders (Ingels et al. 2005). Although a positive significant relationship was found between students' standardized math and reading composite test score and students' intentions, the estimated odds ratios associated with

this variable were very low, with a range of 1.02 to 1.06, across eight equations. Therefore, this variable may not be an important predictor of students' intentions. Taken together with the results associated with the variables, parents' checking of school work and parents' offering advice about academics, the results suggest that academic advising responsibilities with students fall more on school personnel or other external networks outside of the home environment. Although no clear connections can be drawn due to limitations on the data available for this study, the findings reported in this study raise questions about how best school teachers, school counselors, parents, and others can help students be least minimally prepared academically to attend college. Additionally, while the students' standardized math and reading composite test score is only one indicator of academic ability, the findings reported in this study raise questions about the extent to which course learning objectives and college preparatory curriculum align with the content and objectives of standardized tests. Additionally, the findings reported in this study raise questions about the extent to which students are pursuing a challenging high school curriculum that will help to prepare them for the academic rigors of college.

Conclusions Related to Student Engagement Factor:
Participation in Extra-curricular School Activities

Perhaps one of the most surprising findings in this study was the results associated with students' participation in extra-curricular school activities. Although a positive significant relationship was found between students' participation in extra-curricular school activities and students' intentions, the estimated odds ratios associated with this variable were very low, with a range of 1.04 to 1.08, across five equations.

Therefore, this variable may not be an important predictor of students' intentions. These findings suggest that, to some extent, students are involved in extra-curricular school activities; however, their involvement in extra-curricular school activities may represent an untapped opportunity. Although no clear connections can be drawn due to limitations on the data available for this study, the findings reported in this study raise questions about the extent to which students are aware of extra-curricular school activities and its associations tied to some college application requirements, scholarship requirements, and other financial assistance opportunities and well as its role in intellectual and personal development. Also, the findings reported in this study at least raise questions about the extent to which students are involved in activities outside of the school arena, such as individual lessons, team activities, or community service activities.

Conclusions Related to Student Engagement Factor:
Use of a Computer for Learning

Based on the literature review, current information appeared to be limited in how differences among students' access to and use of a computer for learning may be associated with students' college aspirations. A relatively expected finding in this study was the results associated with the independent variable, use of a computer for learning. However, because a negative significant relationship between students' use of a computer for learning and students' intention was found for only one equation. It appears that further exploration is required to better understand or explain the findings associated with this independent variable.

Conclusions Related to Student Engagement Factor:
Use of Resources for College Entrance Requirements

From a policy and budgetary perspective, an interesting set of findings in this study was the results associated with students' use of resources for college entrance requirements. The results suggest a significant positive relationship between students' use of resources for college entrance requirements and students' intentions. Although a positive significant relationship was found, the estimated odds ratios associated with this variable were somewhat low, with a range of 1.07 to 1.18, across eight equations. However, the results suggest that students are not only seeking information about college entrance requirements from an array of resources and people, but are also making plans to take appropriate college preparation steps. The results also suggest that a concerted effort to communicate information among parents, school personnel, college personnel, and other community or family networks appears to be needed to help students prepare for college.

Conclusions Related to Student Engagement Factors:
College Entrance Exams

The results suggest a significant positive relationship between students' intentions and the independent variables associated with students' plans to take college entrance exams. Three conclusions are presented. First and most notably, with regard to the student engagement factors associated with college entrance tests, when considering the estimated odds ratios associated with students' SAT/ACT plans in grade 11, this variable stands out as having the strongest relationship to students' intentions, followed by students' PSAT/PACT plans in grade 10. These results suggest that students are

preparing for the SAT/ACT test by first taking the PSAT/PACT test, and completing requirements associated with the college application process.

Second, the results suggest that test taking planning, SAT/ACT plans in grades 10, 11, and 12, is the greatest for students who attend a private school. These results suggest that students attending a private school may be looking to improve their test scores. Although no clear connections can be drawn due to limitations on the data available for this study, the findings reported in this study raise questions about the possibility that students who attend a private high school may have different characteristics than students who attend a public high school.

Third, from a practical perspective, perhaps the most expected set of findings in this study is the negative relationship between students' intentions and students' PSAT/PACT plans in grade 12. Given the college application process and the PSAT/PACT being preliminary to the SAT/ACT, it makes sense that students who are planning to take the PSAT/PACT in grade 12 do not have plans to attend a 4-year college or university directly after high school. There may be some potential reasons for this. These students may be planning to attend college at a later date, gaining some additional perspective on their levels of basic skills with regard to a norm-referenced measurement of achievement, or trying to prepare for and gain acceptance into a particular college or university of their choice.

In summary, the results suggest that students have acted upon the message to take the PSAT/PACT and the SAT/ACT. Among high school students, a normal grade to take the PSAT/ACT is grade 10, and a normal grade to take the SAT/ACT is grade 11. It

appears that students have access to information related to college entrance exams. Taken together with the variable, use of resources for college entrance requirements, the results suggest that a concerted effort among parents, peers, school personnel, college personnel, and others has resulted in an effective job of communicating the importance of taking the PSAT/PACT and the SAT/ACT as necessary and preliminary steps to applying to college. Although no clear connections can be drawn due to limitations on the data available for this study, the findings reported in this study raise additional questions about how students become aware of the college entrance exams, the college selectivity process with regard to SAT/ACT scores, and how students prepare for college entrance exams, including resources specific to SAT/ACT preparation such as tutors, personal coaches, or other help aids.

Conclusions Related to Student Engagement Factors:
Participation in an AP Program and AP Test Plans

While taking the SAT or ACT is a necessary step in applying to most 4-year colleges, participating in an AP program and taking an AP Test are not college requirements. Advanced placement opportunities for students are often reflective of the resources available to a particular school. Therefore, not all high school students have the chance to participate in an AP program, or correspondingly take an AP Test.

The results suggest a significant positive relationship between students' participation in an AP program and students' intentions. Significant in five equations, the estimated odds ratios associated with students' participation in an AP program range from 1.59 to 2.39. Correspondingly, the results suggest a significant positive relationship

between students' AP Test plans in grades 11 and 12 and students' intentions. Also significant in five equations, the estimated odds ratios associated with students' AP Test plans in grade 11 range from 1.52 to 2.40. Moreover, significant in four equations, the estimated odds ratios associated with the students' AP Test plans in grade 12 range from 1.78 to 2.12.

It appears that schools are not only offering AP programs and AP Tests, but students are putting effort into their academic curriculum choices and pursuing an advanced and challenging high school curriculum that will help to prepare them for the academic rigors of college. The results suggest that early educational planning, beginning in middle school, encourages students to take prerequisite courses for advanced high school classes and fosters a positive attitude toward a challenging curriculum. Taken together with the variable, use of resources for college entrance requirements, the results suggest that a concerted effort among parents, peers, school personnel, and others has resulted in effective work in communicating how AP opportunities can increase students' academic readiness for college.

**Conclusions Related to Student Engagement Factor:
Participation in a College Preparation Program**

While the findings suggest a significant positive relationship between students' intentions and students' participation in an AP program, a significant relationship was not found between students' participation in a college preparation program and students' intentions. The results of this study suggest no evidence of a relationship, either positive or negative, between students' participation in a college preparation program in high

school and students' intentions. In essence, it appears that students' participation in a college preparation program is not a predictor of students' intentions. The results suggest that students may not be currently involved in a college preparation program in high school, may not recognize a program in which they are involved as being a special college program, or may not know about or experience the connections between special college programs and their role in helping students prepare for college. Although no clear connections can be drawn due to limitations on the data available for this study, the findings reported in this study raise questions about the extent to which college preparation programs are helping students plan and prepare for college.

Conclusions Related to Parent Engagement Factors:

Checking of School Work and Offering Advice about Academics

Also from a policy perspective, another area of importance was the lack of a significant relationship between the parents' checking of school work and students' intentions. The results of this study suggest no evidence of a relationship, either positive or negative, between parents' checking of school work and students' intentions. In essence, it appears that parents' checking of school work is not a predictor of students' intentions.

The independent variable, parents' offering advice about academics, fared slightly better. Although a positive significant relationship was found between parents' offering advice about academics and students' intentions, the estimated odds ratios associated with this variable were rather low, with a range of 1.14 to 1.22, across only three equations. The results suggest parents' offering advice about academics is not a

strong predictor of students' intentions. Although no clear connections can be drawn due to limitations on the data available for this study, the findings reported in this study raise questions about the specific roles teachers, counselors, mentors, and others play in helping students select courses, monitor progress, and prepare for college. Additionally, the findings reported in this study raise questions about the extent to which parents want to be, have time to be, and feel qualified to be involved with their child's school work and curriculum choices.

Conclusions Related to Parent Engagement Factor:
Financial Savings for the Tenth Grade Child's Postsecondary Education

From a policy perspective, an area of particular importance was the lack of a significant relationship between financial savings by the parent for the tenth grade child's postsecondary education and students' intentions. The results of this study suggest no evidence of a relationship, either positive or negative, between financial savings by the parent for the tenth grade child's future education and students' intentions. In essence, it appears that financial savings by the parent for the tenth grade child's postsecondary education is not a predictor of students' intentions. Although no clear connections can be drawn due to limitations on the data available for this study, the findings reported in this study raise questions about the extent to which students and parents are aligning college funds with aspirations and intentions. Additionally, the findings reported in this study raise questions about the extent of the role of financial aid, as well as both students' and parents' knowledge and understanding of college costs, the association between higher education access and choice, and the burden of high college debt. Also, further

exploration between students' socioeconomic status and parent's financial savings for the tenth grade child's postsecondary education may help researchers and policymakers better understand the extent to which parents can and are saving money for postsecondary education costs.

Conclusions Related to Parent Engagement Factors:
Educational Aspirations for the Tenth Grade Child

Perhaps the most interesting findings in this study revealed vast differences in how parental educational aspirations relate to students' intentions. Consistent with previous research (Hossler, 1999; Mahoney et al. 1993; Hossler et al. 1992; & Fan, 2001), the results suggest a significant *positive* relationship between the parent engagement factor, educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, and students' intentions. Significant across five equations, the estimated odds ratios associated with this variable range from 1.82 to 4.28. When considering the highest positive odds ratio among all twenty-two variables included in this study, 4.28, along with the second and third highest, 3.75 and 3.14, the results suggest that the parent engagement factor, educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, stands out as the strongest predictor of students' intentions.

Also significant across five equations, the results suggest a significant *negative* relationship between the parent engagement factor, educational aspirations for the tenth grade child: attend some college/no 4-year degree, and students' intentions. When considering the highest *negative* odds ratio among all twenty-two variables included in

this study, the estimated odds ratio associated with the parent engagement factor, educational aspirations for the tenth grade child: attend some college/no 4-year degree, stands out as the strongest predictor of students' stating *other* intentions.

Both the positive relationship and negative relationship that are revealed in this study suggest that a parent has an important impact in the "positive" direction and in the "negative" direction. In either direction, the child's attitudes reflect those of their parents. It appears that when the parent has higher educational aspirations for the tenth grade child, the child is more likely to state the intention of attending a 4-year college or university directly after high school. Similarly, it appears that when the parent has lower educational aspirations for the tenth grade child, the child is less likely to state the intention of attending a 4-year college or university directly after high school.

Conclusions Related to the Peer Engagement Factor:
Importance of Schooling Among Friends

The analysis illustrates the importance of examining an independent variable related to a peer engagement factor, the importance of schooling among friends. The results suggest a significant positive relationship between the importance of schooling among friends and students' intentions. While the estimated odds ratios associated with the variable, importance of schooling among friends, was not particularly strong, with a range of 1.15 to 1.27, notably, this variable appeared as significant in nine out of ten equations. The results suggest that this significant positive relationship may reflect peer pressures and peer influences which can abound among youth. Students who stated

intentions have friends who feel it is important to attend classes regularly, study, get good grades, finish high school, and continue their education past high school.

Conclusions Related to the Theoretical Model

The theoretical framework for this study was based upon Urie Bronfenbrenner's 'Ecological System Theory', which offers a perspective for research in human development. The focus of this theory is a child's development within the context of relationships and experiences that form and influence a child's environment. In this study, the researcher based the selection of the variables on an understanding of Bronfenbrenner's 'Ecological System Theory' and identified student, parent, and peer engagement factors within each of the four systems: 1) microsystem; 2) mesosystem; 3) exosystem; and 4) macrosystem (Bronfenbrenner, 1979).

The findings of this study associated with the parent engagement factor, *educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher*, are strongly consistent with previous research in which the affect of parental educational aspirations for their children were studied. Researchers have reported findings which suggest that a parental desire for the child's education was the strongest relationship in influencing the child's postsecondary educational aspirations (Hossler, 1999; Mahoney et al. 1993; Hossler et al. 1992; & Fan, 2001). Additionally, with regard to this independent variable, the findings of this study appear to support Bronfenbrenner's 'Ecological System Theory'. However, the findings associated with the other engagement factors do not fit as nicely with Bronfenbrenner's 'Ecological System Theory'. Two examples are provided.

First, based on this theory, it appears that each of the independent variables selected for this study would show a significant relationship to the dependent variable, or students' intentions. As previously discussed, based on the results of this study, the central conclusion that can be made in relation to the primary research question is that many significant positive relationships, and to a substantially lesser extent, significant negative relationships, or no relationships, were found to exist between students' intentions and the engagement factors of students, their parents, and their peers.

Second, according to Bronfenbrenner's 'Ecological System Theory', each of the four systems within the environment has a rippling effect on and interconnectedness toward a child's development, from childhood to adulthood. To conceptualize this rippling effect, one may wish to consider and visualize the effects of a rock being thrown into a pond. With this understanding, a ranking of the estimated odds ratios associated the variables identified within each of the four systems would occur. So, with regard to the independent variables identified with the first layer, or microsystem, the estimated odds ratios associated with these independent variables would be higher than the estimated odds ratios associated with the independent variables identified with the second layer, or the mesosystem. Also, the estimated odds ratios of the independent variables associated with the mesosystem would be higher than the estimated odds ratios identified with the third layer, or the exosystem. Finally, the estimated odds ratios of the independent variable associated with the exosystem would be higher than the estimated odds associated with the independent variables identified with the macrosystem. However, the results of this study do not suggest a ranking of the variables in this way.

Using Bronfenbrenner's 'Ecological System Theory,' an interest of this study was to expand thinking about a child's development as it relates to students' intentions. With regard to this research study, it appears that Bronfenbrenner's 'Ecological System Theory' does not provide a sound model based upon the variables selected for this study and identified within each of the four systems.

Recommendations

This study has resulted in a number of conclusions with regard to potential relationships between students' intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers. In this section, a discussion of recommendations will be organized as follows: 1) recommendations for future practice; 2) recommendations for further research; 3) recommendations for research to address the study's limitations and delimitations; and 4) recommendations for research to address other research/policy issues.

Recommendations for Future Practice

A consistent message throughout the literature is that college readiness should begin in middle school and be reinforced throughout high school (Cabrera et al. 2000; Cabrera et al. 2003; Roderick, 2006; Wimberly et al. 2005). In essence, there are about six years in which concerted efforts can be made to focus on students' needs, offer resources to help them learn about college, and guide them through the college requirement process prior to their college arrival directly after high school.

The analysis of the NCES ELS:2002 data suggest that parents, peers, and school personnel contribute to students' intentions. Accordingly, based upon the research findings, what follows is a discussion of six recommendations that may help schools and the larger communities facilitate effective early educational and postsecondary planning. The implementation of these recommendations may help students develop and maintain an aspiration for postsecondary education and increase their likelihood of attending college.

First, in connection with the research findings associated with students' participation in extra-curricular school activities it appears that this may be an untapped opportunity. With an aim to encourage students to participate in extra-curricular school activities, several strategies are recommended: a) advertise extra-curricular school activities available to students; b) communicate to students how participation in extra-curricular activities are tied to some college application requirements, scholarship requirements, and other financial assistance opportunities; c) advertise the benefits associated with participating in extra-curricular school activities in terms of meeting new friends with similar interests and gaining personal development, social, leadership, and noncognitive academic skills; d) introduce students to activities outside of a classroom and home environment by encouraging teachers to integrate community service components and special field trips in their curriculum; e) invite community leaders and current college students to the school to make a presentation on how individuals who are well-rounded and participate in a variety of activities can be more effective in academic and work settings; and f) obtain school data and perform a query to determine those

students who are not participating in a school-sponsored extra-curricular activity and then have a school teacher, counselor, or coach personally contact those students and invite them to get involved.

Second, with a connection to the research findings associated with students' use of resources for college entrance requirements and students' plans to take college entrance exams, school teachers and counselors can help students most effectively in pre-college planning activities when they have accurate and up-to-date information on college admission and placement standards. With an aim to provide the necessary resources to school teachers and counselors and to expose students and their parents to both the academic and personal development opportunities associated with college, several strategies are recommended: a) provide a designated space for a college resource library and media center which includes college recruiting materials, college catalogs, and computers with Internet connections; b) facilitate college preparatory training sessions for all counselors and teachers, with special attention to those teachers who do not teach advanced placement courses, and to counselors as they help their students prepare for college; c) hold periodic one-day workshops to help students complete their college admission application forms and financial aid forms; d) offer free tutoring services, and PSAT/PACT and SAT/ACT preparation courses; f) continue to engage in activities which encourage students to take the PSAT/PACT in grade 10, followed by the SAT/ACT in grade 11; g) host college nights at the high school; h) arrange to have students meet with recruiters; i) facilitate college visits; j) work with the National Center for Education Statistics to utilize their resources for a national advertising campaign; and

k) communicate two key messages to college and university administrators: first, the need to have academics standards, including policies and catalogs, posted on their institution's website; and second the importance of having accurate college preparation information available to students and parents in a variety of communication formats.

Third, with a connection to the research findings associated with students' plans to participate in an AP program and students' plans to take an AP Test, policymakers should seek creative ways to implement or enhance the offering of AP programs and associated AP Tests. With an aim to increase students' opportunities to participate in an AP program, several strategies are recommended: a) seek additional funds through the state legislative process or by writing grants; b) within a school district or state, find collaborative ways to share AP programs and AP Test sites; c) investigate currently developed and implemented AP programs and associated AP Tests which are offered through an online delivery mode; and d) advocate for student involvement in advanced placement programs.

Fourth, with a connection to the research findings associated with parents' checking of school work and parents' offering advice about academics, it appears that parental involvement in association with curriculum choices may be minimal. Choices regarding curriculum must begin early in the educational pipeline, therefore, schools should seek creative ways to help remove potential knowledge gaps about the effects of early curriculum choices on future curriculum and educational options. With an aim to increase students' readiness for high school and college-level work and to help students connect their classes to longer-range goals, several strategies are recommended: a) offer

frequent college counseling and academic preparation sessions for students, parents, and school counselors; b) offer incentives to and recognize those students, parents, and school personnel who attend college counseling and academic preparation sessions; c) identify, communicate, and post on the school's website which courses are linked to a college preparatory curriculum and which will prepare students for college-level admissions' standards; d) at parent/teacher meetings, encourage parents to learn about curriculum choices; e) develop and provide an academic advising / curriculum course for teachers and school counselors which would count toward continuing education requirements; and f) prior to course registration, require curriculum advising sessions to assist students with the selection of appropriate courses.

To help accomplish these recommendations, schools may consider creating partnerships with local postsecondary institutions and community organizations and seek community leaders who want to get involved in academic advising. For example, retired educators or administrators may wish to volunteer time to academic advising. Additionally, recent high school graduates who are now attending college or graduate school may be able to offer assistance through an organized internship opportunity or during extended college breaks.

Additionally, with an aim to communicate curriculum choices and requirements at both the K–12 and postsecondary education level, schools may consider creating a K–16 curriculum committee. To be effective, this committee would be comprised of school and college personnel representatives who meet together periodically and then be charged to

communicate the information to others at their respective school or postsecondary institution.

Fifth, with a connection to the research findings associated with the parent engagement factors: educational aspirations for the tenth grade child, future practice for parents involves mainly the message that their aspirations really do matter. With an aim to communicate to parents that their aspirations matter in both the positive and negative way, several strategies are recommended: a) discuss parental aspirations for the child at school/teacher conferences; b) work with the National Center for Education Statistics and local community leaders to creatively advertise on billboards, school signs, and through the media the message that students are aware of their parental aspirations; and c) host an annual student/parent recognition banquet and invite a special guest speaker to present a motivational speech on topics related to aspirations, dreams, goal setting, and current and future opportunities.

Sixth, with a connection to the research findings associated with the importance of schooling among friends, efforts at home, in school, and within the community should be targeted to help students develop and maintain friendships with peers who attend class regularly, study, get good grades, and desire to continue their education past high school. These particular types of peer influences may foster similar types of behavior among students. Additionally, to encourage peer influences between high school students and college students, schools can create a College Advocate Program with postsecondary education institutions. The primary focus of a College Advocate Program would be for college students to serve as a volunteer peer mentor to a high school student for one hour

week per for the entire academic year. Serving as a role model and providing academic or social encouragement to high school students, one objective would be for the College Advocate Program mentors to help students prepare for college.

Recommendations for Further Research

The NCES ELS:2002 clearly has several important strengths that are relevant to research on the broad topic of college access. First, it is a longitudinal database that spans the key years of the college enrollment process, beginning in tenth grade with the first follow-up study in 2004, followed by a second follow-up study in 2006; and finally one or more additional follow-ups which will be scheduled at a later time. The NCES ELS:2002 is characterized by a high student response rate, with a weighted response rate of 87.28 percent and a reasonably large sample size, with 15,362 completed student questionnaires. Participating tenth grade students attended more than 752 public and private schools nationwide. Although one inherent limitation is that studies are often limited to the variables available in the ELS database, the NCES ELS:2002 includes numerous variables, including measures of social background, home support systems, school and classroom characteristics, postsecondary education choice and enrollment, employment, and outcomes. Additionally, data were collected not only from participating students but also from their parents, teachers, school administrators, and school records (Ingels et al. 2005). However, the NCES ELS:2002 is not a perfect data set.

This study points to several areas for further research:

- First, this study did not examine college aspirations among students of different racial/ethnic groups. Given the growing diversity, with increases in minority

student representation in high schools and colleges, additional research is warranted. Understanding racial and ethnic group differences, expectations, and any uncertainties regarding preparations for college may help decision-makers develop policy issues and culturally-specific interventions that aim to improve or enhance the path to college experiences for underrepresented groups in college.

- Second, a new group of high school students, often defined as the Millennial generation, are entering higher education. Essentially, these students have grown up with exposure to technology, including but not limited to personal computers and the Internet (Oblinger, 2003). The independent variable, use of resources for college entrance requirements, and the intercept were found to be significant at the 0.05 level, and a significant positive relationship between students' intentions and this variable was found. These results, taken together with the knowledge gained from the literature review, warrant additional research. Understanding the specific uses of technology in providing accurate and quality state-wide and college-specific requirement information may help decision-makers develop policy issues and budget resources which aim to improve or enhance communication lines.
- Finally, given the stated goals of college preparation programs, the noted lack of empirically sound college preparation program evaluations from the literature review (Swail, 2000 & Adelman, 1997), and the results of this study which suggest that the independent variable, participation in college preparation programs, and the intercept were not to be significant at the 0.05 level, additional

research is warranted. An examination of the responsibilities, accountabilities, and outcomes of college preparation programs before and beyond grade 10 may provide new insights into the roles of these special programs. In turn, this information may help decision-makers develop policy issues, implement interventions, and budget resources that aim to improve or enhance the path to college experiences for first-generation college-bound students.

Recommendations for Research to Address the Study's Limitations and Delimitations

Further research is also recommended to address a number of limitations and delimitations that were inherent in this study, including the following:

1. A limitation in this study was the actual college attendance and college persistence patterns of the high school students. At the time of this study, these data sets were not available. However, the NCES ELS:2002, a longitudinal study, is designed to monitor the same young people over time as they progress from tenth grade through high school and on to postsecondary education and/or the world of work. Therefore, more data sets will be available at a later date (Ingels et al. 2005). Specifically, the NCES ELS:2006 Second Follow-up, at which time many sample members will be in their second year of postsecondary education or employed and not have attended any schooling after high school, will be released in mid-2007. Accordingly, future research is recommended in the following areas: a) to examine the maintenance of the high educational aspirations among students from tenth grade to twelfth grade; b) to examine the college choice and college

destination process in relation to the engagement factors of students, their parents, and their peers; and c) to examine the ways in which earlier achievements, aspirations, and experiences influence students' college or career path choices; and d) to examine the college enrollment and persistence process among students of different racial/ethnic groups.

2. A limitation in this study is the students' academic preparations for postsecondary education, curriculum path, course taking sequence, and high school transcript information. At the time of this study, these data sets were not available.

However, high school transcripts are being collected for all students who were last enrolled in their Base Year school in the spring 2004. Therefore, these data sets will be available at later dates. Specifically, the NCES: ELS:2002 First Follow-up Transcript Study was released through restricted use/license agreement data files in November, 2006. The NCES: ELS:2002 First Follow-up Transcript Study will provide school archival records from grades 10 through 12, including complete records of high school courses, course titles, grades earned, credits earned, and year taken. Additionally, attendance, SAT/ACT scores, and updated information on high school completion status are included this dataset.

Accordingly, future research is recommended in the following areas: a) to examine how course-taking patterns and opportunities vary within and among schools; b) to examine the relative influences of student, teacher, principal, counselor, and parental choices or recommendations in determining course-taking

sequences; and c) to examine to what degree course-taking patterns influence cognitive growth and persistence in high school and postsecondary education.

3. A limitation in this study is the length of time students had to complete the NCES ELS:2002 Base Year Student Questionnaire. Students were allowed 45 minutes to complete the survey, which consisted of 98 questions. Due to the time limitation, some students may not have been able to complete the survey in its entirety. To build on the findings of the NCES:ELS:2002, which is a quantitative study, a mixed method research design which combines quantitative and qualitative approaches in a single study is recommended. As described by Gay, Mills, & Airasian (2005), the “purpose of mixed methods research is to build on the synergy and strength that exists between quantitative and qualitative research methods in order to more fully understand a given research phenomena” (p. 490).
4. The relationships that were identified in this study cannot be interpreted as cause-effect relationships. Therefore, further research using methodologies to allow the researcher to determine if the engagement factors of students, their parents, and their peers actually influence or affect student’s stated intentions to attend a 4-year college or university directly after high school is recommended.
5. A delimitation was that this study was limited to tenth grade students who attended public or private schools. Consequently, students who were home schooled were not considered for analysis in this study. Further research is recommended to examine students’ intentions in other educational environments separate from, and in addition to, the public and private contexts.

6. The NCES ELS:2002 is an integrated multilevel study that involves multiple respondent populations. The respondents included students, their parents or legal guardians, their teachers, and their schools, with data collected from the principal, the librarian, and a facilities checklist. A delimitation was that this study was limited to data collected by the students and their parents. Accordingly, data collected from the Base-year School Administrator Questionnaire, Teacher Questionnaire, Library Media Center Questionnaire, and Facilities Checklist were not included in this study. Accordingly, future research may also want to consider students' intentions by examining information other than, or in addition to, student and parent survey contributions.

Recommendations for Research to Address Other Research / Policy Issues

Apart from helping to describe the status of high school and college students, one aim of the NCES ELS:2002 is to produce a comprehensive data set for the development of education policy at all government levels. Although beyond the scope of this study, Ingels et al. (2005), identified five broad policy and research issues which can be studied through the NCES ELS:2002: 1) post-high school transitions; 2) equity/access/choice; 3) cognitive growth; 4) course-taking patterns and opportunities; 5) school effectiveness; and 6) parental and community involvement/social capital. Additionally, Ingels et al. (2005) presented corresponding research questions which can be addressed with the NCES ELS:2002 data sets. Moreover, Ingels et al. (2005) provided four analytical levels

in which research and policy issues can be investigated: 1) cross-sectional profiles; 2) longitudinal analysis; 3) intercohort comparisons; and 4) international comparisons.

Summary

The primary research question addressed in this study was: “What relationships exist between first-generation college-bound students’ stated intentions to attend a 4-year college or university directly after high school and the engagement factors of students, their parents, and their peers? With regard to student engagement factors, the results suggest that students’ early postsecondary planning, including plans to take college entrance tests in grade 10 and grade 11, students’ participation in an AP program and associated AP Test plans appear to be important predictors of students’ intentions. Consistent with previous research (Hossler, 1999; Mahoney et al. 1993; Hossler et al. 1992; & Fan, 2001), and when considering the highest positive odds ratio among all twenty-two independent variables included in this study, 4.28, along with the second and third highest, 3.75 and 3.14, the results suggest that the parent engagement factor, educational aspirations for the tenth grade child: graduate from college with a BA/BS degree or higher, stands out as the strongest predictor of students’ intentions. Additionally, the results suggest that the peer engagement factor, importance of schooling among friends, more so than parents’ offering advice about academics and parents’ checking on school work, is an important predictor of students’ intentions.

The research hypothesis in this study was: There is a relationship between first-generation college-bound students’ stated intentions to attend a 4-year college or

university directly after high school and the engagement factors of students, their parents, and their peers. Given the twenty-two independent variables which were included in this study and when considering the results across all equations, the research hypothesis is accepted with regard to all three engagement factors: 1) student; 2) parent; and 3) peer.

Chapter Summary

This chapter provided a general discussion associated with the Overall Results Table, followed by a brief discussion of how the results compare to the literature review. A number of conclusions generated by the results of the current study that may have important implications for researchers, policymakers, educators, and administrators were presented. Finally, a number of potential directions for further research were recommended.

REFERENCES

REFERENCES

- Adelman, C. (1997 July/August). Diversity. *Change*, 29(4), 34-46.
- Berkner, L., He, S., & Cataldi, E. (2002 December). *Descriptive summary of 1995-96 beginning postsecondary students: Six years later*. (NCES 2003-151) U.S. Department of Education: National Center for Education Statistics. D.C.: U.S. Government Printing Office.
- Bronfenbrenner, U. (1979). *The Ecology of Human Development*. Cambridge, Massachusetts: Harvard University Press.
- Cabrera, A. & La Nasa, S. (2000 Fall). Chapter 1: Understanding the College-Choice Process. In *New Directions for Institutional Research (107)*. San Francisco: Jossey-Bass.
- Cabrera, A. & La Nasa, S. (2000 Fall). Chapter 2: Three Critical Tasks America's Disadvantaged Face on Their Path to College. In *New Directions for Institutional Research (107)*. San Francisco: Jossey-Bass.
- Cabrera, A. & La Nasa, S. (2000 Fall). Chapter 3: Overcoming the Tasks on the Path to College for America's Disadvantaged. In *New Directions for Institutional Research (107)*. San Francisco: Jossey-Bass.
- Cabrera, A., Prabhu, R., Deil-Amen, R, Terenzini, P., Lee, C., & Franklin, R. (2003 November). Increasing the college preparedness of at-risk students. Paper presented at the annual meeting of the Association for the Study of Higher Education (Portland, Oregon, November 13-16, 2003).
- Carnevale, A. & Fry, R. (2000). Crossing the great divide: Can we achieve equity when Generation Y goes to college? *Leadership 2000 Series*. Princeton, NJ: Educational Testing Service.
- Ceja, M. (2004 October). Chicana college aspirations and the role of parents: developing educational resiliency. *Journal of Hispanic Higher Education*, 3(4), 338-362.
- Choy, S. (2001 December). *Students whose parents did not go to college: Postsecondary access, persistence, and attainment. Findings from the condition of education, 2001*. (NCES 2001-126) U.S. Department of Education: National Center for Education Statistics. D.C.: U.S. Government Printing Office.

Choy, S., Horn, L., Nunez, A., & Chen, X. (2000 Fall). Chapter 4: Transition to College: What helps At-Risk Students and Students Whose Parents Did Not Attend College. In *New Directions for Institutional Research* (107). San Francisco: Jossey-Bass.

Chenoweth, E. & Galliher, R. (2004). Factors influencing college aspirations of rural West Virginia high school students. *Journal of Research in Rural Education*, 19,(2), 1-10.

Croninger, R., & Lee, V. (2001 August). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record*, 103(4), 548-581.

Desimone, L. (1999 September/October). Linking parent involvement with student achievement: Do race and income matter? *The Journal of Educational Research*, 93,(2), 11-30.

DeVoe J., Peter K., Noonan, M., Snyder, T., and Baum, K. (2005 November). *Indicators of School Crime and Safety: 2005*. (NCES 2006-001/NCJ210697) U.S. Departments of Education and Justice. Washington D.C.: U.S. Government Printing Office.

Ewell, P. (2004 July/August). Money matters. *Change*, 36(4), 4-5.

Fan, X. (2001). Parental involvement and students' academic achievement: A growth modeling analysis. *The Journal of Experimental Education*, 70(1), 27-61.

Ferguson, R. (2002). What doesn't meet the eye: Understanding and addressing racial disparities in high-achieving suburban schools. Cambridge, MA: Harvard University, John F. Kennedy School of Government. (ED 474 390).

Forrest, K. (2003 Summer). Overcoming unintentional barriers with intentional strategies: educating faculty about student disabilities. *Teaching of Psychology*, 30(3), 270-276.

Gay, L., Mills, G., Airasian, P. (2006). *Educational research: Competencies for analysis and applications* (8th ed.). Upper Saddle River, New Jersey: Pearson Education, Inc.

Gibbons, M. & Shoffner, M. (2004 October). Prospective first-generation college students: Meeting their needs through social cognitive career theory. *Professional School Counseling*, 8(1), 91-97.

Goyette, K. & Xie, Y. (1999 January). Educational expectations of Asian American Youths: Determinants and ethnic differences. *Sociology of Education*, 72(1), 22-35.

Hallinan, M. & Williams, R. (1990 April). Students' characteristics and the peer-influence process. *Sociology of Education*, 63(2), 122-132.

Hao, L. & Bonstead-Bruns, M. (1998 July). Parent-child differences in educational expectations and the academic achievement of immigrant and native students. *Sociology of Education*, 71(3), 175-198.

Harrington, P. & Sum, A. (1999 Fall/Winter). Access is about more than money. *Connection: New England's Journal of Higher Education and Economic Development*, 14(3), 15-17.

Horn, L. (1997). *Confronting the Odds: Students at Risk and the Pipeline to Higher Education*. (NCES 98-094). U.S. Department of Education: National Center for Education Statistics. Washington D.C.: U.S. Government Printing Office.

Horn, L. & Bobbitt L. (2000 March). *Mapping the Road to College: First-Generation Students' Math Track, Planning Strategies, and Context of Support*. (NCES 2000-153). U.S. Department of Education: National Center for Education Statistics. Washington D.C.: U.S. Government Printing Office.

Horn, L., Chen, X., and Adelman, C. (1998 May). *Toward resiliency*. U.S. Department of Education: Office of Educational Research and Improvement. Washington D.C.: U.S. Government Printing Office.

Horn, L., Nunez, A., & Bobbitt, L. (2000 March). *Mapping the road to college: First-generation students' math track, planning strategies, and context of support*. (NCES 2000-153). U.S. Department of Education: Office of Educational Research and Improvement. Washington D.C.: U.S. Government Printing Office.

Horn, L., Peter, K., Rooney, K., & Malizio, A. (2002 July). *Profile of Undergraduates in U.S. Postsecondary Institutions: 1999-2000*. (NCES 2002-168). U.S. Department of Education: National Center for Education Statistics. Washington D.C.: U.S. Government Printing Office.

Horn, L., Premo, M. & Malizio, A. (1995 October). *Profile of Undergraduates in U.S. Postsecondary Education Institution: 1992-1993*. (NCES 96-237). U.S. Department of Education: Office of Educational Research and Improvement. Washington D.C.: U.S. Government Printing Office.

- Hossler, D. & Stage, F. (1992 Summer). Family and high school experience influences on the postsecondary educational plans of ninth-grade students. *American Educational Research Journal*, 29(2), 425-451.
- Ingels, S., Pratt, D., Rogers, J., Siegel, P., Stutts, E., & Owings, J. (2004 February). *Education Longitudinal Study of 2002: Base Year Data File User's Manual*. Washington DC: U.S. Department of Education: National Center for Education Statistics.
- Ishitani, T. (2005 June). Students educational attainment among first-generation students in the United States. Paper presented at the annual meeting of the 45th annual forum of the Association for Institutional Research (San Diego, California, June 1, 2005).
- Kaufman, P. and Bradby, D. (1992). *Characteristics of at-risk students in NELS:88*. (NCES 92-042). Washington, DC: U.S. Department of Education: National Center for Education Statistics. Washington D.C.: U.S. Government Printing Office.
- King, J. (Ed.). (2002). *Financing a College Education: How it Works, How It's Changing*. Westport, CT: The American Council on Education and The Oryx Press.
- Llagas, C. & Snyder, T.D. (2003 April). Status and Trends in the Education of Hispanics. (NCES 2003-008) U.S. Department of Education, National Center for Education Statistics. Washington D.C.: U.S. Government Printing Office.
- Mahoney, J. & Merritt, S. (1993 September/October). Educational hopes of black and white high school seniors in Virginia. *Journal of Educational Research*, 87(1), 31-38.
- McDonough, P. (1997). *Choosing Colleges: How Social Class and Schools Structure Opportunity*. Albany, NY: State University of New York Press.
- McGuinn, P. (2006). *No Child Left Behind and the Transformation of Federal Education Policy*. Lawrence, KS: University Press of Kansas.
- Menard, S. (2002). *Applied Logistic Regression Analysis*. Thousand Oaks: Sage Publications, Inc.
- Mondy, R. & Noe, R. (2005). Chapter 3: Workforce Diversity, Equal Employment Opportunity, and Affirmative Action. In. *Human Resource Management*. New Jersey: Prentice Hall.
- Oblinger, D. (2003 July/August). Boomers & Gen-Xer's Millennials: Understanding the new students. [On-line]. An EDUCAUSE e-book retrieved August 28, 2006 from <http://www.educause.edu/educatingthenetgen>.

Oblinger, D. & Oblinger, J. (2005). Educating the net generation. [On-line]. An EDUCAUSE e-book retrieved August 28, 2006 from <http://www.educause.edu/educatingthenetgen>.

Pampel, F. (2000). *Logistic Regression: A Primer*. Thousand Oaks: Sage Publications, Inc.

Pascarella, E., Pierson, C., Wolniak, G., & Terenzini, P. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *Journal of Higher Education*, 75(3), 249-284.

Pascarella, E. & Terenzini, P. (2005). *How college effects students*. San Francisco: Jossey-Bass.

Patricio, R. & Anguiano, V. (2004 January). Families and schools: The effect of parental involvement on high school completion. *Journal of Family Issues*, 25(1), 61-85.

Peng, S. & Wright, D. (1994 July/August). Explanation of academic achievement of Asian American students. *Journal of Educational Research*, 87(6), 346-352.

Pike, G. & Kuh, G. (2005 May/June). First- and second-generation college students: A comparison of their engagement and intellectual development. *The Journal of Higher Education* 76(3), 276-300.

Predmore, S. (2004 November/December). Meeting the challenges of urban education. *Techniques: Connecting Education with Careers* 76(8), 18 – 23.

Rees, F. (2001). *How to lead work teams: Facilitation skills (2nd ed.)*. San Francisco: Jossey Bass.

Roderick, M. (2006). Closing the aspirations-attainment gap. Paper presented for the Manpower Demonstration Research Corporation. However (MDRC) High School Reform Conference, "Improving Schools: Putting Knowledge to Work." (San Diego, California. November 16-18, 2005). New York: MDRC

Roellke, C. (2003). Resource allocation in rural and small schools. ERIC Digest. (ED482323 2003-12-00).

Skotach, A. (2006 November). Peer influences on the college-going decisions of low socioeconomic status urban youth. *Education and Urban Society*, 39(1), 128-146.

Smith-Maddox, R. (1999 Spring). The social networks and resources of African American eighth graders: Evidence from the National Education Longitudinal Study of 1988. *Adolescence*, 34(133), 170-183.

Spohn, K., Crowther, T., & Lykins, C. (1992). *Appalachian access and success: A research project of the Ohio Board of Regents and a consortium of two- and four-year colleges and universities in Appalachian Ohio*. Portsmouth, OH: Shawnee State University.

Swail, W. (2000 Fall). Chapter 6: Preparing America's Disadvantaged for College: Programs That Increase College Opportunity. In *New Directions for Institutional Research* (107). San Francisco: Jossey-Bass.

Torrez, N. (2004 February/March). Developing parental information frameworks that support college preparation for Latino students. *The High School Journal* 8,(3), 54-63.

United States Department of Labor. Bureau of Labor Statistics. (2006, March 24). *College Enrollment and Work Activity of 2005 High School Graduates*. (USDL 06-514) Washington D.C.: U.S. Government Printing Office.

Venezia, A. & Kirst, M. (2005 May). Inequitable opportunities: How current education systems and policies undermine the chances for student persistence and success in college. *Educational Policy* 19(2), 283-307.

Warschaur, M. (2004). *Technology and social inclusion*. Cambridge, MA: The MIT Press.

Wimberly, G. & Noeth, R. (2005). *College readiness begins in middle school*. ACT Policy Report. Iowa City: ACT.

Zietz, J. & Joshi, P. (2005). Academic choice behavior of high school students: economic rationale and empirical evidence. *Economics of Education Review* 24, 297-308.

APPENDICES

APPENDIX A

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND LEVEL OF PARENTAL EDUCATION:
DID NOT FINISH HIGH SCHOOL

Backward Stepwise Logistic Regression Results of p -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Did Not Finish High School

Independent Variables	Sequence in which Independent Variables were Eliminated					
	1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run
Student Engagement Factors						
Socioeconomic status	0.992					
Standardized math and reading composite test score	0.018	0.018	0.019	0.064	0.065	0.071
Participation in extracurricular school activities	0.896	0.896	0.891			
Use of a computer for learning	0.355	0.354	0.356	0.364	0.364	0.365
Use of resources for college entrance requirements	0.182	0.181	0.186	0.094	0.093	0.089
PSAT/PACT plans in grade 10	0.354	0.354	0.350	0.551	0.547	0.549
PSAT/PACT plans in grade 11	0.536	0.537	0.536	0.953		
PSAT/PACT plans in grade 12	0.057	0.055	0.053	0.180	0.152	0.155
SAT/ACT plans in grade 10	0.359	0.357	0.360	0.345	0.345	0.348
SAT/ACT plans in grade 11	0.158	0.157	0.155	0.094	0.064	0.063
SAT/ACT plans in grade 12	0.746	0.745	0.740	0.778	0.779	0.786
AP Test plans in grade 10	0.338	0.341	0.343	0.449	0.444	0.446
AP Test plans in grade 11	0.192	0.186	0.184	0.284	0.240	0.237
AP Test plans in grade 12	0.386	0.383	0.381	0.323	0.307	0.298
Participation in an AP program	0.137	0.137	0.136	0.370	0.379	0.375
Participation in a college preparation program	0.959	0.960				
Parent Engagement Factors						
Checking of school work	0.178	0.177	0.180	0.369	0.361	0.374
Offering advice about academics	0.692	0.687	0.682	0.558	0.558	0.571
Financial savings for tenth grade child's postsecondary education	0.246	0.242	0.242	0.431	0.420	0.435
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.857	0.855	0.852	0.852	0.844	
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.336	0.327	0.325	0.353	0.355	0.101
Peer Engagement Factor						
Importance of schooling among friends	0.009	0.009	0.009	0.005	0.006	0.005

Independent Variables	Sequence in which Independent Variables were Eliminated					
	7th Run	8th Run	9th Run	10th Run	11th Run	12th Run
Student Engagement Factors						
Socioeconomic status						
Standardized math and reading composite test score	0.080	0.061	0.124	0.117	0.107	0.343
Participation in extracurricular school activities						
Use of a computer for learning	0.372	0.596	0.617			
Use of resources for college entrance requirements	0.087	0.079	0.056	0.036	0.036	0.013
PSAT/PACT plans in grade 10	0.540	0.258	0.288	0.206	0.134	0.451
PSAT/PACT plans in grade 11						
PSAT/PACT plans in grade 12	0.136	0.180	0.295	0.281	0.312	0.710
SAT/ACT plans in grade 10	0.290	0.551	0.553	0.580		
SAT/ACT plans in grade 11	0.023	0.012	0.010	0.010	0.010	0.001
SAT/ACT plans in grade 12						
AP Test plans in grade 10	0.456	0.321	0.323	0.276	0.234	0.147
AP Test plans in grade 11	0.243	0.236	0.200	0.177	0.181	0.086
AP Test plans in grade 12	0.321	0.187	0.188	0.184	0.183	0.373
Participation in an AP program	0.377	0.389	0.367	0.366	0.363	0.101
Participation in a college preparation program						
Parent Engagement Factors						
Checking of school work	0.383	0.698				
Offering advice about academics	0.586					
Financial savings for tenth grade child's postsecondary education	0.431	0.505	0.517	0.521	0.537	
Educational aspirations for the tenth grade child: attend some college/no 4-year degree						
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.099	0.062	0.037	0.046	0.049	0.128
Peer Engagement Factor						
Importance of schooling among friends	0.002	0.006	0.003	0.003	0.002	0.002

Independent Variables	Sequence in which Independent Variables were Eliminated					
	13th Run	14th Run	15th Run	16th Run	17th Run	18th Run
Student Engagement Factors						
Socioeconomic status						
Standardized math and reading composite test score	0.342	0.397				
Participation in extracurricular school activities						
Use of a computer for learning						
Use of resources for college entrance requirements	0.013	0.014	0.010	0.005	0.005	0.005
PSAT/PACT plans in grade 10	0.501					
PSAT/PACT plans in grade 11						
PSAT/PACT plans in grade 12						
SAT/ACT plans in grade 10						
SAT/ACT plans in grade 11	0.001	0.001	0.001	0.001	0.000	0.000
SAT/ACT plans in grade 12						
AP Test plans in grade 10	0.147	0.088	0.076	0.106	0.165	
AP Test plans in grade 11	0.088	0.070	0.063	0.107		
AP Test plans in grade 12	0.340	0.241	0.293			
Participation in an AP program	0.103	0.106	0.103	0.095	0.103	0.158
Participation in a college preparation program						
Parent Engagement Factors						
Checking of school work						
Offering advice about academics						
Financial savings for tenth grade child's postsecondary education						
Educational aspirations for the tenth grade child: attend some college/no 4-year degree						
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.126	0.112	0.087	0.090	0.088	0.081
Peer Engagement Factor						
Importance of schooling among friends	0.001	0.001	0.002	0.001	0.001	0.000

Independent Variables	Sequence in which Independent Variables were Eliminated	
	19th Run	20th Run
Student Engagement Factors		
Socioeconomic status		
Standardized math and reading composite test score		
Participation in extracurricular school activities		
Use of a computer for learning		
Use of resources for college entrance requirements	0.008	0.008
PSAT/PACT plans in grade 10		
PSAT/PACT plans in grade 11		
PSAT/PACT plans in grade 12		
SAT/ACT plans in grade 10		
SAT/ACT plans in grade 11	0.000	0.000
SAT/ACT plans in grade 12		
AP Test plans in grade 10		
AP Test plans in grade 11		
AP Test plans in grade 12		
Participation in an AP program		
Participation in a college preparation program		
Parent Engagement Factors		
Checking of school work		
Offering advice about academics		
Financial savings for tenth grade child's postsecondary education		
Educational aspirations for the tenth grade child: attend some college/no 4-year degree		
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.114	
Peer Engagement Factor		
Importance of schooling among friends	0.000	0.000

APPENDIX B

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND LEVEL OF PARENTAL EDUCATION:
GRADUATED FROM HIGH SCHOOL OR OBTAINED A GED

Backward Stepwise Logistic Regression Results of p -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Graduated from High School or Obtained a GED

Independent Variables	Sequence in which Independent Variables were Eliminated					
	1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run
Student Engagement Factors						
Socioeconomic status	0.565	0.565	0.518	0.521	0.524	
Standardized math and reading composite test score	0.002	0.002	0.002	0.001	0.001	0.001
Participation in extracurricular school activities	0.024	0.026	0.026	0.022	0.022	0.019
Use of a computer for learning	0.770	0.771				
Use of resources for college entrance requirements	0.692	0.695	0.651			
PSAT/PACT plans in grade 10	0.058	0.049	0.034	0.024	0.023	0.021
PSAT/PACT plans in grade 11	0.008	0.007	0.006	0.005	0.004	0.004
PSAT/PACT plans in grade 12	0.464	0.464	0.435	0.345	0.306	0.308
SAT/ACT plans in grade 10	0.032	0.037	0.042	0.038	0.036	0.041
SAT/ACT plans in grade 11	0.004	0.004	0.007	0.006	0.005	0.005
SAT/ACT plans in grade 12	0.548	0.549	0.568	0.555	0.514	0.502
AP Test plans in grade 10	0.984					
AP Test plans in grade 11	0.139	0.132	0.113	0.100	0.109	0.107
AP Test plans in grade 12	0.622	0.621	0.607	0.597		
Participation in an AP program	0.039	0.035	0.033	0.021	0.019	0.019
Participation in a college preparation program	0.224	0.225	0.214	0.233	0.227	0.231
Parent Engagement Factors						
Checking of school work	0.356	0.356	0.312	0.328	0.330	0.339
Offering advice about academics	0.083	0.082	0.099	0.101	0.096	0.097
Financial savings for tenth grade child's postsecondary education	0.574	0.574	0.483	0.452	0.448	0.385
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.261	0.260	0.225	0.164	0.161	0.178
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.160	0.160	0.173	0.165	0.167	0.155
Peer Engagement Factor						
Importance of schooling among friends	0.031	0.032	0.025	0.021	0.021	0.020

Independent Variables	Sequence in which Independent Variables were Eliminated					
	7th Run	8th Run	9th Run	10th Run	11th Run	12th Run
Student Engagement Factors						
Socioeconomic status						
Standardized math and reading composite test score	0.000	0.000	0.000	0.000	0.000	0.000
Participation in extracurricular school activities	0.019	0.017	0.015	0.014	0.013	0.012
Use of a computer for learning						
Use of resources for college entrance requirements						
PSAT/PACT plans in grade 10	0.009	0.011	0.015	0.014	0.017	0.035
PSAT/PACT plans in grade 11	0.000	0.000	0.000	0.000	0.000	0.001
PSAT/PACT plans in grade 12	0.160	0.165	0.161	0.130	0.140	
SAT/ACT plans in grade 10	0.048	0.051	0.047	0.036	0.039	0.055
SAT/ACT plans in grade 11	0.001	0.001	0.001	0.001	0.001	0.001
SAT/ACT plans in grade 12						
AP Test plans in grade 10						
AP Test plans in grade 11	0.091	0.092	0.068	0.051	0.054	0.043
AP Test plans in grade 12						
Participation in an AP program	0.021	0.015	0.017	0.011	0.011	0.008
Participation in a college preparation program	0.219	0.257	0.234			
Parent Engagement Factors						
Checking of school work	0.332	0.384				
Offering advice about academics	0.102	0.079	0.095	0.073	0.078	0.077
Financial savings for tenth grade child's postsecondary education	0.391					
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.189	0.198	0.189	0.197		
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.139	0.113	0.129	0.134	0.000	0.000
Peer Engagement Factor						
Importance of schooling among friends	0.019	0.011	0.013	0.010	0.009	0.007

Independent Variables	Sequence in which Independent Variables were Eliminated	
	13th Run	14th Run
Student Engagement Factors		
Socioeconomic status		
Standardized math and reading composite test score	0.000	0.000
Participation in extracurricular school activities	0.005	0.004
Use of a computer for learning		
Use of resources for college entrance requirements		
PSAT/PACT plans in grade 10	0.004	0.003
PSAT/PACT plans in grade 11	0.000	0.000
PSAT/PACT plans in grade 12		
SAT/ACT plans in grade 10	0.077	0.042
SAT/ACT plans in grade 11	0.000	0.000
SAT/ACT plans in grade 12		
AP Test plans in grade 10		
AP Test plans in grade 11	0.101	
AP Test plans in grade 12		
Participation in an AP program	0.007	0.005
Participation in a college preparation program		
Parent Engagement Factors		
Checking of school work		
Offering advice about academics		
Financial savings for tenth grade child's postsecondary education		
Educational aspirations for the tenth grade child: attend some college/no 4-year degree		
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.000	0.000
Peer Engagement Factor		
Importance of schooling among friends	0.000	0.000

APPENDIX C

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND LEVEL OF PARENTAL EDUCATION:
ATTENDED A 2-YEAR SCHOOL/NO DEGREE

Backward Stepwise Logistic Regression Results of p -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Attended a 2-year School/No Degree

Independent Variables	Sequence in which Independent Variables were Eliminated					
	1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run
Student Engagement Factors						
Socioeconomic status	0.237	0.236	0.259	0.265	0.276	0.219
Standardized math and reading composite test score	0.136	0.136	0.118	0.110	0.096	0.121
Participation in extracurricular school activities	0.317	0.314	0.323	0.325	0.314	0.296
Use of a computer for learning	0.014	0.013	0.012	0.011	0.013	0.012
Use of resources for college entrance requirements	0.032	0.032	0.039	0.038	0.038	0.032
PSAT/PACT plans in grade 10	0.004	0.003	0.002	0.002	0.002	0.002
PSAT/PACT plans in grade 11	0.177	0.165	0.155	0.146	0.079	0.109
PSAT/PACT plans in grade 12	0.145	0.145	0.177	0.187	0.237	0.237
SAT/ACT plans in grade 10	0.941					
SAT/ACT plans in grade 11	0.072	0.047	0.042	0.040	0.041	0.028
SAT/ACT plans in grade 12	0.582	0.570	0.539	0.550		
AP Test plans in grade 10	0.225	0.221	0.232	0.236	0.252	0.225
AP Test plans in grade 11	0.012	0.011	0.010	0.009	0.008	0.006
AP Test plans in grade 12	0.132	0.130	0.091	0.090	0.075	0.065
Participation in an AP program	0.217	0.220	0.187	0.180	0.184	0.151
Participation in a college preparation program	0.830	0.836				
Parent Engagement Factors						
Checking of school work	0.445	0.446	0.424	0.430	0.446	
Offering advice about academics	0.017	0.017	0.019	0.018	0.017	0.007
Financial savings for tenth grade child's postsecondary education	0.293	0.291	0.307	0.309	0.289	0.215
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.568	0.565	0.592			
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.207	0.209	0.198	0.001	0.001	0.001
Peer Engagement Factor						
Importance of schooling among friends	0.002	0.002	0.001	0.001	0.001	0.002

Independent Variables	Sequence in which Independent Variables were Eliminated				
	7th Run	8th Run	9th Run	10th Run	11th Run
Student Engagement Factors					
Socioeconomic status	0.242				
Standardized math and reading composite test score	0.067	0.043	0.033	0.028	0.015
Participation in extracurricular school activities					
Use of a computer for learning	0.007	0.008	0.008	0.014	0.011
Use of resources for college entrance requirements	0.012	0.010	0.011	0.010	0.011
PSAT/PACT plans in grade 10	0.002	0.002	0.000	0.000	0.000
PSAT/PACT plans in grade 11	0.115	0.120	0.043	0.055	0.047
PSAT/PACT plans in grade 12	0.235	0.230			
SAT/ACT plans in grade 10					
SAT/ACT plans in grade 11	0.029	0.024	0.019	0.019	0.019
SAT/ACT plans in grade 12					
AP Test plans in grade 10	0.217	0.216	0.224	0.145	0.132
AP Test plans in grade 11	0.002	0.001	0.002	0.001	0.001
AP Test plans in grade 12	0.063	0.058	0.075	0.062	0.048
Participation in an AP program	0.196	0.223	0.242		
Participation in a college preparation program					
Parent Engagement Factors					
Checking of school work					
Offering advice about academics	0.013	0.010	0.009	0.007	0.005
Financial savings for tenth grade child's postsecondary education	0.221	0.161	0.158	0.197	
Educational aspirations for the tenth grade child: attend some college/no 4-year degree					
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.001	0.001	0.001	0.001	0.000
Peer Engagement Factor					
Importance of schooling among friends	0.000	0.001	0.001	0.001	0.001

APPENDIX D

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND LEVEL OF PARENTAL EDUCATION:
Graduated from a 2-year School

Independent Variables	Sequence in which Independent Variables were Eliminated		
	13th Run	14th Run	15th Run
Student Engagement Factors			
Socioeconomic status			
Standardized math and reading composite test score	0.016	0.015	0.031
Participation in extracurricular school activities			
Use of a computer for learning			
Use of resources for college entrance requirements	0.017	0.014	0.001
PSAT/PACT plans in grade 10	0.009	0.006	0.001
PSAT/PACT plans in grade 11	0.047	0.040	0.021
PSAT/PACT plans in grade 12			
SAT/ACT plans in grade 10			
SAT/ACT plans in grade 11	0.001	0.001	0.001
SAT/ACT plans in grade 12			
AP Test plans in grade 10			
AP Test plans in grade 11			
AP Test plans in grade 12	0.095		
Participation in an AP program	0.006	0.007	0.007
Participation in a college preparation program			
Parent Engagement Factors			
Checking of school work			
Offering advice about academics	0.063	0.087	
Financial savings for tenth grade child's postsecondary education			
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.001	0.001	0.000
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher			
Peer Engagement Factor			
Importance of schooling among friends	0.000	0.000	0.000

APPENDIX E

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND LEVEL OF PARENTAL EDUCATION:
ATTENDED COLLEGE/NO DEGREE

Backward Stepwise Logistic Regression Results of p -values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and Level of Parental Education: Attended College/No Degree

Independent Variables	Sequence in which Independent Variables were Eliminated					
	1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run
Student Engagement Factors						
Socioeconomic status	0.848	0.827	0.822			
Standardized math and reading composite test score	0.189	0.174	0.176	0.196	0.196	0.189
Participation in extracurricular school activities	0.000	0.000	0.000	0.000	0.000	0.001
Use of a computer for learning	0.745	0.738	0.739	0.742	0.747	
Use of resources for college entrance requirements	0.004	0.006	0.006	0.006	0.005	0.003
PSAT/PACT plans in grade 10	0.046	0.062	0.063	0.064	0.056	0.056
PSAT/PACT plans in grade 11	0.437	0.564	0.569	0.566	0.545	0.605
PSAT/PACT plans in grade 12	0.283	0.333	0.330	0.334	0.350	0.302
SAT/ACT plans in grade 10	0.369	0.386	0.386	0.389	0.376	0.274
SAT/ACT plans in grade 11	0.126	0.080	0.080	0.080	0.083	0.052
SAT/ACT plans in grade 12	0.323	0.201	0.200	0.205	0.209	0.170
AP Test plans in grade 10	0.573	0.512	0.511	0.512	0.517	0.784
AP Test plans in grade 11	0.480	0.433	0.433	0.442	0.443	0.450
AP Test plans in grade 12	0.022	0.022	0.022	0.022	0.023	0.032
Participation in an AP program	0.104	0.107	0.108	0.106	0.106	0.144
Participation in a college preparation program	0.736	0.748	0.746	0.748		
Parent Engagement Factors						
Checking of school work	0.525	0.281	0.282	0.288	0.300	0.359
Offering advice about academics	0.627	0.683	0.681	0.687	0.653	0.647
Financial savings for tenth grade child's postsecondary education	0.993					
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.129	0.120	0.000	0.000	0.000	0.000
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.948	0.931				
Peer Engagement Factor						
Importance of schooling among friends	0.378	0.505	0.506	0.510	0.520	0.410

Independent Variables	Sequence in which Independent Variables were Eliminated					
	7th Run	8th Run	9th Run	10th Run	11th Run	12th Run
Student Engagement Factors						
Socioeconomic status						
Standardized math and reading composite test score	0.188	0.150	0.137	0.133	0.126	0.042
Participation in extracurricular school activities	0.001	0.000	0.000	0.000	0.000	0.000
Use of a computer for learning						
Use of resources for college entrance requirements	0.002	0.002	0.002	0.001	0.000	0.000
PSAT/PACT plans in grade 10	0.054	0.058	0.045	0.042	0.006	0.002
PSAT/PACT plans in grade 11	0.607	0.626				
PSAT/PACT plans in grade 12	0.307	0.301	0.192	0.199	0.194	0.228
SAT/ACT plans in grade 10	0.233	0.196	0.151	0.136	0.024	0.033
SAT/ACT plans in grade 11	0.042	0.033	0.012	0.003	0.000	0.000
SAT/ACT plans in grade 12	0.159	0.163	0.101	0.073	0.023	0.025
AP Test plans in grade 10						
AP Test plans in grade 11	0.486	0.457	0.417			
AP Test plans in grade 12	0.034	0.023	0.023	0.035	0.264	0.334
Participation in an AP program	0.157	0.165	0.150	0.133	0.159	0.174
Participation in a college preparation program						
Parent Engagement Factors						
Checking of school work	0.363	0.257	0.235	0.238	0.425	
Offering advice about academics	0.630					
Financial savings for tenth grade child's postsecondary education						
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.000	0.000	0.000	0.000	0.000	0.000
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher						
Peer Engagement Factor						
Importance of schooling among friends	0.398	0.399	0.398	0.373		

Independent Variables	Sequence in which Independent Variables were Eliminated		
	13th Run	14th Run	15th Run
Student Engagement Factors			
Socioeconomic status			
Standardized math and reading composite test score	0.035	0.028	0.015
Participation in extracurricular school activities	0.000	0.000	0.000
Use of a computer for learning			
Use of resources for college entrance requirements	0.000	0.000	0.000
PSAT/PACT plans in grade 10	0.001	0.001	0.001
PSAT/PACT plans in grade 11			
PSAT/PACT plans in grade 12	0.314		
SAT/ACT plans in grade 10	0.030	0.031	0.030
SAT/ACT plans in grade 11	0.000	0.000	0.000
SAT/ACT plans in grade 12	0.021	0.037	0.026
AP Test plans in grade 10			
AP Test plans in grade 11			
AP Test plans in grade 12			
Participation in an AP program	0.111	0.101	
Participation in a college preparation program			
Parent Engagement Factors			
Checking of school work			
Offering advice about academics			
Financial savings for tenth grade child's postsecondary education			
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.000	0.000	0.000
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher			
Peer Engagement Factor			
Importance of schooling among friends			

APPENDIX F

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND HIGH SCHOOL LOCATION:
URBAN SETTING

Backward Stepwise Logistic Regression Results of p-values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Urban Setting

Independent Variables	Sequence in which Independent Variables were Eliminated					
	1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run
Student Engagement Factors						
Socioeconomic status	0.150	0.150	0.115	0.082	0.052	0.050
Standardized math and reading composite test score	0.789	0.786				
Participation in extracurricular school activities	0.016	0.016	0.015	0.014	0.009	0.009
Use of a computer for learning	0.328	0.334	0.348	0.357	0.487	0.509
Use of resources for college entrance requirements	0.005	0.006	0.006	0.006	0.013	0.014
PSAT/PACT plans in grade 10	0.044	0.038	0.027	0.024	0.028	0.021
PSAT/PACT plans in grade 11	0.160	0.151	0.139	0.114	0.104	0.091
PSAT/PACT plans in grade 12	0.071	0.068	0.072	0.085	0.054	0.051
SAT/ACT plans in grade 10	0.421	0.388	0.404	0.557	0.608	
SAT/ACT plans in grade 11	0.026	0.025	0.023	0.028	0.029	0.024
SAT/ACT plans in grade 12	0.554	0.552	0.517	0.462	0.427	0.527
AP Test plans in grade 10	0.845					
AP Test plans in grade 11	0.006	0.007	0.007	0.006	0.008	0.007
AP Test plans in grade 12	0.059	0.065	0.064	0.074	0.073	0.067
Participation in an AP program	0.562	0.542	0.522	0.471	0.442	0.443
Participation in a college preparation program	0.406	0.401	0.407	0.280	0.198	0.183
Parent Engagement Factors						
Checking of school work	0.468	0.468	0.487	0.330	0.289	0.299
Offering advice about academics	0.742	0.739	0.748			
Financial savings for tenth grade child's postsecondary education	0.497	0.495	0.488	0.645		
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.374	0.366	0.369	0.285	0.254	0.255
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.186	0.190	0.179	0.202	0.197	0.191
Peer Engagement Factor						
Importance of schooling among friends	0.006	0.006	0.006	0.005	0.005	0.005

Independent Variables	Sequence in which Independent Variables were Eliminated					
	7th Run	8th Run	9th Run	10th Run	11th Run	12th Run
Student Engagement Factors						
Socioeconomic status	0.043	0.048	0.056	0.062	0.018	0.020
Standardized math and reading composite test score						
Participation in extracurricular school activities	0.009	0.008	0.007	0.007	0.003	0.003
Use of a computer for learning	0.512					
Use of resources for college entrance requirements	0.015	0.023	0.021	0.020	0.095	0.079
PSAT/PACT plans in grade 10	0.017	0.020	0.013	0.012	0.014	0.016
PSAT/PACT plans in grade 11	0.028	0.035	0.024	0.019	0.062	0.084
PSAT/PACT plans in grade 12	0.015	0.017	0.015	0.018	0.384	
SAT/ACT plans in grade 10						
SAT/ACT plans in grade 11	0.024	0.024	0.019	0.021	0.008	0.008
SAT/ACT plans in grade 12						
AP Test plans in grade 10						
AP Test plans in grade 11	0.005	0.004	0.004	0.003	0.001	0.001
AP Test plans in grade 12	0.054	0.055	0.061	0.054	0.080	0.028
Participation in an AP program	0.448	0.451				
Participation in a college preparation program	0.187	0.206	0.193	0.184	0.374	0.355
Parent Engagement Factors						
Checking of school work	0.332	0.314	0.302	0.310		
Offering advice about academics						
Financial savings for tenth grade child's postsecondary education						
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.262	0.261	0.304			
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.168	0.175	0.143	0.000	0.000	0.000
Peer Engagement Factor						
Importance of schooling among friends	0.005	0.005	0.005	0.005	0.000	0.000

Independent Variables	Sequence in which Independent Variables were Eliminated	
	13th Run	14th Run
Student Engagement Factors		
Socioeconomic status	0.019	0.012
Standardized math and reading composite test score		
Participation in extracurricular school activities	0.003	0.002
Use of a computer for learning		
Use of resources for college entrance requirements	0.063	0.042
PSAT/PACT plans in grade 10	0.013	0.056
PSAT/PACT plans in grade 11	0.083	
PSAT/PACT plans in grade 12		
SAT/ACT plans in grade 10		
SAT/ACT plans in grade 11		
SAT/ACT plans in grade 12	0.008	0.002
AP Test plans in grade 10		
AP Test plans in grade 11	0.001	0.000
AP Test plans in grade 12	0.020	0.020
Participation in an AP program		
Participation in a college preparation program		
Parent Engagement Factors		
Checking of school work		
Offering advice about academics		
Financial savings for tenth grade child's postsecondary education		
Educational aspirations for the tenth grade child: attend some college/no 4-year degree		
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.000	0.000
Peer Engagement Factor		
Importance of schooling among friends	0.000	0.000

APPENDIX G

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND HIGH SCHOOL LOCATION:
SUBURBAN SETTING

Independent Variables	Sequence in which Independent Variables were Eliminated				
	7th Run	8th Run	9th Run	10th Run	11th Run
Student Engagement Factors					
Socioeconomic status					
Standardized math and reading composite test score	0.000	0.000	0.000	0.000	0.000
Participation in extracurricular school activities					
Use of a computer for learning	0.014	0.014	0.007	0.006	0.007
Use of resources for college entrance requirements	0.001	0.001	0.000	0.000	0.000
PSAT/PACT plans in grade 10	0.000	0.000	0.000	0.000	0.000
PSAT/PACT plans in grade 11	0.000	0.000	0.000	0.000	0.000
PSAT/PACT plans in grade 12					
SAT/ACT plans in grade 10	0.277	0.181	0.151		
SAT/ACT plans in grade 11	0.001	0.000	0.000	0.001	0.002
SAT/ACT plans in grade 12	0.155	0.135	0.142	0.311	
AP Test plans in grade 10	0.310				
AP Test plans in grade 11	0.033	0.048	0.032	0.023	0.017
AP Test plans in grade 12	0.069	0.087	0.073	0.063	0.038
Participation in an AP program	0.022	0.013	0.011	0.010	0.010
Participation in a college preparation program					
Parent Engagement Factors					
Checking of school work	0.194	0.201			
Offering advice about academics	0.001	0.001	0.002	0.002	0.003
Financial savings for tenth grade child's postsecondary education					
Educational aspirations for the tenth grade child: attend some college/no 4-year degree					
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.000	0.000	0.000	0.000	0.000
Peer Engagement Factor					
Importance of schooling among friends	0.000	0.000	0.000	0.000	0.000

APPENDIX H

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND HIGH SCHOOL LOCATION: RURAL
SETTING

Backward Stepwise Logistic Regression Results of p-values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Location: Rural Setting

Independent Variables	Sequence in which Independent Variables were Eliminated					
	1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run
Student Engagement Factors						
Socioeconomic status	0.999					
Standardized math and reading composite test score	0.000	0.000	0.000	0.000	0.000	0.000
Participation in extracurricular school activities	0.217	0.216	0.217	0.216	0.212	0.211
Use of a computer for learning	0.726	0.725	0.728	0.721	0.722	
Use of resources for college entrance requirements	0.193	0.194	0.195	0.199	0.198	0.212
PSAT/PACT plans in grade 10	0.079	0.088	0.079	0.080	0.068	0.070
PSAT/PACT plans in grade 11	0.401	0.410	0.387	0.402	0.331	0.332
PSAT/PACT plans in grade 12	0.989	0.989				
SAT/ACT plans in grade 10	0.087	0.087	0.085	0.084	0.059	0.061
SAT/ACT plans in grade 11	0.009	0.010	0.010	0.009	0.001	0.001
SAT/ACT plans in grade 12	0.888	0.888	0.884	0.888		
AP Test plans in grade 10	0.289	0.289	0.284	0.269	0.270	0.266
AP Test plans in grade 11	0.918	0.919	0.920			
AP Test plans in grade 12	0.378	0.378	0.354	0.346	0.330	0.277
Participation in an AP program	0.177	0.179	0.175	0.179	0.179	0.172
Participation in a college preparation program	0.516	0.516	0.516	0.515	0.502	0.567
Parent Engagement Factors						
Checking of school work	0.195	0.196	0.196	0.197	0.200	0.190
Offering advice about academics	0.112	0.111	0.113	0.113	0.116	0.125
Financial savings for tenth grade child's postsecondary education	0.176	0.216	0.209	0.209	0.209	0.188
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.157	0.156	0.155	0.155	0.155	0.131
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.426	0.423	0.423	0.427	0.414	0.437
Peer Engagement Factor						
Importance of schooling among friends	0.076	0.076	0.071	0.071	0.071	0.063

Independent Variables	Sequence in which Independent Variables were Eliminated					
	7th Run	8th Run	9th Run	10th Run	11th Run	12th Run
Student Engagement Factors						
Socioeconomic status						
Standardized math and reading composite test score	0.000	0.000	0.000	0.000	0.000	0.000
Participation in extracurricular school activities	0.199	0.197	0.162	0.160	0.155	
Use of a computer for learning						
Use of resources for college entrance requirements	0.203	0.195	0.166	0.154	0.148	0.093
PSAT/PACT plans in grade 10	0.064	0.058	0.077	0.079	0.052	0.062
PSAT/PACT plans in grade 11	0.318	0.294				
PSAT/PACT plans in grade 12						
SAT/ACT plans in grade 10	0.064	0.060	0.058	0.058	0.039	0.022
SAT/ACT plans in grade 11	0.001	0.001	0.000	0.000	0.000	0.000
SAT/ACT plans in grade 12						
AP Test plans in grade 10	0.252	0.255	0.236	0.264		
AP Test plans in grade 11						
AP Test plans in grade 12	0.276	0.265	0.246			
Participation in an AP program	0.159	0.170	0.181	0.154	0.078	0.056
Participation in a college preparation program						
Parent Engagement Factors						
Checking of school work	0.188	0.169	0.143	0.129	0.143	0.109
Offering advice about academics	0.128	0.116	0.113	0.121	0.123	0.155
Financial savings for tenth grade child's postsecondary education	0.197	0.171	0.153	0.167	0.154	0.178
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.139	0.000	0.000	0.000	0.000	0.000
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.438					
Peer Engagement Factor						
Importance of schooling among friends	0.061	0.061	0.049	0.048	0.051	0.016

Independent Variables	Sequence in which Independent Variables were Eliminated		
	13th Run	14th Run	15th Run
Student Engagement Factors			
Socioeconomic status			
Standardized math and reading composite test score	0.000	0.000	0.000
Participation in extracurricular school activities			
Use of a computer for learning			
Use of resources for college entrance requirements	0.046	0.035	0.009
PSAT/PACT plans in grade 10	0.050	0.062	0.044
PSAT/PACT plans in grade 11			
PSAT/PACT plans in grade 12			
SAT/ACT plans in grade 10	0.025	0.023	0.016
SAT/ACT plans in grade 11	0.000	0.000	0.000
SAT/ACT plans in grade 12			
AP Test plans in grade 10			
AP Test plans in grade 11			
AP Test plans in grade 12			
Participation in an AP program	0.065	0.056	0.055
Participation in a college preparation program			
Parent Engagement Factors			
Checking of school work	0.168		
Offering advice about academics	0.111	0.181	
Financial savings for tenth grade child's postsecondary education			
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.000	0.000	0.000
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher			
Peer Engagement Factor			
Importance of schooling among friends	0.015	0.020	0.007

APPENDIX I

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND HIGH SCHOOL TYPE: PUBLIC HIGH
SCHOOL

Independent Variables	Sequence in which Independent Variables were Eliminated	
	7th Run	8th Run
Student Engagement Factors		
Socioeconomic status		
Standardized math and reading composite test score	0.000	0.000
Participation in extracurricular school activities	0.001	0.000
Use of a computer for learning		
Use of resources for college entrance requirements	0.000	0.000
PSAT/PACT plans in grade 10	0.000	0.000
PSAT/PACT plans in grade 11	0.002	0.001
PSAT/PACT plans in grade 12		
SAT/ACT plans in grade 10	0.008	0.009
SAT/ACT plans in grade 11	0.000	0.000
SAT/ACT plans in grade 12	0.084	0.052
AP Test plans in grade 10		
AP Test plans in grade 11	0.002	0.002
AP Test plans in grade 12	0.007	0.005
Participation in an AP program	0.003	0.003
Participation in a college preparation program		
Parent Engagement Factors		
Checking of school work		
Offering advice about academics	0.001	0.000
Financial savings for tenth grade child's postsecondary education	0.323	
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.036	0.049
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.050	0.033
Peer Engagement Factor		
Importance of schooling among friends	0.000	0.000

APPENDIX J

BACKWARD STEPWISE LOGISTIC REGRESSION RESULTS OF
P-VALUES FOR FIRST-GENERATION COLLEGE-BOUND STUDENTS'
STATED INTENTIONS TO ATTEND A 4-YEAR COLLEGE OR UNIVERSITY
DIRECTLY AFTER HIGH SCHOOL AND HIGH SCHOOL TYPE: PRIVATE HIGH
SCHOOL

Backward Stepwise Logistic Regression Results of p-values for First-generation College-bound Students' Stated Intentions to attend a 4-year College or University directly after High School and High School Type: Private High School

Independent Variables	Sequence in which Independent Variables were Eliminated					
	1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run
Student Engagement Factors						
Socioeconomic status	0.904	0.846				
Standardized math and reading composite test score	0.271	0.263	0.285	0.296	0.294	0.225
Participation in extracurricular school activities	0.216	0.196	0.197	0.201	0.201	0.246
Use of a computer for learning	0.917	0.922	0.919			
Use of resources for college entrance requirements	0.660	0.645	0.621	0.620	0.613	0.675
PSAT/PACT plans in grade 10	0.506	0.449	0.450	0.467	0.466	0.419
PSAT/PACT plans in grade 11	0.224	0.208	0.209	0.219	0.223	0.250
PSAT/PACT plans in grade 12	0.105	0.081	0.078	0.076	0.082	0.045
SAT/ACT plans in grade 10	0.021	0.019	0.018	0.018	0.018	0.020
SAT/ACT plans in grade 11	0.002	0.002	0.002	0.002	0.002	0.004
SAT/ACT plans in grade 12	0.022	0.024	0.026	0.025	0.025	0.032
AP Test plans in grade 10	0.660	0.673	0.671	0.661	0.663	0.646
AP Test plans in grade 11	0.507	0.486	0.486	0.485	0.488	0.429
AP Test plans in grade 12	0.755	0.680	0.684	0.670	0.657	0.411
Participation in an AP program	0.666	0.673	0.674	0.678	0.672	0.628
Participation in a college preparation program	0.449	0.441	0.440	0.442	0.437	0.326
Parent Engagement Factors						
Checking of school work	0.769	0.673	0.692	0.639	0.688	
Offering advice about academics	0.933					
Financial savings for tenth grade child's postsecondary education	0.544	0.521	0.540	0.537	0.537	0.570
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.129	0.125	0.124	0.124	0.005	0.006
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher	0.795	0.811	0.820	0.823		
Peer Engagement Factor						
Importance of schooling among friends	0.098	0.105	0.104	0.102	0.103	0.090

Independent Variables	Sequence in which Independent Variables were Eliminated					
Student Engagement Factors	7th Run	8th Run	9th Run	10th Run	11th Run	12th Run
Socioeconomic status						
Standardized math and reading composite test score	0.195	0.095	0.094	0.097	0.097	0.089
Participation in extracurricular school activities	0.215	0.288	0.288	0.284	0.281	0.278
Use of a computer for learning						
Use of resources for college entrance requirements						
PSAT/PACT plans in grade 10	0.444	0.629	0.612	0.614	0.605	
PSAT/PACT plans in grade 11	0.234	0.284	0.292	0.295	0.289	0.280
PSAT/PACT plans in grade 12	0.052	0.028	0.028	0.031	0.032	0.011
SAT/ACT plans in grade 10	0.017	0.051	0.055	0.056	0.047	0.025
SAT/ACT plans in grade 11	0.005	0.003	0.003	0.002	0.002	0.000
SAT/ACT plans in grade 12	0.035	0.027	0.027	0.028	0.027	0.011
AP Test plans in grade 10	0.639	0.904	0.865	0.855		
AP Test plans in grade 11	0.375	0.110	0.091	0.086	0.091	0.089
AP Test plans in grade 12	0.427	0.905	0.905			
Participation in an AP program	0.599	0.315	0.313	0.315	0.251	0.245
Participation in a college preparation program	0.264	0.953				
Parent Engagement Factors						
Checking of school work						
Offering advice about academics						
Financial savings for tenth grade child's postsecondary education	0.672					
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.007	0.020	0.021	0.021	0.021	0.018
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher						
Peer Engagement Factor						
Importance of schooling among friends	0.082	0.005	0.006	0.006	0.007	0.006

Independent Variables	Sequence in which Independent Variables were Eliminated		
	13th Run	14th Run	15th Run
Student Engagement Factors			
Socioeconomic status			
Standardized math and reading composite test score	0.090	0.073	0.053
Participation in extracurricular school activities	0.317		
Use of a computer for learning			
Use of resources for college entrance requirements			
PSAT/PACT plans in grade 10			
PSAT/PACT plans in grade 11			
PSAT/PACT plans in grade 12	0.004	0.003	0.002
SAT/ACT plans in grade 10	0.028	0.022	0.018
SAT/ACT plans in grade 11	0.000	0.000	0.000
SAT/ACT plans in grade 12	0.003	0.002	0.001
AP Test plans in grade 10			
AP Test plans in grade 11	0.065	0.059	0.058
AP Test plans in grade 12			
Participation in an AP program	0.290	0.292	
Participation in a college preparation program			
Parent Engagement Factors			
Checking of school work			
Offering advice about academics			
Financial savings for tenth grade child's postsecondary education			
Educational aspirations for the tenth grade child: attend some college/no 4-year degree	0.017	0.005	0.005
Educational aspirations for the tenth grade child: obtain a BA/BS degree or higher			
Peer Engagement Factor			
Importance of schooling among friends	0.007	0.006	0.006