THE INFLUENCE OF ACADEMIC SELF-EFFICACY 
AND BACHELOR’S ASPIRATIONS ON THE COLLEGE CHOICE PROCESS

by
Eulalie Elizabeth Frye Cook

A Dissertation submitted in partial fulfillment
of the requirements for the degree
of
Doctor of Philosophy
in
Education

MONTANA STATE UNIVERSITY
Bozeman, Montana

April 2017
DEDICATION

This dissertation is dedicated to the following people; I could not have done this without you. It truly took our entire village to get me through this. Thank you all.

To my husband, best friend, and biggest champion. Jake, thank you for making it possible for me to complete my Ph.D. You are a true partner and a constant source of inspiration; I am so glad to be experiencing this adventure with you.

To my parents who never let us quit before the season, course, or semester was over and supported us all along the way. Thank you for modeling how to be adults and how to never give up. Mom, thank you for continuing to demonstrate how to be bold and courageous.

To my big brothers who always set a high bar academically, athletically, and as humans. Thank you for being so supportive and such good friends to me.

Finally, to my nieces, Miriam, Frances, and Effie: may you always have the confidence to pursue your dreams.
I want to express my deepest appreciation to my chair, Dr. Carrie Myers. Her intellect, resilience, and work ethic are an inspiration, and her guidance, rigor, and high expectations have made me a better scholar, professional, and human. Her immense knowledge and ability to ask poignant questions led to many moments of clarity throughout my dissertation. I am grateful for many prompt responses to messages over breaks, the willingness to review and offer incredibly detailed feedback in tight timeframes, and well-timed words of encouragement. A lot of life happens over the course of eight years. Dr. Myers was a model of strength and courage in the face of personal challenges and loss and, as a newly tenured faculty, she saw the program through tragedy and transition. She has my utmost respect and her impact and influence will continue for years to come.

I would also like to acknowledge Dr. Arthur Bangert. He taught all four of my graduate statistics courses that served as the foundation of my understanding of the statistical analyses used in this study. His wealth of knowledge and teaching gave me the skills to undertake a challenging project and persist through difficulty. I am also indebted to him for reaching out after the loss of my father to give me a gentle nudge in the right direction, thank you.

Last, I want to offer my sincere thanks to Dr. Chris Fastnow and Dr. Marilyn Lockhart for serving on my committee. The feedback they offered truly made this a dissertation a better product and I am thankful for their willingness to serve despite demanding positions on campus that help to serve the people of Montana.
# TABLE OF CONTENTS

1. INRODUCTION TO THE STUDY ................................................................. 1
   - Statement of the Problem .............................................................. 4
   - Purpose of the Study ................................................................. 5
   - Research Questions ..................................................................... 6
   - Significance of the Study ............................................................ 6
   - Theoretical/Conceptual Framework ........................................... 8
   - Research Design ......................................................................... 10
   - Operational Definitions ............................................................ 12
   - Assumptions ............................................................................... 15
   - Delimitations ............................................................................. 16
   - Limitations .................................................................................. 17
   - Chapter Summary ...................................................................... 18

2. LITERATURE REVIEW ........................................................................ 19
   - Theoretical Precursors to the College Choice Model .................. 20
     - Economics and Human Capital Theory .................................. 20
     - Sociology .................................................................................. 22
       - Cultural Capital .................................................................... 22
       - Social Capital ....................................................................... 23
       - Habitus and Organizational Habitus (School Context) .......... 24
     - Psychology .............................................................................. 26
     - Education and Combined Models .......................................... 27
   - The Hossler & Gallagher College Choice Model and Syntheses .... 28
     - Predisposition: Aspirations .................................................... 28
     - Studies of Predisposition ........................................................ 30
     - Search ..................................................................................... 31
     - Choice ..................................................................................... 34
     - Critique of the College Choice Model .................................... 35
     - Summary of the College Choice Model ................................... 36
   - Rationale for Self-Efficacy ........................................................... 36
     - Connections Between College Choice and Self-Efficacy ........ 37
   - Examination of Self-efficacy ......................................................... 38
     - Sources of Self-efficacy and Academic Self-efficacy ............... 40
     - Results of Studies of Academic Self-efficacy .......................... 45
     - Nuances of Studying Self-efficacy .......................................... 47
     - Summary of Self-efficacy ......................................................... 49
   - Pivotal Factors in College Choice and Self-Efficacy .................... 49
     - Individual Characteristics ....................................................... 50
     - Parents: Cultural Capital and Family Capital ......................... 51
3. METHODOLOGY ........................................................................................................... 71

Research Design and Rationale ......................................................................................... 71
Research Context .................................................................................................................. 72
Data Collection Procedures ................................................................................................. 73
Population/Sample .................................................................................................................. 74
  Weights Employed .............................................................................................................. 75
  Design Effects .................................................................................................................... 75
  ELS Sample vs Subsample Comparison ......................................................................... 76
Variables and Constructs ...................................................................................................... 77
  Dependent Variables ........................................................................................................... 84
    Search ............................................................................................................................... 84
    Choice ............................................................................................................................... 85
  Independent Variables ...................................................................................................... 85
    English self-efficacy and Math self-efficacy ................................................................. 85
    Aspirations ....................................................................................................................... 86
  Individual Control Variables ......................................................................................... 87
    Gender ............................................................................................................................. 87
    Race ................................................................................................................................. 88
    Academic Ability ............................................................................................................ 88
    Socioeconomic Status ................................................................................................. 88
Microsystem Control Variables .......................................................................................... 89
  Academic Curriculum ...................................................................................................... 90
Data Reduction Techniques ................................................................................................. 90
  Measures of Capital ......................................................................................................... 90
  Parental Encouragement .............................................................................................. 90
  Social Capital ................................................................................................................... 91
  School Context ................................................................................................................. 93
Instrumentation Validity/Reliability ................................................................................... 95
  File Preparation .............................................................................................................. 96
4. RESULTS .......................................................................................................................... 107

Analytical Approach and Analysis Results ....................................................................... 107
  Model Building .............................................................................................................. 111
Exam Status ..................................................................................................................... 112
  Set 1: Exam Status and Aspirations .............................................................................. 112
  Set 1, Block 1: Aspirations ......................................................................................... 113
    Aspirations ............................................................................................................... 113
  Set 1, Block 2: Individual Controls ............................................................................. 114
    Gender ................................................................................................................... 114
    Race ....................................................................................................................... 114
    Academic Ability ................................................................................................. 115
    Socioeconomic Status ......................................................................................... 115
  Set 1, Block 3: Microsystem Controls ...................................................................... 116
    Social Capital ...................................................................................................... 116
    School Support .................................................................................................. 116
    Curriculum .......................................................................................................... 117
    Summary ............................................................................................................. 117
  Set 2: Exam Status and English Self-efficacy ............................................................. 120
  Set 2, Block 1: English Self-Efficacy ........................................................................ 120
  Set 2, Block 2: Individual Controls ........................................................................... 121
    Gender ................................................................................................................ 121
    Race .................................................................................................................... 122
    Academic Ability ............................................................................................... 122
    Socioeconomic Status ....................................................................................... 122
  Set 2, Block 3: Microsystem Controls .................................................................. 123
    Family Social Capital ......................................................................................... 123
    Social Capital .................................................................................................... 123
    School Context .................................................................................................. 123
    Curriculum .......................................................................................................... 124
    Summary ............................................................................................................ 124
  Set 3:Exam Status and Math Self-efficacy ................................................................. 126
  Set 3, Block 1: Math Self-efficacy .............................................................................. 126
  Set 3, Block 2: Individual Controls ........................................................................... 127
    Gender ................................................................................................................ 127
TABLE OF CONTENTS – CONTINUED

Race ................................................................................................................. 127
Academic Ability .......................................................................................... 128
Socioeconomic Status .................................................................................. 128
Set 3, Block 3: Microsystem controls .......................................................... 128
  Family Capital ............................................................................................ 128
  Social Capital ............................................................................................ 129
  Parental Encouragement .......................................................................... 129
  School Context ........................................................................................... 129
  Curriculum ................................................................................................ 129
  Summary .................................................................................................... 129
Set 4, Exam Status and Aspirations, English Self-efficacy, and Math Self-efficacy ................................................................................................................. 132
Set 4, Block 1: Aspirations, English Self-efficacy, and Math Self-efficacy ................................................................................................................. 132
  Aspirations ................................................................................................ 132
  English Self-efficacy ................................................................................. 133
  Math Self-efficacy ..................................................................................... 133
Set 4, Block 2: Individual Controls ............................................................... 133
  Gender ....................................................................................................... 134
  Race .......................................................................................................... 134
  Academic Ability ....................................................................................... 134
  Socioeconomic Status ............................................................................. 134
Set 4, Block 3: Microsystem Controls ............................................................ 135
  Social Capital ............................................................................................ 135
  School Context ........................................................................................... 135
  Curriculum ................................................................................................ 135
  Summary .................................................................................................... 136
Application Status .......................................................................................... 139
Set 1: Application status and aspirations ....................................................... 139
Set 1, Block 1: Aspirations ............................................................................ 140
Set 1, Block 2: Individual Controls ............................................................... 140
  Gender ....................................................................................................... 140
  Race .......................................................................................................... 141
  Academic Ability ....................................................................................... 141
  Socioeconomic Status ............................................................................. 142
Set 1, Block 3: Microsystem controls ............................................................ 142
  Family Capital ............................................................................................ 142
  Social Capital ............................................................................................ 142
  Parental Encouragement ........................................................................ 143
  School Context ........................................................................................... 143
  Curriculum ................................................................................................ 143
### TABLE OF CONTENTS – CONTINUED

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>143</td>
</tr>
<tr>
<td>Set 2: Application Status and English Self-efficacy</td>
<td>146</td>
</tr>
<tr>
<td>Set 2, Block 1: English self-efficacy</td>
<td>146</td>
</tr>
<tr>
<td>English Self-efficacy</td>
<td>146</td>
</tr>
<tr>
<td>Set 2, Block 2: Individual controls</td>
<td>146</td>
</tr>
<tr>
<td>Gender</td>
<td>147</td>
</tr>
<tr>
<td>Race</td>
<td>147</td>
</tr>
<tr>
<td>Academic Ability</td>
<td>147</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>148</td>
</tr>
<tr>
<td>Set 2, Block 3: Micrsystem controls</td>
<td>148</td>
</tr>
<tr>
<td>Family Capital</td>
<td>148</td>
</tr>
<tr>
<td>Social Capital</td>
<td>148</td>
</tr>
<tr>
<td>Parental Encouragement</td>
<td>149</td>
</tr>
<tr>
<td>School Context</td>
<td>149</td>
</tr>
<tr>
<td>Curriculum</td>
<td>149</td>
</tr>
<tr>
<td>Summary</td>
<td>149</td>
</tr>
<tr>
<td>Application Status and Math Self-efficacy</td>
<td>152</td>
</tr>
<tr>
<td>Set 3, Block 1: Math Self-Efficacy</td>
<td>152</td>
</tr>
<tr>
<td>Set 3, Block 2: Individual Controls</td>
<td>153</td>
</tr>
<tr>
<td>Gender</td>
<td>153</td>
</tr>
<tr>
<td>Race</td>
<td>153</td>
</tr>
<tr>
<td>Academic Ability</td>
<td>154</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>154</td>
</tr>
<tr>
<td>Set 3, Block 3: Micrsystem Controls</td>
<td>154</td>
</tr>
<tr>
<td>Family Capital</td>
<td>154</td>
</tr>
<tr>
<td>Social Capital</td>
<td>154</td>
</tr>
<tr>
<td>Parental Encouragement</td>
<td>155</td>
</tr>
<tr>
<td>School Context</td>
<td>155</td>
</tr>
<tr>
<td>Curriculum</td>
<td>155</td>
</tr>
<tr>
<td>Summary</td>
<td>155</td>
</tr>
<tr>
<td>Set 4: Application Status and Aspirations, English Self-efficacy</td>
<td>158</td>
</tr>
<tr>
<td>Set 4, Block 1: Aspirations, English Self-efficacy, and Math Self-efficacy</td>
<td>158</td>
</tr>
<tr>
<td>Aspirations</td>
<td>159</td>
</tr>
<tr>
<td>English Self-efficacy</td>
<td>159</td>
</tr>
<tr>
<td>Math Self-efficacy</td>
<td>159</td>
</tr>
<tr>
<td>Set 4, Block 2: Individual Controls</td>
<td>160</td>
</tr>
<tr>
<td>Gender</td>
<td>160</td>
</tr>
<tr>
<td>Race</td>
<td>160</td>
</tr>
<tr>
<td>Academic Ability</td>
<td>161</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS – CONTINUED

Socioeconomic Status ......................................................... 161
Set 4, Block 3: Microsystem Controls .................................. 161
Family Capital ................................................................. 162
Social Capital ................................................................. 162
Parental Encouragement ................................................... 162
School Context ............................................................... 162
Curriculum ................................................................. 162
Summary of Application Status Models ............................ 163
Chapter Summary ............................................................. 166
College Entrance Exam Completion Results ....................... 166
Application Submission Results ........................................... 167
Common Factors that Influenced Exam Completion
and Application Submission ............................................. 168
5. CONCLUSIONS ............................................................. 169

Research Questions ........................................................... 170
Summary of Methodology .................................................. 171
Conclusions and Related Literature ..................................... 172
College Entrance Exam Completion Conclusions ............... 172
Bachelor’s Aspirations ....................................................... 172
English Self-efficacy ......................................................... 174
Math Self-efficacy ........................................................... 175
Exam Status and Significant Individual and Microsystem Controls .... 176
Gender ................................................................. 176
Race ................................................................. 177
Academic Ability ............................................................ 178
Socioeconomic Status ...................................................... 179
Social Capital ............................................................... 180
School Context ............................................................... 181
Curriculum Track ............................................................ 182
Summary ................................................................. 183
Application Submission Conclusions .................................. 183
Bachelor’s Aspirations ....................................................... 183
English Self-efficacy ......................................................... 184
Math Self-efficacy .......................................................... 185
Application Status and Significant
Individual and Microsystem Controls ............................. 186
Gender ................................................................. 186
Race ................................................................. 186
Academic Ability ............................................................ 187
TABLE OF CONTENTS – CONTINUED

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic Status</td>
<td>188</td>
</tr>
<tr>
<td>Family Capital</td>
<td>189</td>
</tr>
<tr>
<td>Social Capital</td>
<td>189</td>
</tr>
<tr>
<td>Parental Encouragement</td>
<td>190</td>
</tr>
<tr>
<td>School Context</td>
<td>191</td>
</tr>
<tr>
<td>Curriculum Track</td>
<td>191</td>
</tr>
<tr>
<td>Summary</td>
<td>192</td>
</tr>
<tr>
<td>Comparing the Exam-Status and Application-Status Models</td>
<td>192</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>193</td>
</tr>
<tr>
<td>Implications for Practice</td>
<td>195</td>
</tr>
<tr>
<td>Concluding Remarks</td>
<td>198</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>200</td>
</tr>
</tbody>
</table>
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Overview of Studies that Examine Application Steps</td>
<td>57</td>
</tr>
<tr>
<td>2. Select Findings from Studies of Application Actions</td>
<td>63</td>
</tr>
<tr>
<td>3. Overall vs Sample Population Characteristics</td>
<td>77</td>
</tr>
<tr>
<td>4. Table of Specifications for Variables in the Study</td>
<td>79</td>
</tr>
<tr>
<td>5. Factor Loadings for Parental Encouragement</td>
<td>92</td>
</tr>
<tr>
<td>6. Factor Loadings for Social Captial Measures</td>
<td>93</td>
</tr>
<tr>
<td>7. Factor Loadings for Participation in High-School-Based Support</td>
<td>94</td>
</tr>
<tr>
<td>8. Correlation Matrix of Scale Independent Variables</td>
<td>101</td>
</tr>
<tr>
<td>9. Descriptive Statistics of Variables in the Logistic Regression Models</td>
<td>110</td>
</tr>
<tr>
<td>10. Logistic Regressions Parameter Estimates: Exam Status on Aspirations and Control Variables (N = 2,967)</td>
<td>119</td>
</tr>
<tr>
<td>11. Logistic Regressions Parameter Estimates: Exam Status on English Self-efficacy and Control Variables (N = 2,967)</td>
<td>125</td>
</tr>
<tr>
<td>12. Logistic Regressions Parameter Estimates: Exam Status on Math Self-efficacy and Control Variables (N = 2,967)</td>
<td>13</td>
</tr>
<tr>
<td>13. Logistic Regressions Parameter Estimates: Exam Status on Aspirations, English and Math Self-efficacy, Control Variables (N = 2,967)</td>
<td>138</td>
</tr>
<tr>
<td>14. Logistic Regressions Parameter Estimates: Application Status on Aspirations and Control Variables (N = 2,967)</td>
<td>145</td>
</tr>
<tr>
<td>15. Logistic Regressions Parameter Estimates: Application Status on English Self-efficacy and Control Variables (N = 2,967)</td>
<td>151</td>
</tr>
<tr>
<td>16. Logistic Regressions Parameter Estimates: Application Status on Math Self-efficacy and Control Variables (N = 2,967)</td>
<td>157</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>17. Logistic Regressions Parameter Estimates: Application Status on Aspirations, English and Math Self-efficacy, and Control Variables (N = 2,967)</td>
<td>165</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conceptual Model</td>
<td>9</td>
</tr>
<tr>
<td>2. Constructs and Variables in this Investigation</td>
<td>12</td>
</tr>
<tr>
<td>3. Ecological Framework Used in this Study</td>
<td>49</td>
</tr>
</tbody>
</table>
A significant decline in the number of students with bachelor’s aspirations in early high school to the number of students who actually enroll has been reported and is as high as 49% (Roderick et al., 2008). To better understand this phenomenon, this study deconstructed the application process and examined factors that may be influential in completion of critical application steps. This study explored the construct of academic self-efficacy along with bachelor's aspirations using the Education Longitudinal Study of 2002 (ELS:2002) to investigate the influence of these factors on two key steps in the college choice and application process: completion of a college entrance exam and submission of an application to a four-year institution. Two sets of logistic regression analyses were run to investigate the variables for each application step. Bachelor’s aspirations were significantly associated with completion of both steps. English self-efficacy was associated with completion of a college entrance exam, but not application submission. Math self-efficacy was associated with submission of an application, but did not significantly influence college entrance exam completion. These findings demonstrate the dynamic nature of the college choice process and reveal how factors that influence key steps in the application process may shift over time. Results also reinforce the importance of fostering high aspirations early in a student’s high school career (or even earlier) and the need to build well-rounded academic self-efficacy for students since they may draw on different sources at different points in the college application process.
CHAPTER ONE

INTRODUCTION TO THE STUDY

College choice is a critical process for traditional-age, high school students planning to pursue postsecondary education after graduation. The college choice process involves deciding “whether and where to go to college” (Bergerson, 2009, p. 2). According to the Bureau of Labor Statistics, 69.2% of high school graduates in 2015 enrolled in institutions of higher education. Of those who enrolled, approximately two-thirds attended four-year colleges or universities (Bureau of Labor Statistics, 2016).

A bachelor’s degree has become a necessary credential in the knowledge economy and the required education for many occupations has increased in recent decades (Duderstadt & Womack, 2003; Goyette, 2008). Research has also shown a wide range of benefits that result from an educated citizenry. From increased civic involvement and better lifestyle choices, to higher wages and more productivity, the gains associated with higher education have a positive impact on individuals and on society as a whole (Gándara & Mejorado, 2005; Hossler, Braxton, & Coopersmith, 1989; Pascarella & Terenzini, 2005). Additionally, education serves as a primary means for social mobility in the United States (Gumport, 2007; Walpole, 2007). Given the individual and societal advances resulting from higher education, it is necessary to deepen the understanding of factors that help students successfully make the transition from high school to college.
College choice has been heavily researched since access to higher education was significantly expanded by a series of historic events and resulting legislation, including the Servicemen’s Readjustment Act of 1944 and the Higher Education Act of 1965, which provided federal funds for students (Brubacher & Rudy, 1997; Kim & Rury, 2007). The dominant model of college choice in higher-education journals, developed by Hossler and Gallagher (1987), is based on sociologic and economic theories and describes the college choice process in three stages: predisposition, search, and choice. The predisposition phase reflects how a student’s background characteristics, social system, and environmental influences predispose him or her to attend college, or not. The search phase is triggered when a student decides to pursue postsecondary education, which prompts him or her to seek information about colleges and establish criteria to evaluate college options. The choice phase of the model is when a student ultimately selects an institution in which to enroll (Cabrera & La Nasa, 2000; Hossler & Gallagher, 1987; Hossler et al., 1989; Bergerson, 2009). This dissertation is primarily concerned with factors that impact predisposition and their subsequent influence on application steps that align with the search and choice stages.

Although there is a vast body of literature focused on the high school to college transition, relatively few studies deconstruct the college-application process and reframe it as a series of steps or tasks a student must complete to become college eligible (Klasik, 2012; Plank & Jordan, 2001). Of the studies that do examine application steps, many report a dramatic decrease in the number of students who hold bachelor’s aspirations early in high school to the number of students who actually enroll in college (Berkner &
Chavez, 1997; Cabrera & La Nasa, 2001; Klasik, 2012; Roderick et al., 2008). This phenomenon has been called the aspiration-attainment paradox (Adelman, 2006; Deil-Amen & Tevis, 2010) and reflects an all-too-common reality for many students: they aspire to go to college, but fail to realize their goal.

Each application step requires high school students to complete an action, such as take a college-entrance exam (SAT or ACT), fill out a financial aid application, or apply, and each may present a barrier to enrollment. Additionally, these steps often involve deadlines or a sequence of smaller tasks. For example, college-entrance exams require preparation, registration, completion of the exam itself, decisions where to send test scores, and possibly even retaking the exam. Viewing the college-application process as an obstacle is particularly relevant for four-year institutions because they generally have more rigorous admission requirements that involve more steps compared to two-year institutions or other certificate or short-term programs. As such, four-year institutions were the primary focus of this study.

This study was inspired in part by Daniel Klasik’s (2012) investigation. Klasik used a national sample to examine application steps, and analyzed step completion based on student background characteristics. One of his key findings was that only five steps were common across almost all students who attended four-year institutions. Those five included: bachelor’s degree aspirations in tenth grade, bachelor’s degree aspirations in twelfth grade, completion of an SAT/ACT, application to a four-year institution, and enrollment in a four-year college. These vital tasks were explored further in this study.
Statement of the Problem

The aspiration-attainment paradox is a well-documented phenomenon in college choice literature. Klasik (2012) recorded a 45% drop-off from bachelor's degree aspirations in tenth grade to the number of students who enrolled in a four-year institution from a nationally representative sample of students in the Educational Longitudinal Study of 2002. Roderick et al. (2008) documented a 49% drop-off between high school seniors’ aspirations and actual enrollment in a four-year college among a sample of Chicago Public School students in their report, *From High School to the Future: Potholes on the Road to College*. The decline between aspirations early in high school and enrollment warrants further exploration.

Bachelor’s degree aspirations are frequently identified in the college choice literature as an important element that “triggers” preparation behaviors (Bergerson, 2009; Cabrera & La Nasa, 2000; Perna, 2006). Having bachelor’s aspirations early-on has been shown to be an instrumental element in taking the appropriate steps and gathering information to successfully complete application steps (Klasik, 2012). In this dissertation, aspirations or bachelor’s aspirations refer specifically to whether or not students sought to earn a bachelor’s degree in tenth grade.

In addition, several authors have called for the need to build students’ self-efficacy in college-preparation programs (Bergerson, 2009; Hagedorn & Fogel, 2002; Tierney, Corwin, & Colyar, 2005). The motive for this call is to help students develop strong beliefs in their capabilities to achieve a postsecondary education to help alleviate the aspiration-attainment paradox (Bergerson, 2009; Hagedorn & Fogel, 2002; Tierney et
Self-efficacy “refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3). It is a key element in motivation and plays a “facilitative role” in students’ ability to engage in self-regulatory cognitions that prompt action (Bandura, 1997; Pintrich & DeGroot, 1990). High self-efficacy in the domain of academics has been found to be positively associated with all forms of academic success from reducing the likelihood of dropping out (Peguero & Shaffer, 2015) to increasing students’ career and life expectations (Kim, 2014). In this dissertation, the construct of academic self-efficacy is operationalized by survey items that asked students about their confidence in comprehension and ability to succeed in math and English courses, assignments, and on tests (see further detail in Operational Definitions). Although the importance of academic self-efficacy has been cited in several recent syntheses of college choice literature (see Arnold, Lu, & Armstrong, 2012, and Bergerson, 2009), it remains understudied with a national dataset, a gap in the literature this dissertation addresses.

**Purpose of the Study**

The purpose of this secondary data analysis was to use a national dataset to examine the relationship between bachelor’s aspirations, English self-efficacy, and math self-efficacy to determine their influence on key application steps. The application steps under study included completion of a college-entrance exam (SAT or ACT) and submission of an application—both of which are critical for enrollment in a four-year institution (Klasik, 2012). The dataset used in this study was the Education Longitudinal
Study 2002/2004 collected by the National Center for Education Statistics (see more detail in Research Design).

**Research Questions**

This study examined two sets of questions as they relate to whether students completed two critical application steps. Specifically, it asked:

1. Is completion of a college-entrance exam associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?

2. Is submission of an application to a four-year institution associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?

To parse out the distinct contributions of college aspirations, math self-efficacy, and English self-efficacy, a variety of control variables were used to account for individual and microsystem factors known to be significant in the college choice literature (see further discussion in Theoretical/Conceptual Framework).

**Significance of the Study**

Identifying and understanding factors that motivate students to persist through the college choice and application process is of national importance. Although the U.S. held
the distinction of having the highest proportion of college graduates in the world in 1990 among 25- to 34-year-olds, by 2015 the country had dropped to twelfth (“Education—Knowledge and Skills,” 2015). This fact is particularly concerning considering the economic and social gains associated with higher education (Pascarella & Terenzini, 2005). While many elements affect bachelor’s degree attainment, it is necessary to first ensure that students who aspire to a four-year institution can successfully navigate the application process to become enrolled.

Although the college choice process varies by individual, studying the factors that influence it nationally offers insight because it has the potential to inform possible interventions for a broad spectrum of students. Policymakers, institutions, researchers, families, and students have a significant stake in understanding factors associated with completion of application actions to enroll in a four-year institution.

Most high school students enroll in four-year institutions (Bureau of Labor Statistics, 2016), which adds to the significance of this study. It is important to study traditional-age high school students for a couple additional reasons as well. First, those who do not pursue college after high school may not benefit from significant investments in the process by high schools and colleges to support the decision-making process (Hurtado, Inkelas, Briggs, & Rhee, 1997). Second, delayed entry into college has been reported as detrimental to eventual college attainment for many students (Pascarella & Terenzini, 2005).

Finally, this study was also significant in that it examined the psychological construct of academic self-efficacy using a national dataset. Psychology research is
frequently constrained to a single institution and not tested with a national sample (Perna & Thomas, 2008). The unique contribution in this study was the usage of a national dataset to explore the construct of academic self-efficacy (as measured by English and math self-efficacy) in the context of college choice and application processes.

Theoretical/Conceptual Framework

The theoretical underpinnings for this study were drawn from a variety of disciplines. Theoretical concepts from sociology (cultural capital, social capital, and school context) and higher education (the college choice process) were used to examine how self-efficacy (social-cognitive theory) and bachelor’s aspirations are associated with the application actions required at the search and choice stages of the college choice process.

Taking inspiration from scholars who have utilized ecological frameworks (Arnold et al., 2012; Perna, 2006; Perna & Thomas, 2008), the conceptual model in this study draws upon this framework to show how various layers of an individual’s context shape their experiences. Figure 1 illustrates how the individuals’ personal characteristics, access to social and cultural capital, and school context exert influence on the individual as he or she goes through the college choice and application process. It also shows the link between predisposition, which was operationalized through academic self-efficacy and aspirations (independent variables), and steps aligned with the search and choice stages (the dependent variables).
The individual layer of the ecological framework accounts for a student’s actions and recognizes that there is a dynamic interplay between beliefs, behaviors, and the environment—both physical and social (Arnold et al., 2012; Bandura, 1997). Background characteristics (i.e., gender, race, socioeconomic status, and academic ability) are not necessarily static traits or attributes, but rather they shape the individual’s experience. The definition for the microsystem layer is borrowed directly from Arnold, Lu, and Armstrong (2012) and refers to “immediate social and physical environment, including people, places, objects, symbols, and activities an individual experiences directly” (p. 14). For this study, the microsystem was represented by the constructs of family capital, cultural capital, social capital, and school context. Each was operationalized by survey item(s) from a national dataset used in this study. Parental encouragement, a specific source of cultural capital derived from the family interactions, was measured by a survey item that asked students how frequently he or she discussed academic topics with their parents (Coleman, 1988). Family and social capital were operationalized by a measure of
what the student’s family (mother, father, and close relative) and social network (friend, favorite teacher, school counselor, and coach) desired for the student’s future. School context was measured through participation in college-preparation-related activities offered by the school, including preparation for college-entrance exams and attendance of college fairs (Klasik, 2012). In addition, the student’s curriculum—either college preparatory or general—was also accounted for in the microsystem. The conceptual model visually represents the key constructs and steps investigated in this study.

**Research Design**

The research design for this study was a quantitative analysis of secondary survey data from the National Center for Education Statistics (NCES). The NCES is a federal agency responsible for gathering data and reporting on the “condition of American education” (National Center for Education Statistics, 2016). To that end, the NCES develops, conducts, and provides access to data that is gathered through surveys of students nationally. A series of longitudinal studies have been conducted by the NCES that enable the study of education trends. These school-based surveys and resulting datasets capture responses from students across the country numerous times throughout high school, college or work alternatives, and into the labor force.

The national datasets collected and made available by the NCES are powerful tools with which to study aggregate student trends. The dataset used for this study was the Education Longitudinal Study of 2002 (ELS:2002), the fourth study in the longitudinal series carried out by the NCES. The base year of data collection for this
survey was 2002, when students were in tenth grade. Follow-up surveys were administered in 2004, 2006, and 2012. The ELS:2002 included multiple respondent populations comprised of students, parents, teachers, and school administrators. Parent and administrator questionnaires were mailed and telephone follow-up interviews were conducted with non-responders (Ingels et al., 2005). This study focused on the college choice process and only responses from the first two rounds of data collection in 2002 and 2004 were used in this study, which is denoted in this paper as ELS:2002/04.

The Education Longitudinal Study of 2002 was the first time a national longitudinal study ever gathered information on the construct of self-efficacy, which justifies the use of this dataset for this study. Per the Education Longitudinal Study of 2002 Base Year Field Test Report (U.S. Department of Education, 2003), which described instrument development for the survey, concerted effort was made to include psychological variables despite limited space and competition for that space on the ELS:2002/04 questionnaires. The addition of these psychological variables to the dataset, which included two measures of academic self-efficacy (one for math and one for English), created a unique opportunity to explore this construct on a national scale. These variables were investigated to determine their association with necessary steps in the application process.

In line with prior studies in this topic area, a series of logistic regression models were run (Adelman, 1999, 2006; Cabrera & La Nasa, 2001; Hurtado et al., 1997; Klasik, 2012). The models analyzed the association of math self-efficacy, English self-efficacy, and bachelor’s aspirations with the following application actions: completion of a college
entrance exam and submission of an application to a four-year institution. In addition, a number of control variables were included to mitigate confounding factors. Figure 2 presents an overview of the variables in this study.

**Figure 2. Constructs and Variables in this Investigation**

<table>
<thead>
<tr>
<th>Stages of the College choice Process</th>
<th>PREDISPOSITION</th>
<th>SEARCH</th>
<th>CHOICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Application Steps (DV$s$)</td>
<td>Mental state operationalized via IV$s$</td>
<td>Take college-entrance exams</td>
<td>Submit college applications</td>
</tr>
<tr>
<td>Drivers of Action (IV$s$)</td>
<td>Bachelor’s aspirations, English self-efficacy, and math self-efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual (Controls)</td>
<td><strong>Background characteristics</strong>: race, gender, academic ability</td>
<td><strong>Cultural capital</strong>: socioeconomic status (parents’ education, occupation, family income)</td>
<td></td>
</tr>
<tr>
<td>Microsystem (Controls)</td>
<td><strong>School context</strong>: percent of students participating in college fairs and SAT/ACT-preparation courses, college-preparatory curriculum, etc.</td>
<td><strong>Parental encouragement</strong>: discussions with parents regarding academic plans</td>
<td><strong>Family and Social capital</strong>: family desire for student’s future (mother, father, close relative); nonfamily desire for student’s future (friend, school counselor, favorite teacher, coach)</td>
</tr>
</tbody>
</table>

Note: IV = Independent Variable, DV = Dependent Variable

**Operational Definitions**

Important constructs under study and descriptions of how they are operationalized based on ELS:2002/04 survey items are introduced.
Academic Self-efficacy: Like the definition of self-efficacy, which refers to one’s beliefs in his/her own capabilities (Bandura, 1997), this term specifies an academic domain. In this study, academic self-efficacy was used as an umbrella term to refer to two specific measures from the ELS:2002 survey: English self-efficacy and math self-efficacy.

English and math self-efficacy: In this study, both measures of academic self-efficacy were operationalized by a series of five questions specific to each subject. In tenth grade, survey respondents were asked to “Describe how often you experience the feelings in response to the following questions:” (response options included almost never, sometimes, often, and almost always) (1) I’m confident I can do an excellent job on my English/Math tests. (2) I’m certain I can understand the most difficult material presented in English/Math texts. (3) I’m confident I can understand the most complex material presented by my English/Math teacher. (4) I'm confident I can do an excellent job on my English/Math assignments. (5) I'm certain I can master the skills being taught in my English/Math class.

Aspirations, Bachelor’s Degree Aspirations, or Bachelor’s Aspirations: In this dissertation, the term aspirations or bachelor’s aspirations was used to convey two distinct components. First, bachelor’s aspirations refer specifically to the level of education a student desires to earn. Second, aspirations also denote timing—in this study tenth grade. It was operationalized by the question, “How far in school do you think you will get?” from the survey administered to tenth grade students.
Exam Status: This outcome variable reflects whether the student completed a college-entrance exam by spring of their senior year in high school. It was operationalized by the question, “Have you taken or are you planning to take any of the following tests: SAT or ACT?” (response options included: yes, already taken it; yes, plan to take; haven’t thought about it; no, don’t plan to take it). Students who responded either yes, already taken it or yes, plan to take were coded as 1, the other two responses were coded as 0.

Application Status: This refers to whether or not a student submitted an application to a four-year institution by spring of his or her senior year in high school. It was operationalized by a combination of two questions. The first asked students, “Which of the following will you most likely attend?” (response options: 4-year college or university, 2-year community college, or vocational, technical, or trade school). The second asked students, “To how many schools have you applied?” (response options: none, 1 school, 2–4 schools, 5 or more schools). Ultimately, students who indicated they would pursue a 4-year institution and had submitted at least one application were coded 1 and all others were coded 0.

Individual Level: This refers to the first layer of the ecological framework and includes a student’s background characteristics as well as his or her thoughts, behaviors, and actions that mutually shape and are shaped by the environment. In this study, individual-level characteristics that were controlled included gender, race, socioeconomic status, and academic ability.
Microsystem: The microsystem layer denotes the second layer of the ecological framework and refers to the “immediate social and physical environment” (Armstrong, et al., 2012, p. 14). In this study, microsystem variables that were controlled included school context, academic curriculum, parental encouragement, social capital, and family capital.

Assumptions

It is important to justify the appropriateness of the self-efficacy measures used in this study. As stated by Bandura (1997), “Particularized efficacy beliefs are most predictive because those are the types of beliefs that guide which activities are undertaken and how well they are performed” (p. 40). Within the ELS:2002/04 dataset, there were two measures of academic self-efficacy; one focused on math self-efficacy and the other focused on English self-efficacy. These two variables were considered among an array of other factors known to impact the college choice process from aspiration to application. Many of the activities required for enrollment in a four-year college or university necessitate math and English self-efficacy.

If academically efficacious students are more likely to undertake challenging endeavors and persist despite challenges (Bandura, 1997; Pajares, 2008), it stands to reason that high math and English self-efficacy may be associated with completion of a college-entrance exam and submission of an application to a four-year institution. Math achievement has been reported to be a significant predictor of academic preparation and success (Adelman, 2006). In fact, students are required to take four years of English and three years of mathematics to secure a college-preparatory curriculum per the
recommended Carnegie units, a standard credit-hour measurement that represents a yearlong course that meets daily (Ingels et al., 2007). These are both among the highest number of required credit hours of all subject areas; therefore, the measures of English and math self-efficacy were deemed appropriate for further investigation (Adelman, 2006; Klasik, 2012). Additionally, math and English skills are assessed on both the SAT and ACT per The Princeton Review (“SAT vs. ACT,” 2016), further validating the appropriateness as measures of academic self-efficacy for this study.

**Delimitations**

This study was delimited to the college choice and application process in the United States for two practical reasons. First, ELS:2002/04 only includes high school students from the U.S. Second, the college choice and application processes in other countries vary widely.

A second delimitation in this study was its focus on application steps for four-year institutions. Klasik (2012) effectively argues that many alternatives to a four-year institution do not require the number of steps necessary to enroll at a bachelor’s-degree-granting college or university, so the barriers to entry may not be as significant or require the same levels of social support, cultural capital, and school support.

The third delimitation was that only students who were observed in the 2002 and 2004 rounds of data collection were included in the sample. Consistent with prior research, this decision was made to ensure the quality of the data since the focus was on
how well students persist through the application process. This ensured alignment with the theoretical foundations and prior research (Klasik, 2012; Plank & Jordan, 2001).

Finally, this study was also delimited in that it used background characteristics, cultural capital, social capital, and school context as control variables. These factors are important in the literature but are not the primary focus of the proposed study. To fully understand the role of degree aspirations and academic self-efficacy, it is necessary to control for additional variables that influence students as they experience the college choice and applications process.

Limitations

Clifford Adelman (2006) wisely noted that, while national datasets are tremendously powerful, they also have weaknesses. “Every data set sacrifices something. No data set is constructed with the questions a particular researcher may have a decade later, so variables are derived and secondary” (p. 10). It is with this acknowledgement that this study utilizes the self-efficacy measures focused on math and English academic proficiency. While these variables are germane to the application steps under investigation, there may be opportunities in the future to refine the measurement in terms of task specificity.

A second limitation is that the study of the college choice process can only be done using longitudinal data because it involves a multiyear process predominantly throughout high school. This means that the results may seem dated due to the lengthy data collection and processing time before data is available, a common reality in
educational research. Despite its age, ELS:2002 included measures of the construct of academic self-efficacy, which has not been explored with a national dataset, nor has it been extensively explored in the context of college choice.

As with all survey data, relying on student, parent, and administrator self-reported data does not afford the opportunity to verify the accuracy of the information provided. However, this is the case with all national survey datasets and the insights gleaned should be carefully considered.

Chapter Summary

A significant decline from initial bachelor’s degree aspirations to enrollment in a four-year institution has been reported (Klasik, 2012; Roderick et al., 2008). Yet, relatively few studies have investigated the college-application process as a series of individual steps that may present barriers to students as they seek to become college eligible. This dissertation examined the constructs of bachelor’s aspirations and academic self-efficacy (English self-efficacy and math self-efficacy) in the context of the college choice to understand if these factors significantly influence completion of two critical application steps that include completion of a college-entrance exam and submission of an application.
A bachelor’s degree confers many financial and lifestyle benefits (Pascarella & Terenzini, 2005) and serves as a key component in social mobility (Walpole, 2007). On his or her path to a bachelor’s degree, each student must successfully navigate the college choice and application process to enroll. Throughout this multiyear process, many thoughts, characteristics, social interactions, and environmental factors can affect a student’s opportunity to pursue a four-year degree. It is evident from the 45% to 49% drop-off between aspirations and enrollment that many students are not able to successfully navigate this process (Klasik, 2012; Roderick, et al., 2008).

Due to its complexity, scholars in economics, education, psychology, and sociology have explored the college choice and application processes from a range of theoretical lenses and conceptual frameworks. In addition, the college choice process has also been approached from the institutional perspective (Zemsky & Oedel, 1983; Paulsen, 1990) as well as the student perspective (Hossler & Gallagher, 1987). To maintain alignment with the conceptual model used in this study, which is based on traditional-age students entering college directly after high school, this study limits the scope of the literature review to studies that are aligned with this perspective.

This review focuses on the following facets of literature to bring together the college choice literature and the construct of self-efficacy as they pertain to the college application process.
• First, an overview of important theoretical contributions from different disciplines is provided to contextualize the college choice model.

• Second, Hossler and Gallagher’s (1987) three-phase model of the college choice process is examined with an emphasis on predisposition since it was an important focus in this study.

• Third, the theory and construct of academic self-efficacy is introduced and examined.

• Fourth, pivotal elements that overlap in college choice and self-efficacy, including individual characteristics, social capital, cultural capital, and organizational context, are described.

• Finally, studies that examine the college choice process through specific application steps are reviewed.

Theoretical Precursors to the College Choice Model

A brief overview of relevant disciplines, theories, and their development is provided to lay the foundation for this study. Researchers from four primary disciplines have contributed to the current understanding of the college choice process and their collective efforts offer significant insight from which to draw.

Economics and Human Capital Theory

One of the most salient economic perspectives in college choice research is that of human capital theory. Human capital suggests that, if individuals invest in accruing new skills, their investment will be returned in terms of higher compensation for their
expertise even when direct and indirect costs of education are considered (Becker, 1964; Perna & Thomas, 2008). Thus, students who desire well-paying jobs aspire to higher levels of education. While a useful concept for framing how investment in education yields more marketable skills, this model has several weaknesses. Perna and Thomas (2008) identify three core issues: (a) education credentials are not the only factors that indicate value to employers, (b) factors such as race and gender discrimination are not accounted for in the theory, and (c) it assumes people make rational decisions and everyone has equal access to information (p. 15, para. 1).

Klasik (2012) adds that the basic human capital model assumes there is only one decision about college; yet, because the college-enrollment process involves a series of steps, Klasik suggests that “… at each step students must recalculate and reaffirm their human capital decision” (p. 549). While human capital is useful in explaining why the pursuit of education is important, it alone is not enough to describe the multifaceted college choice process and other disciplinary lenses are needed.

It is also noteworthy that, in addition to human capital, econometric studies explore how financial aid and college costs impact the college choice process (St. John, Paulsen, & Starkey, 1996). While the impact of college costs and availability of financial aid is an important area of research and vital for many students, it is beyond the scope of the present study. In keeping with the findings from Klasik’s study (2012), only socioeconomic status was considered in this study. Not all students apply for financial aid; it was not one of the primary steps that almost all students who attend four-year
institutions take. Therefore, in this aggregate analysis of college choice and application with a national dataset, only critical steps are included.

**Sociology**

In their synthesis of the characteristics of the literature, Perna and Thomas (2008) note the dominance of sociology in top education journals. Sociology has contributed numerous useful constructs to understand and explain the college choice process. Perna (2006) reports that status-attainment models focus primarily on how background characteristics, such as race, socioeconomic status, and parental education, impact decisions and aspirations for the future. While status-attainment models were common in the 1970s and 80s, they have given way to the concepts of cultural and social capital, habitus, and environmental capital in more modern models (Bourdieu, 1986; McDonough, 1997; Perna, 2006). While the import of background characteristics remains, the constructs of cultural capital, social capital, and school context explain much about the resources and information to which a student has access (Arnold, Lu, & Armstrong, 2012; Klasik, 2012; McDonough, 1997; Perna, 2006; Perna & Thomas, 2008).

**Cultural Capital.** The concept of cultural capital was conceived by Bourdieu and Passerson (1977) and has been widely adopted in educational research to explain how socioeconomic status is connected to educational attainment. This form of capital represents students’ attitudes and knowledge, influenced in part by their parents, that expresses class status. Rueda, Monzó, and Arzubiaga (2003) describe academic
knowledge as a “specialized type” of cultural capital that parents or significant others bestow upon a student. Students from lower socioeconomic backgrounds often do not have access to the same academic knowledge and opportunities as students from higher socioeconomic backgrounds (Villalpando & Solorzano, 2005).

Bourdieu (1987) articulates three forms of cultural capital that include (a) the “embodied state,” which is internalized and reflected in one’s perspective or mindset, (b) the “objectified state,” which represents household or school items such as computers, books, and instruments, and (c) the “institutionalized state” such as academic credentials (p. 243). Considering these forms of cultural capital, it becomes apparent that college-educated parents likely emphasize the value of their education and perhaps tell stories about their college experiences to their children, thus influencing the embodied state of their children. This means that, at the individual level of the ecological framework, the available cultural capital influences the student’s outlook, perhaps represented by his or her college aspirations. College-educated parents may also possess more items, such as laptops and books, and subscribe to newspapers or magazines, infusing the home with objectified forms of cultural capital. Finally, college-educated parents may also display their diplomas or other academic credentials in an office or home, reflecting the institutionalized state of cultural capital. In light of these subtle influences embedded in a student’s daily life, the connection between socioeconomic status and education becomes apparent.

**Social Capital.** In Coleman’s (1988) conceptualization of social capital, he connects the value of social relationships with “capital that provides information that
facilitates action” (p. S105). While self-efficacy speaks to an individual’s belief that they can achieve an outcome and explains the internal process for taking action, the absence of critical information about what to do, which comes through social capital, makes it a necessary concept. In a study, Coleman (1988) demonstrated the impact of familial social capital on dropping out of high school. To isolate the construct of family social capital, Coleman (1988) controlled for financial and human capital in the family and revealed the following results: the dropout rate of students from single-parent households was 6% higher; households with four siblings (i.e., less adult attention) had a 6.4% higher dropout rate compared to households with one sibling; and students whose mother did not hold an expectation for college were 8.6% more likely to drop out compared to students whose mothers had college expectations. Coleman (1988) also demonstrated that social capital exists outside the family by showing that, when families moved (a proxy for removing social capital), the dropout rate increased from 11.8% to 16.7% if the family moved once, and 23.1% if it moved twice. Thus, social capital can come from within the family or from the influence of significant others in a student’s life (Coleman, 1988; Rueda, Monzó, & Arzubiaga, 2003). This study uses the terms “family capital” to refer to capital gained from parents or relatives, and “social capital” to refer to information gained from other influential individuals (peers, teachers, counselors, coaches) in the microsystem environment.

Habitus and Organizational Habitus (School Context). The final sociologic constructs that help frame this study are those of habitus and organizational habitus. In her seminal study of how social class and schools influence students’ college choices,
Patricia McDonough (1997) used Bourdieu’s (1987) construct of habitus to explain how differences in capital resources result in different college-attendance patterns.

McDonough (1997) defines habitus as “a common set of subjective perceptions held by all members of the same group or class that shapes an individual’s expectations, attitudes, and aspirations” (p. 9). Since habitus is an internalized set of beliefs that one derives from his or her social class and environment, it may heavily influence aspirations. McDonough (1997) investigates how input from students’ parents, friends, counselors, and schools can “reproduce” the stratification that has been documented in higher education with wealthier students attending four-year institutions and lower-income students being funneled toward community college options. Habitus is a necessary construct for this study because it provides a foundation for student’s aspirations, which is closely related to the predisposition phase of the college choice process and connects with background characteristics.

In her study, McDonough (1997) extended the concept of habitus to a broader level to describe the school’s climate of support for college-going and labeled it “organizational habitus.” In this study, the construct is referred to as school context for clarity. In her research, McDonough (1997) illuminates how schools (through support, advising, curriculum, and dedicated resources for college preparation such as AP or IB courses) are critical in influencing student’s college aspirations.

Critiques of capital theories that are founded in sociology have been put forth by a variety of authors. The two most prevalent criticisms of social and cultural capital are (a) its overrepresentation in higher-education literature (Mwangi, 2015; Perna & Thomas,
2008) and (b) its lack of clarity in terms of accurate measures and how it is operationalized, particularly as it related to aspirations, which is discussed in greater detail later in this review (Perna, 2006).

**Psychology**

Psychology provides concepts that help to examine individual’s attitudes and behaviors. Several psychology constructs focus on students’ academic performance including goals, optimism, and self-efficacy (Perna & Thomas, 2008).

One of the key contributions of this study was the thorough examination of academic self-efficacy, which is drawn from social-cognitive theory. The purpose was to better understand how academic self-efficacy influences the college choice process. According to Bandura (1986; 1997), social-cognitive theory assumes that human agency involves mutual influence of behavior, environmental events, and internal personal factors. While human agency is not viewed as independent from the environment and social situation, it acknowledges individual variation in how events or circumstance are perceived, which largely depends on efficacy. Bandura (1997) explains that individuals with higher efficacy are more inclined to act on opportunities and find creative ways around barriers whereas inefficacious individuals are less proactive and more easily stymied by impediments. The construct of self-efficacy is explored in depth later in this review.
Education and Combined Models

Combined models of the college choice process are most commonly found in educational research. As a primarily applied field, educational researchers draw on any or all of the aforementioned disciplinary and theoretical approaches (Perna and Thomas, 2008). Beginning in the early 1980s, a series of combined models were constructed, each building on prior models and highlighting slightly different facets of the college choice process (Hossler & Gallagher, 1987; Hossler, Schmit, & Vesper, 1999; Jackson, 1982). Common elements in all the models included the influence of background characteristics, a decision in favor of college attendance, the notion of search or information gathering, and elements of evaluation and choice. The early models laid the groundwork for the Hossler and Gallagher model (1987) that has since been a prominent feature in college choice research.

More recent developments in the combined models in the higher education literature have included the addition of psychological constructs and the use of ecological frameworks to account for the various layers of interaction that help capture the complexity of the college choice process (Arnold et al., 2012; Bergerson, 2009; Perna, 2006).

This section has introduced the disciplinary roots of important theoretical constructs to contextualize this study in the literature. The next section explores the college choice process, which is utilized in this study to frame the chronology of steps in the application process and understand influential factors in each phase.
Drawn from sociologic and economic disciplinary roots, the most broadly adopted model of college choice to date is the three-phase model conceptualized by Don Hossler and Karen Gallagher (1987). The model simplified previous models and collapsed numerous steps into three stages that represent the student perspective. Despite its simplicity, the model effectively organizes a variety of factors that are known to influence students as they transition from high school to postsecondary education. As described in Chapter One, Hossler and Gallagher (1987) define the three phases of their proposed model in terms of predisposition, search, and choice. As an organizing framework, the three-phase model has been extremely useful. Each phase is discussed and important variables, influences, and activities that occur during the phase are identified.

Predisposition: Aspirations

The predisposition phase begins anytime between early adolescence and early high school as students develop interests in careers or disciplines that require education beyond the high-school level (Bergerson, 2009; Cabrera & La Nasa, 2000). Being predisposed to college is said to initiate college-planning activities such as registering for college-preparatory courses, exploring extracurricular activities and academic preparation that may improve chances of admission, and procuring information about ways to afford college (Cabrera & La Nasa, 2000).
While predisposition is undisputedly a key factor in eventual college attendance, it continues to draw criticism and cause consternation in the literature (Arnold, et al., 2012; Bergerson, 2009; Perna, 2006). The confusion stems from a couple primary sources: (a) the lack of precise terminology associated with the construct and (b) the chronology or time-sensitive nature of the predisposition stage.

As to the first issue of labels, scholars often use the term predisposition interchangeably with aspirations, expectations, plans, or anticipations (Perna, 2006; Adelman, 1999). Recognizing the confusion, several authors have advocated for more precise definitions of the terms (Feliciano, 2006; Perna, 2006; Seifert, Wells, Saunders, & Gopaul, 2013). While more recent literature has focused on expectations rather than aspiration (Seifert et al., 2013), there is an important distinction to be made between the two terms that is related to the second issue of chronology. The term “expectation” may be appropriate for a senior in high school who likely knows if he or she will go to college the following year. However, predisposition represents the first stage of the college choice process—which occurs early in high school (Cabrera & La Nasa, 2000). At this stage in the process, the notion of going to college may be more aligned with an aspiration rather than an expectation. It is important to operationalize the construct with a question that reflects appropriate timing of the predisposition phase. In the present study, predisposition is used to refer to the first phase of the college choice model, and aspirations reflect the student’s desired level of education from a tenth-grade survey item that asked how far in school they thought they would get.
Studies of Predisposition

In their synthesis of related literature, Hossler, Braxton, and Coopersmith (1989) identified 12 variables shown to influence predisposition. Those factors include family socioeconomic status, student academic ability, race and ethnicity, gender, parental level of education, family residence (urban or rural location), parental encouragement and support, peer encouragement and support, encouragement from high-school counselors and teachers, student educational aspirations and career plans, quality of high school and academic track, and labor market. These same factors have maintained relevance over the last several decades; however, more recent literature places an emphasis on socioeconomic status (Bergerson, 2009).

Studies of predisposition have consistently revealed the importance of parental influence (Bergerson, 2009; Cabrera & La Nasa, 2000; Hossler et al., 1999). In their structural model (LISREL) of predisposition with a sample of 2,497 ninth-grade students from 21 Indiana high schools, Hossler and Stage (1992) included parents’ education, family income, gender, and ethnicity as independent variables to predict four dependent variables including parents’ expectation for the student, student GPA, high-school activities, and the student’s educational aspirations. Hossler and Stage (1992) found parents’ education levels (mother and father) were positively related to all the dependent variables. Additionally, female students were reported as having higher GPAs, higher educational aspirations, and more participation in high-school activities, while ethnicity negatively influenced high-school activities and parent’s expectations for the student.
A number of recent studies have focused on educational expectation and have documented an overall increase in level of education expected (Goyette, 2008; Seifert et al., 2013). In a study comparing aspirations and expectations of three different cohorts of students from National Center for Education Statistics (NCES) longitudinal surveys, Goyette (2008) shows that bachelor’s degree expectations of high-school sophomores have increased considerably from 43% in 1980 to 62% in 1990, and 85% in 2002. The most dramatic increase in expectations is among students whose parents do not have a bachelor’s degree; from 38% in 1980 to 79% in 2002. Goyette (2008) points to a decoupling of expectations from parents’ achievement, as well as a disconnect between educational aspirations and occupational aspirations, to help explain the increase in expectations as “college for all” has become the norm.

Search

The second phase in the college choice process involves gathering and evaluating information to develop a choice set of institutions (Cabrera & La Nasa, 2000). One of the key application steps that occurs during the search stage is taking a college-entrance exam; therefore, this phase was operationalized in this study by completion of an SAT or ACT (Bergerson, 2009). The search phase is highly reliant on one’s cultural and social capital since students must rely on those around them to gain accurate and timely information on which to act. In a broad sense, the search phase occurs between tenth and mid-twelfth grades and is said to be “triggered” by the PSAT (Cabrera & La Nasa, 2001). Students generally experience quite a bit of uncertainty as they go through the search process both in terms of which institutions to consider and what factors they should
evaluate (Hossler et al., 1999; MacAllum et al., 2007). Information gathering typically includes talking to family and friends, obtaining catalogues and materials, and visiting campuses (Hossler et al., 1989, 1999). Parental encouragement maintains significance in this phase as parents convey expectations about price and proximity of appropriate college options to home; yet, toward the end of this stage, students rely more on external sources of information, such as counselors, teachers, and admissions representatives (Bergerson, 2009; Hossler et al., 1999). Bergerson (2009) also notes the differential access to information based on socioeconomic status. Higher-socioeconomic-status students reportedly rely on more sources of information and include a larger geographical area in their search process (Cabrera & La Nasa, 2000). Many studies also reference that the timing of search coincides with taking college-entrance exams, which is why completion of a college-entrance exam was utilized as a dependent variable that reflects the application action that corresponds to search (Bergerson, 2009; Cabrera & La Nasa, 2000; Hossler et al., 1999; MacAllum, Glover, Queen, & Riggs, 2007).

In a study of the search phase, Galotti and Mark (1994) surveyed 322 college-bound students three times inquiring about sources of information used and institutional criteria under consideration. They found that the most commonly consulted sources of information were parents, friends, guidance-center materials, and college brochures. Like Hossler et al. (1999), they also documented an increase in reliance on admissions representatives and colleges directly as students move through the search phase.

Hamrick and Hossler (1996) explored the topic of search in a slightly different manner in their examination of surveys of 297 Indiana students. Students were asked
what they had done to learn more about colleges, with six response options including “I haven’t done anything,” “I have talked to my parents, teachers, counselors or others IF the topic comes up,” “I have PICKED UP information (from a counselor’s office or library),” “I have ASKED my parents, teachers, counselors, or others for information,” “I have WRITTEN for or REQUESTED information,” and “I have VISITED a college campus in which I am interested.” Based on their responses, students were grouped into two categories: highly diversified searchers, which indicated the students used four or five of the resources, and less-diversified searchers (one to three resources). Results of a discriminant analysis indicated that background characteristics, early exploration of college options, and parental support were positively associated with more diversified searches. The researchers also found support for their hypothesis that a more highly diversified search led to greater satisfaction with having adequate information to choose a college and ultimately satisfaction with their chosen institution.

In a more sophisticated study of the search phase of college choice, Plank and Jordan (2001) utilize multinomial logistic regression to demonstrate that higher levels of information and guidance (as measured by discussions with parents and school personnel about college plans, and preparation for college-entrance exams) was significantly and positively associated with enrollment in a postsecondary institution. Controlling for background characteristics, the effect of race was eliminated and in some instances reversed (i.e., Asian, black, and Hispanic students were more likely than white students to go to a four-year college) while higher test scores and higher socioeconomic status maintained some significance in enrollment patterns (Plank & Jordan, 2001).
As is evidenced in the literature on the search phase of the college choice process, many students rely on people around them in their social network for information about college. These interactions occur in a student’s microsystem and must be accounted for as influential variables that impact the college choice process.

**Choice**

Finally in the choice stage, students apply and ultimately enroll. Generally occurring in eleventh and twelfth grades (Bergerson, 2009), factors that influence the choice phase include socioeconomic status, ability, ethnicity, parental levels of education, family residence characteristics, parental encouragement, peer encouragement and support, high-school quality, and institutional attributes that include academic quality, location, financial aid, size, social atmosphere, net cost, and receipt of aid (Bergerson, 2009; Hossler, Braxton, & Coopersmith, 1989).

A precursor to enrollment is actually submitting an application; however, the act of submitting an application has proven a significant barrier for many students (Avery & Kane, 2004; Berkner & Chavez, 1997; Cabrera & La Nasa, 2001; Hurtado et al., 1997; Klasik, 2012; Plank & Jordan, 2001; Roderick et al., 2008). Because this study focuses on the difficulty presented by the application process and whether or not a student is able to persist based on his or her aspirations and academic self-efficacy, choice was operationalized by application submission. This is consistent with the view that students make decisions about where they plan to apply in the search phase and then actually apply to their preferred institutions and compare offer options during the choice phase (Schmit, 1991; Hossler et al., 1999).
Critique of the College Choice Model

The major criticisms of the three-phase Hossler and Gallagher model (1987) in the literature are that (a) it does not account for the experience for nontraditional or minority students and (b) it does not acknowledge the inequities in access to guidance and information either through cultural capital or social capital (Arnold et al., 2012; Bergerson, 2009). Although these are legitimate weaknesses of the model, the model was used in this study for two reasons. First, the focus of this investigation was on traditional students and whether or not higher levels of academic self-efficacy and college aspirations are associated with taking key steps in the college-application process. There was no attempt to focus on one subpopulation over another, but rather to understand on a national level if students with higher levels of aspirations and academic self-efficacy were more likely to complete a college-entrance exam and submit an application. Second, social and cultural capital measures served as controls in this study to more clearly assess the role of academic self-efficacy and students’ aspirations.

Additionally, the college choice model lacks two key elements. First, although it is a combined model and claims to be from the student perspective, it only draws on sociology and economics to explore the college choice process and does not include any psychological factors that may help explain the role of human agency in the process. Second, it does not delineate that students simultaneously navigate the complex application process, but rather only peripheral references to some of the actions required such as taking college-entrance exams.
Summary of the College Choice Model

Despite its weaknesses, the college choice model provides an ideal framework for an aggregate study of college choice with a national dataset. Key steps can be aligned with the distinct phases of the model and the extensive literature on the topic provides a substantial foundation on which to build. The inclusion of academic self-efficacy, discussed next, adds a new dimension to the topic of college choice.

Rationale for Self-Efficacy

An important component of psychology and ecological frameworks is that individuals are both products and producers of their immediate environments (Pajares, 2008; Arnold et al., 2012). Therefore, human agency is a critical component of the college choice and application process because actions, and underlying forces that drive action, could impact the aspiration-attainment gap. The prevailing college choice models founded on sociology and economics leave this vital dimension out of the equation.

Self-efficacy is not a novel construct in the college choice literature, yet it had not been measured in an NCES dataset prior to ELS:2002. Developments in the field of psychology, including Albert Bandura’s (1997) book titled *Self-Efficacy*, paved the way to explore this dimension of human agency as it relates to the college choice and application processes. Numerous authors (Tierney et al., 2005; Bergerson, 2009; Deil-Amen & Tevis, 2010) have invoked the usefulness of self-efficacy in the college choice process. While self-efficacy as a general term is most commonly used, academic self-efficacy may be more appropriate since it specifies the domain (Peguero & Shaffer,
Bergerson (2009) indicates that “self-efficacy is conceptualized as students’ ability to set goals, plan for, and actualize their educational aspirations” (p. 94), which helps explain how it may go beyond merely aspirations and address a deeper need to take actions that will move them through the application process. In addition, Deil-Amen and Tevis (2010) discuss the overlap of self-efficacy with sociological constructs because the environment largely shapes the individual, yet the individual also influences the environment and has agency over his or her actions.

Connections Between College Choice and Self-Efficacy

One of the primary links between the social-cognitive construct of self-efficacy and the college choice literature is situated in the arena of college-preparation programs or intervention programs. In the seminal works of Tierney and Hagedorn (2002) and Tierney, Corwin, and Colyar (2005), both of which focus on how to best implement strategies to increase access to college through effective college-preparation programs, increasing a student’s academic self-efficacy is encouraged. Hagedorn and Fogel (2002) studied three college-preparation programs designed to support low- to marginal-performing students in urban, low-socioeconomic areas in California. They found that the programs increased the students’ academic self-efficacy, which in turn promoted mastery goal orientation in the students. This increase in self-efficacy is important because it has implications about whether or not the student will engage in the college choice process. The rationale is simple; students who do not feel they will be “appropriately rewarded or recognized” are unlikely to engage in a task, which is why college-preparation programs foster self-efficacy (Hagedorn & Fogel, 2002). While self-efficacy is a recommended
strategy for college-preparation programs, it has not been examined with a national
dataset to determine if higher levels of academic self-efficacy are associated with
increased ability to endure the college-application process of four-year institutions.

Thus, with limited extant literature about the relationship between the college
choice process and self-efficacy, and no known studies that explore self-efficacy in the
context of the college choice process with a national dataset, there is an opportunity to
add to this area of the literature.

**Examination of Self-efficacy**

Bandura's theory of self-efficacy was intended as a unifying theory of behavioral
change. Its origins are within social-cognitive theory that emphasizes triadic reciprocity,
which simply means that individuals influence and are influenced by their environment,
their behavior, and themselves (i.e., their own cognitive thoughts, perceptions, etc.)
(Bandura, 1997; Zimmerman, 1989). Depending on the context, not all of these
influences are mutually influential or equally important (Zimmerman, 1989), so in a low-
achieving school where most students either do not pursue college or opt for a two-year, a
student’s interest in a four-year degree may be reduced by lack of support available in
that environment. This is quite consistent with sociological models that focus on how
people are a product of their social environment, but is distinct in its focus on the
cognitive functions.

Within the realm of social-cognitive theory, the process of self-regulated learning,
of which self-efficacy is a key construct, has been explored. As defined by Zimmerman
(1989), “Self-regulated learning strategies are actions and processes directed at acquiring information or skills that involve agency, purpose, and instrumentality perceptions by learners” (p. 329). In contrast, self-efficacy refers to perceptions about one’s own ability to execute a course of action to achieve desired results (Bandura, 1997). So, while social-cognitive theory considers the interactions between individuals’ thoughts, behaviors, and surroundings, self-regulation deals with the mental processes and actions through which individuals direct their efforts, and self-efficacy pertains to internal thoughts about capacity to succeed. Even more simply put, U.S. Department of Education Researchers (2003) state that “Self-regulated cognitions regulate action” (p. 74) and identify self-efficacy among the underlying motivational forces behind self-regulated cognitions. Thus, the connection between self-efficacy and likelihood of taking action is established.

To delineate the role of self-efficacy, it is necessary to first explicate self-regulation. Self-regulation, as posited by Zimmerman, is a three-phase process comprised of forethought, performance control, and self-reflection (Schunk, 2008). According to Schunk (2008), forethought “precedes actual performance” and encompasses planning activities during which an individual may establish or consider strategies that may be effective to accomplish a task. The second phase, performance control, happens during task performance and regulates “attention and action” and may be influenced by “social comparisons, feedback, and use of strategies” (Schunk, 2008). The final phase is self-reflection, or when an individual evaluates performance, and assesses the strategies they implemented compared to progress toward the goals they established in the forethought phase.
Before self-regulation is employed, an individual must first believe that he or she has the capacity to succeed, should they choose to undertake a task (Schunk, 2008). Therefore, embarking on any endeavor hinges on having high, or at least high enough, self-efficacy. This underscores the importance of understanding self-efficacy in the context of college choice.

Sources of Self-efficacy and Academic Self-efficacy

Self-efficacy has four primary sources, all of which are commonplace in the college choice literature as well. The four primary sources include performance outcomes or past experience, vicarious experiences, verbal persuasion, and physiological feedback (Bandura, 1997). Before elaborating on the sources, one additional point should be made: all four of these sources are susceptible to the student’s interpretation of the influence or outcome (Pajares, 2008). When students reflect, they interpret and revise their self-efficacy depending on how they perceive the performance. While the judgment of the performance may not be accurate, the interpretation is in the mind of the individual. An overview of the sources of self-efficacy, academic self-efficacy, and connections to college choice are covered.

Of the four sources of self-efficacy, past performance is the strongest influencer (Bandura, 1997). For an individual to succeed, he or she relies on past performance to assess his or her likely abilities and, therefore, the likelihood of success in the future. Bandura (1997) uses the term “enactive mastery experience” and suggests it is the most reliable evidence of whether a person believes he or she will succeed at a task. Strong
efficacy expectations are formed through repeated success and, once developed, occasional failures may not have much impact.

In an academic setting such as school, students regularly complete assignments and, with each new task, their self-efficacy has the potential to be increased or decreased. Pajares (2008) explains that, through interpretation and evaluation of the outcomes achieved on academic tasks, students judge their competence at the task. Depending on results, students either gain a sense of enhanced efficacy that promotes confidence they will be competent at similar tasks, or reduce their sense of efficacy when they judge their efforts to produce a less than optimal result.

Within the context of college choice, academic preparation has consistently been shown to be the most critical factor in college attendance (Adelman, 1999, 2006; Cabrera & La Nasa, 2001; Klasik, 2012; Perna, 2005). An individual with a successful academic history is more likely to believe in his or her academic success in the future, such as college. Not only that, but mastery experience has been shown to have “enduring” effects on self-efficacy well into the future (Pajares, 2008).

Vicarious experiences come into play when students see others around them succeed at tasks and become more confident that they too will be able to succeed. "Vicarious experience, relying as it does on inferences from social comparison, is a less dependable source of information about one's capabilities than is direct evidence of personal accomplishments" (Bandura, 1977, p. 197). As such, vicarious experience is not as strong as mastery and more vulnerable to change.
At school, social comparisons to inform academic self-efficacy are relatively constant and necessary. Parajes (2008) points out that, without context, academic achievements mean very little. Eventually a student establishes “internal standards,” which are typically generated by understanding if one’s score is higher or lower than their peers.

The college choice literature is rife with examples of vicarious experience. In a meta-synthesis of a variety of qualitative studies, Mwangi (2015) describes how the presence of older siblings who have gone to college can have a positive impact on college going. In addition, peers are another source of vicarious experience and have also been shown to have a significant influence. Corwin, Colyar, and Tierney (2005) emphasize the role of peers in college intervention programs; yet in Tierney and Colyar’s (2005) synthesis of studies related to the influence of peers on college-going, they find mixed evidence. Depending on the subpopulation under investigation, the values of the peers, and the historical context in which the study took place, peers have been found to either discourage education in favor of more delinquent behaviors, or exert a positive influence in the case of individuals with high-achieving friends (Tierney & Colyar, 2005). Interestingly, the theme of vicarious experience is reflected in Attinasi’s (1989) influential qualitative study of Mexican-Americans’ college-going. He found that both siblings and teachers modeled college-going behavior, which helped students gain a clearer understanding of the nature of the process.

According to Bandura (1977), verbal persuasion, the third source of self-efficacy, “…is widely used because of its ease and ready availability. People are led through
suggestion into believing they can cope successfully with what has overwhelmed them in
the past” (p. 198). Unsurprisingly, this source of efficacy is also less reliable than
personal mastery experiences and can potentially be damaging since failures “discredit
the persuaders and further undermine efficacy” (Bandura, 1977, p. 198).

Verbal persuasion can have a significant impact on academic self-efficacy,
particularly on young students who have not yet developed internal standards.
Unfortunately, “… it is usually easier to weaken self-efficacy beliefs through negative
appraisals than to strengthen such beliefs through positive encouragement” (Pajares,
2008). Messages, whether conveyed verbally or nonverbally and intentionally or
unintentionally by influential adults, have the potential to greatly encourage or discourage
academic self-efficacy in students (Pajares, 2008).

In the case of college choice, there are a number of potential “persuaders”
including families, teachers, counselors, peers, or other influential adults. While research
has shown that parents are the most important factor in a student’s college plans,
significant others can also exert influence. Peers, counselors, teachers, coaches, relatives
and any number of influential others may also be an important source of support,
particularly in cases when parents do not have exposure to college, and all are viable
sources of verbal persuasion (Corwin, Colyar, & Tierney, 2005; Hossler et al., 1999;
Mwangi, 2015).

The fourth and final source of self-efficacy is physiological feedback. In
Bandura’s (1977) words, "...emotional arousal is another constituent source of
information that can affect perceived self-efficacy in coping with threatening situations.
People rely partly on their state of physiological arousal in judging their anxiety and vulnerability to stress" (p. 198). This is particularly true in an academic setting when students may feel nervous for a test. Depending on their academic self-efficacy, they likely interpret that feeling either positively or negatively (Pajares, 2008). While many of the steps to enrollment in a four-year college, such as taking college-entrance exams, can be quite stressful and cause unpleasant physiological feedback, it is difficult to measure and is not highly prevalent in the college choice literature. It could be argued that, in some of the qualitative studies, student’s comments may reflect their emotional state. For example, in Deil-Amen and Tevis’s (2010) study of college-entrance exams with a group of low-SES high-school students, some of the quotes provide a good indicator as to feelings of vulnerability, which one may presume caused some form of physiological response: “So when I got my low ACT score back, my college dreams kind of faded away” (p. 155). Yet, since there are not sufficient measures of this source of self-efficacy, it is not included in this examination.

While there is strong alignment between the literature on college choice and the four primary sources of self-efficacy, there are a couple additional facets of self-efficacy that may have bearing in this study including magnitude and strength (Bandura, 1977). In his original conception of self-efficacy, Bandura described magnitude in terms of the level of task difficulty that a person would still feel efficacious. The college choice and application process is lengthy and challenging. Depending on the student’s level of academic self-efficacy, he or she may not be able to maintain the feelings of efficacy in the face of the challenges presented throughout the application process. Strength of self-
efficacy also has important implications for students embarking on the college choice and application processes. To pursue college at a four-year institution requires a strong resolve to get through all the necessary courses to become college qualified, take college-entrance exams, and submit application(s) for admission. Students who have merely been told by parents that they are capable of going to college may not be able to sustain their efforts through the challenges of the application process without a strong mastery experience in their classes, or seeing peers achieve college-level work. This reinforces why congruity of the experiences and influences can help enhance self-efficacy (Bandura, 1977, 1997).

While there are numerous dimensions of social-cognitive theory and self-regulation that could be studied in connection with the college choice and application processes, the construct of self-efficacy was selected for three primary reasons. First, as demonstrated in the previous section, educational researchers have called for its usefulness in promoting college-going. Second, it provides a vital connection between thought and action that is largely missing in the college choice literature. Third, it offers a measure of human agency that is also lacking in much of the extant literature.

Results of Studies of Academic Self-efficacy

To gain perspective from existing studies that have examined academic self-efficacy using the ELS:2002 dataset, a small sample of three studies were identified for review using the NCES bibliography search tool. Two of the studies sought to explore factors that influence academic self-efficacy and the other looked at the impact of academic self-efficacy in relation to dropping-out behaviors of high-school students.
Using social-cognitive, cognitive evaluation, and motivational theories, Fan and Williams (2010) analyzed how parental involvement predicted student motivation and found that 8% of the variance in math self-efficacy and 7% of variance in English self-efficacy was explained by parental involvement. Additionally, they revealed that parents’ aspirations for their child’s postsecondary education positively predicted math and English self-efficacy (Fan & Williams, 2010). These findings of the influence of parents are consistent with the college choice literature in which parents play a crucial role throughout the process, but are particularly influential in the earlier phases (Hossler et al., 1989; Cabrera & La Nasa, 2000; Hossler et al., 1999; McDonough, 1997).

Similarly, Mihyeon (2014) framed her study through career development and social-cognitive theories and conducted a path analysis with ELS:2002 data to determine how background characteristics impact academic self-efficacy which then impacts career and life expectations. Results indicated that family background (parental advice/discussions, income, and educational expectation) explained 50% of variance in academic-self efficacy. Academic self-efficacy accounted for 2% of variance in career and life success expectations. So once again, the role of background characteristics and parental support and encouragement is a critical component of students’ expectations for the future.

The third study by Peguero and Shaffer (2015) examined how academic self-efficacy impacts and potentially “insulates” students from dropping out. This was interesting in particular because it asked a mirror opposite question of this study—are students with high academic self-efficacy less likely to drop out of high school, as
opposed to being associated with four-year college attendance? Results of the HGLM that factored in self-efficacy, race, student characteristics, family characteristics, and school characteristics indicate that increased academic self-efficacy reduces the likelihood of dropping out, and it also insulates racial and ethnic minorities from risk of dropping out.

The results of these three studies demonstrate that academic self-efficacy is influenced by many of the same factors as aspirations (Fan & Williams, 2010; Mihyeon, 2014) and it is, in fact, a significant factor in student’s success (Peguero & Shaffer, 2015).

Nuances of Studying Self-efficacy

As with all theoretical models, there are challenges of applying self-efficacy in practice. Psychology theorists have criticized education researchers in particular for ignoring several key elements of self-efficacy theory. Pajares (1996) explains that assessments of one’s self-efficacy are “task and domain specific” and that ill-defined variations of self-efficacy that are intended to represent the construct in a more global sense only serve to reduce the actual effects of self-efficacy. Interestingly, the measures of academic self-efficacy in ELS:2002 were drawn from the Programme for International Student Assessment (PISA), a program of the Organisation for Economic Cooperation and Development (OECD), which used a more generalized construct of self-efficacy. The PISA measure of self-efficacy was phrased in the general sense and asked students to rate “How often these things apply to you” with response options of: almost never, sometimes, often, and almost always. The questions included: “I’m confident I can do an excellent job on assignments and tests,” “I’m certain I can understand the most difficult
material presented in texts,” and “I’m certain I can master the skills being taught.” All of these questions represent a global measure of self-efficacy rather than a domain-specific measure as suggested by Bandura (1997) and Pajares (2006). In the development of the ELS:2002 questionnaires, the PISA questions were modified to reflect more domain-specific areas of math and English.

The domain specificity poses some interesting challenges in the realm of the college choice and application processes because students are unlikely to be familiar with the task at hand and, thus, specificity may not be possible. According to Pajares (2006):

> When task demands are unfamiliar, people must generalize from prior attainments that are perceived as similar to the required task and gauge their perceived competence with self-beliefs they judge more closely correspond to the novel requirements (p. 562).

There is also discussion in the literature about the generality of self-efficacy and when and how it may transfer to a new task or when it may not. Bandura (1997) reports five processes through which efficacy can be generalized and the one that is relevant to this study is the development of self-regulatory skills. If students believe they have the capability to be successful in higher-level math or English classes, they may take those same skills, such as effort and perseverance through difficult problems, and apply them to the steps along the college-application process. For example, if they apply those skills to taking college-entrance exams, they will have transferred domain-specific efficacy to a broader process. Because there is limited precedent for studying the measures of academic self-efficacy in the context of college choice in an NCES dataset, some informed choices were made to explore this connection.
Summary of Self-efficacy

The discussion of self-efficacy provides an overview of the construct and presents justification for inclusion in the college choice process. The nuances of academic self-efficacy and its potential role as a missing element that explains the motivation to act throughout the college choice process reinforces the need for further study.

Pivotal Factors in College Choice and Self-Efficacy

To reinforce how the foundational disciplinary perspectives, college choice, and self-efficacy literatures converge, pivotal variables that are relevant across domains are discussed. They are organized within the ecological framework and include individual characteristics, cultural capital, family and social capital, and school context.

Figure 3. Ecological Framework Used in this Study
Individual Characteristics

At the center of the ecological framework, individual attributes, attitudes, and characteristics exert an immense effect on college choice. At the core, where predisposition and individual characteristics intersect is where aspirations and academic self-efficacy lie. Rooted in human capital and psychological perspectives, these constructs are mental states that initiate action. Theoretically, high college aspirations drive “readiness” to engage in activities such as gathering information about admissions requirements and taking the SAT, which are positively associated with enrollment according to Arnold et al. (2012). Academic self-efficacy plays a key role in the motivational component of self-regulated learning in which students identify tasks, commit to those tasks, and expend the energy necessary to achieve the level of performance they deem successful (U.S. Department of Education, 2003). Self-efficacy is helpful in conceptualizing the predisposition phase since it can explain how students engage self-regulatory skills to succeed in realizing their college aspirations. If college aspirations cue a student to begin the search phase of the college choice process, then the motivation to act would come from self-efficacy, which regulates which tasks a student will undertake; thus, the two constructs are closely linked.

Much of the psychology literature has focused on the connection between self-efficacy and career choice rather than application steps (Rottinghaus, Lindley, Green, & Brogen, 2002). Rottinghaus, Lindley, Green, and Brogen (2002) point out that career choice and educational aspirations are related since specific levels of education are required for certain occupations. In their hierarchical regression analyses examining the
contributions of personality, self-efficacy, and interests as they relate to educational aspirations, Rottinghaus et al. (2002) found that the addition of self-efficacy measures contributed to 15.9% of the variance in educational aspirations. While this study does provide some evidence of a link between self-efficacy and educational aspirations, generalizability is not appropriate since the measures of self-efficacy were more focused on interests and traits rather than college-application activities.

The second tier, or the individual layer of the ecological model, includes how attributes such as gender, race, academic ability, and socioeconomic status influence student’s beliefs and experiences. As noted, while these individual characteristics are static attributes, they play a dynamic role in shaping the experience of the students and have considerable implications for social and cultural capital (Bandura, 1997; Perna, 2006).

Depending on a student’s self-efficacy and college aspirations, some students are better prepared than others to navigate and understand the complexities of the college choice process. Compared to higher-socioeconomic students, low-socioeconomic students have lower aspirations and expectations (Kao & Tienda, 1998; MacAllum et al., 2007). Self-efficacy affects which colleges are in a student’s consideration set because students select postsecondary options they believe align with their abilities (MacAllum et al., 2007; McDonough, 1997).

Parents: Cultural Capital and Family Capital

At the microsystem level, parents are the most influential factors in the college choice process (Hossler et al., 1999). Drawn from the sociologic literature, construct of
cultural capital and family capital—both of which are transmitted from parents to children—have been found to be highly influential. During the predisposition stage, parental encouragement is the single strongest predictor of postsecondary plans—their educational expectations for their children, involvement with the school, and financial planning for college are all positively associated with postsecondary education (Cabrera & La Nasa, 2000). Beyond encouragement, parents’ income, education, occupation, or some combination thereof are also significant factors in bestowing cultural capital to their offspring that positively influences enrollment and eventual college attainment (Pascarella & Terenzini, 2005; Cabrera & La Nasa, 2000; Arnold et al., 2012). Related to income, parental support (or saving for college) has been found to vary by socioeconomic status and awareness of how much college costs (Cabrera & La Nasa, 2000). Generally, more educated parents have a better grasp of the financial-aid options and the associated eligibility requirements, all of which promote college attendance (Cabrera & La Nasa, 2000; Perna, 2006).

Parental influence on academic self-efficacy is no less significant than on aspirations. According to Fan and Williams (2010):

Because adolescents exist within social systems and are continuously interacting with their caretakers, parents not only influence the development of self-efficacy, but also provide observational models that guide adolescents’ adjustment of their self-efficacy. When adolescents are encouraged and affirmed of their capability, they are more likely to experience less self-doubt, exercise greater effort and persist when facing difficulties (p. 54).

Additionally, Kim (2014) reported that parental support, operationalized through communication and educational expectations, in addition to family income were significant contributors to academic self-efficacy.
With regard to family capital, higher-socioeconomic students with college-educated parents are likely to receive consistent encouragement throughout high school, are expected to attend college, and can engage in discussions about college and financial-aid options with their parents. By comparison, lower socioeconomic students may not receive consistent encouragement during high school, a finding that has been linked to enrollment in a two-year institution rather than four-year (Cabrera & La Nasa, 2000; Walpole, 2007). Compared to college-educated parents, low-socioeconomic parents often have less cultural and social capital with regard to college knowledge (Bergerson, 2009).

School Context and Academic Preparation

A second microsystem factor that is important in both college choice and academic self-efficacy is academic preparation and achievement. This issue is closely linked to the school context in which a student is educated and impacts the college choice process in several ways. While a student’s ability is an inherent trait, academic preparation greatly affects achievement (i.e., test scores or GPA), which can either encourage or discourage pursuit of postsecondary education.

Additionally, due to vicarious experience, students establish internal standards in part based on their educational context. This was made abundantly clear in Deil-Amen and Tevis’s (2010) qualitative study of student perceptions of college-entrance exams. Students in low-performing schools were asked about their scores and, although the national average score was 21, the average of the five schools in the study was 16. Due to social comparison, students who scored 20 or 21 exhibited an “inflated sense of college
readiness” because they compared their scores to the school average and were unaware of the national average (Deil-Amen & Tevis, 2010).

Several other factors related to the issue of academic preparation are the differential curriculum options including college-preparatory courses, high-level math courses, and advanced placement options (Bergerson, 2009). Hossler, Vesper, and Schmit (1999) demonstrated a correlation between grades and types of institutions attended with the majority of A and B students attending four-year institutions compared to lower-performing students who selected two-year or work/military alternatives.

The concept of cultural reproduction is helpful in understanding the impact of academic preparation as it relates to socioeconomic status. In explicating this concept, Perna and Thomas (2008) describe the reproductionist view that, because lower-income families live in low-income areas where schools are generally underfunded, their educational experiences and environmental influences are more likely to set them on a path to lower-class job prospects. The reverse is true for wealthier students who will likely live in a neighborhood with a better-funded school and more opportunities and encouragement for educational achievement.

Social Capital: Access to Information

Social capital constitutes the third pivotal variable that connects self-efficacy and college choice. Academic self-efficacy may be greatly enhanced or diminished by persuasion from parents, teachers, coaches, relatives, and peers. If conflicting messages are sent about a student’s ability to go to college by these various persuaders, it could readily decrease their academic self-efficacy.
Similarly, the second stage of Hossler and Gallagher’s college choice model is search, which involves gathering and processing information about postsecondary institutions. Social capital and cultural capital are significant factors in the search process as students seek information and input about college considerations. McDonough (1997) clearly illustrated the importance of these forms of capital, especially school counselors, through her qualitative study of students from four different high schools with very different economic situations. Information is a critical component in the college choice process and the timing, where or who it comes from, the message it contains, and its accuracy are all key elements that determine its potential value. Timely, accurate information is positively associated with postsecondary enrollment (Bergerson, 2009). In addition, Hamerick and Hossler (1996) lament that search is a cumulative process and, while that makes it difficult to measure individual communication efforts from institutions, it may also suggest that those with access to information are able to accrue more knowledge. Their results revealed a positive association with background characteristics, parental support, and early student exploration of post-high-school plans.

Another recommended strategy of Corwin et al.’s (2005) related to effective college preparation is “access to college planning information and navigational strategies” (Corwin et al., 2005, p. 4). This encourages not only more information, but also the skills to utilize that information to make better decisions. Key aspects of this involve family and social networks to aid students in the college choice process.
Summary of Pivotal Factors

As is evident from this discussion of individual thoughts and characteristics, cultural and social capital, and school context, there is an abundance of overlap between college choice and self-efficacy that validates the connection between the two literatures. This provided groundwork for this study to contribute by leveraging a national dataset to examine the academic self-efficacy and its influence on important steps in the college application process.

Studies of College Choice and Application Steps

The final area of literature reviewed to inform this dissertation included studies that have explored application steps. The purpose of this component of the literature review was to evaluate these studies across several dimensions including theoretical foundation, datasets and methodologies, application actions and other variables used, and important findings. A set of nine studies that focus on the application process were identified for in-depth review (see Table 1). A select few of these investigations examine the actions required to apply to a four-year institution as dependent variables (Avery & Kane, 2004; Cabrera & La Nasa, 2001; Hurtado et al., 1997; Klasik, 2012; Roderick et al., 2008). Other studies simply account for application actions that might help to explain differences in enrollment between various groups of students (Adelman, 1999, 2006; Berkner & Chavez; Horn & Nuñez, 2000; Plank & Jordan, 2001).
Table 1. Overview of Studies that Examine Application Steps

<table>
<thead>
<tr>
<th>Citation</th>
<th>Research Topic</th>
<th>Theoretical/Conceptual Framework</th>
<th>Dataset</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avery &amp; Kane (2004)</td>
<td>Comparison of urban and suburban Boston student perceptions of the economic benefits of college and how the two groups approach the college-application process.</td>
<td>Econometric</td>
<td>Surveys of Boston area high school seniors in two groups: 282 low income urban students and 250 suburban high school students.</td>
<td>Descriptive statistics comparing the two groups, T statistics to compare groups (no controls)</td>
</tr>
<tr>
<td>Klasik (2012)</td>
<td>Analyze how students from different backgrounds complete steps toward enrollment in a four-year college.</td>
<td>Combined – human, social, and cultural capital, and organizational capital</td>
<td>ELS:2002</td>
<td>Multivariate logistic regression predicts step completion</td>
</tr>
</tbody>
</table>
Table 1. Overview of Studies that Examine Application Steps, Continued

<table>
<thead>
<tr>
<th>Study</th>
<th>Focus</th>
<th>Methodology</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horn &amp; Nuñez (2000)</td>
<td>Compare high school academic experiences, especially math curricula, of first generation students with peers whose parents have more education.</td>
<td>Atheoretical</td>
<td>NELS:88/94</td>
</tr>
<tr>
<td>Hurtado, Inkelas, Briggs, &amp; Rhee (1997)</td>
<td>Examine college-application behaviors of students from different racial/ethnic backgrounds.</td>
<td>Hosler and Gallagher three-phase model of college choice</td>
<td>NELS:88/92 and BPS:90/92</td>
</tr>
<tr>
<td>Plank &amp; Jordan (2001)</td>
<td>Factors that explain talent loss (qualified students not attending college) among low-SES individuals with specific attention to the search phase of the college choice. process.</td>
<td>Talent loss, social capital, combined models of college choice</td>
<td>NELS:88</td>
</tr>
<tr>
<td>Roderick, Nagaoka, Coca, Moeller, Roddie, Gillian, &amp; Patton (2008)</td>
<td>Understand if Chicago Public Schools students are taking the steps to enroll in 4-year institutions; and how they navigate the college search and application process to learn where they experience difficulty and success.</td>
<td>Social capital</td>
<td>Sample of 6,212 students in the 2005 graduating class of Chicago Public Schools</td>
</tr>
</tbody>
</table>
Theoretical and Conceptual Foundations

The most common framework for exploring the college choice and application processes were combined models of college choice that were based loosely on Hossler and Gallagher’s three-phase model, which accounted for four of the studies (Cabrera & La Nasa, 2001; Klasik, 2012; Hurtado et al., 1997; Plank & Jordan, 2001). Three of the studies would be best characterized as atheoretical (Adelman, 1999; Berkner & Chavez, 1997; Horn & Nuñez, 2000) and one was similarly atheoretical, but offered an economic disciplinary lens (Avery & Kane, 2004). Social capital served as the sole theoretical construct for Roderick et al.’s study (2008) and was also referenced in two of the other studies to establish meaningful support resources for college-going (Plank & Jordan, 2001; Klasik, 2012). Klasik (2012) drew on the largest number of theories from economic and sociology disciplinary roots including Hossler & Gallagher’s model (combined), human capital (economic), social capital (sociology), cultural capital (sociology), and organizational/school context capital (sociology). It is interesting to note that none included any psychological theories or constructs in analyzing students’ movement through the application process, missing the potential contribution of human agency.

Datasets and Methodologies Employed

The most common datasets used in the studies of college choice and application reviewed were longitudinal studies from the National Center for Education Statistics. Five of the studies used the National Longitudinal Study of 1988 (NELS:88) (Adelman, 2006; Berkner & Chavez, 1997; Cabrera & La Nasa, 2001; Horn & Nuñez, 2000; Plank
& Jordan, 2001). One additional study used NELS:88 in conjunction with the Beginning Postsecondary Student Longitudinal Study (BPS: 90) dataset to add data that was collected after the student was in college (Hurtado et al., 1997). While these studies are seen as valuable, the age of the datasets are a weakness since the college choice and application process of students in the 1980s reflects macrosystem and exosystem factors from a different era compared to what students undergo since the new millennium, such as changes in policy like No Child Left Behind, which has been thought to increase educational aspirations for all students (Roderick et al., 2008).

Two of the studies focused on specific geographic regions, one in Boston with a relatively small sample (n = 532) of urban and comparator suburban students (Avery & Kane, 2004) and another in Chicago with different sample sizes depending on the research question (n = 2,691 to 6,212) (Roderick et al., 2008). Only one study in this set utilized the ELS:2002 (Klasik, 2012). It is not surprising that the majority of the studies used datasets from the NCES since they provide rich detail as students experience the college choice and application process. Although the prior datasets have included many similar variables, an important difference in the ELS:2002 dataset is that it included measures of academic self-efficacy in math and English, which prior datasets did not.

In terms of methods, the logistic regression technique was used in six of the nine studies due to the nature of the survey data and questions asked in these studies (did students complete an application step or not?). This was by far the most prevalent statistical technique used, and it was also used in this study. All the studies included descriptive data to characterize the sample and many reported on completion rates of the
various application steps, which are discussed further in the findings section of this review. Additional techniques to compare groups included T statistics (as in the case of comparing urban Boston students with suburban counterparts), which were used by Avery and Kane (2004), but the authors did not attempt to control for student background characteristics as was common in many of the other studies. The study of Chicago Public Schools students (Roderick et al., 2008) utilized hierarchical linear modeling to include students at the first level and schools at the second level, thereby accounting for individual and school variance.

Specific Application Steps Analyzed

Across these nine studies, there was little consistency as to which specific enrollment steps were analyzed. The variation in steps included in the analyses is likely due to a couple of reasons. As a relatively new line of inquiry that remains somewhat understudied (Klasik, 2012), it is possible that no standard steps have been meted out aside from the results of Klasik’s (2012) findings. The second and more important possible explanation is that the application process varies for every student. In their study of students who were the first in their family to go to college, Horn and Nuñez (2000) reported that these students relied heavily on sources of knowledge such as counselors, teachers, or others to discuss high-school curriculum, college plans, and to gain support in applying to college. Therefore, a critical step for a student whose parents did not go to college may be meeting with a guidance counselor to understand what actions he or she needs to take, while another student, whose parents did go to college, may be able to obtain the required information at home.
Klasik (2012) included the most extensive set of application steps in his investigation, identifying nine distinct actions. Despite including a broad array of steps, Klasik (2012) found that only five were critical. “If optional steps like applying for financial aid and meeting with a college counselor or college representative are included among these five steps, the process loses clarity because fewer students who enroll in a four-year college complete all of the steps” (p. 519).

The most common steps analyzed in this set of studies were (a) submitting a college application (Avery & Kane, 2004; Berkner & Chavez, 1997; Cabrera & La Nasa, 2001; Klasik, 2012; Hurtado et al., 1997; Plank & Jordan, 2001; Roderick et al., 2008), (b) enrolling in college (Berkner & Chavez, 1997; Klasik, 2012; Horn & Nunez, 2000; Hurtado et al., 1997; Plank & Jordan; Roderick et al., 2008), (c) attaining minimal college qualifications (Adelman, 2006; Avery & Kane, 2004; Berkner & Chavez, 1997; Cabrera & La Nasa, 2001; Klasik, 2012; Hurtado et al., 1997), and (d) bachelor’s degree aspirations (Adelman, 2006; Avery & Kane, 2004; Berkner & Chavez, 1997; Cabrera & La Nasa, 2001; Klasik, 2012; Roderick et al., 2008). Additional steps that appeared in a variety of the studies included taking the ACT/SAT (and/or registering and preparing for the ACT/SAT) (Avery & Kane, 2004; Berkner & Chavez, 1997; Klasik, 2012; Plank & Jordan, 2001) and graduating high school (Avery & Kane; Cabrera & La Nasa, 2001).

Findings from Studies of College Choice and Application Actions

A summary of findings from the various studies can be seen in Table 2. In looking across the studies, there are several stumbling blocks that seem to divert students from their educational aspirations. Brief discussions of the following steps and related findings
are presented: applications to four-year institutions, attaining minimal college qualifications, college-entrance exams, and bachelor’s aspirations.

Table 2. Select Findings from Studies of Application Actions

<table>
<thead>
<tr>
<th>Citation</th>
<th>Research Question</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adelman (2006)</td>
<td>Examine factors associated with bachelor’s degree attainment.</td>
<td>High school curriculum (Carnegie units) matters more than any other precollege factor as it relates to 4-year degree attainment. Highest math course remains a significant metric of academic preparation. Schools serving low SES students are less likely to offer math courses above algebra II. Latino students are less likely to have access to advanced math courses.</td>
</tr>
<tr>
<td>Avery &amp; Kane (2004)</td>
<td>Comparison of urban and suburban Boston student perceptions of the economic benefits of college and how the two groups approach the college-application process.</td>
<td>Five key steps to attend a 4-year college were identified: graduate high school, earn a GPA required for admission, register for the SAT, take the SAT, and complete an application. Early in the year 65% of urban students and 94% of suburban students planned to attend a 4-year, by the end of the year only 24% and 88% respectively had the same expectation. Having a 3.0 GPA (the cutoff for public 4-years in Mass.) for both groups increased the likelihood of attending a 4-year. 10% of urban, low-income students with a 3.0 GPA did not register for the SAT and of those who did, 15% did not complete it. A quarter of urban, low-income students with high grades and 50% with low grades were unable to complete an application to a 4-year.</td>
</tr>
<tr>
<td>Study</td>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Berkner &amp; Chavez (1997)</td>
<td>Examine postsecondary access among 1992 high school graduates. Controlling for race, family income, parents’ education, attaining college qualifications and completion of college-entrance exams and applying: race differences were eliminated but significant differences remained between students in the highest and lowest income ranges, and students whose parents had some college versus those how were high school graduates or lower. Of college qualified low-income students who took the SAT/ACT and submitted and application, over 83% attended a 4-year institution.</td>
<td></td>
</tr>
<tr>
<td>Cabrera &amp; La Nasa (2001)</td>
<td>Explore how economically and sociologically underprivileged Americans prepare for college. 81% of students who completed the three tasks under study (attain college qualifications, graduate from high school, and apply to a 4-year) enrolled in a 4-year institution. Before the controls were in place, lowest-SES students were 51% less likely than highest-SES students to obtain college qualifications; when these variables are controlled, the difference is reduced to 15%. Lower levels of parental education and faced with more at-risk factors presented significant challenges for low-SES students. Significant factors included: at-risk factors, parents’ expectations, college qualifications, access to financial aid information, at least bachelor’s aspirations.</td>
<td></td>
</tr>
<tr>
<td>Klasik (2012)</td>
<td>Analyze how students from different backgrounds complete steps toward enrollment in a four-year college. Five steps proved critical: 10th and 12th grade 4-year aspirations Taking the SAT/ACT Attaining minimal qualifications Applying to a 4-year Controlling for race, income, gender, and academic preparation: Most race differences were eliminated; students in the highest income group were more likely to complete necessary steps; students with better GPAs and test scores early in high school were more likely to complete the steps. Controlling for social capital, cultural capital, and school context eliminated most of the family income differences; other differences were reduced but remained significant.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 2. Select Findings from Studies of Application Actions, Continued

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Horn &amp; Nuñez (2000)</strong></td>
<td>Only significant results related to enrolling in a 4-year college with controls are reported:</td>
</tr>
<tr>
<td></td>
<td>Students who did not take math beyond algebra II were between 15 and 19% less likely.</td>
</tr>
<tr>
<td></td>
<td>Students whose parents graduated college were 9% more likely than first generation students.</td>
</tr>
<tr>
<td></td>
<td>Students in the highest family income group were 12-13% more likely.</td>
</tr>
<tr>
<td></td>
<td>Educational expectations of a 4-year degree increased the likelihood of 4-year enrollment by</td>
</tr>
<tr>
<td></td>
<td>6% for parents and 10% for students.</td>
</tr>
<tr>
<td></td>
<td>Student who sometimes had conversations with their parents about college-entrance prep and</td>
</tr>
<tr>
<td></td>
<td>often discussed plans for college were more likely by 3% and 10% respectively.</td>
</tr>
<tr>
<td></td>
<td>Parents who attended a financial aid program were 10% more likely.</td>
</tr>
<tr>
<td></td>
<td>Students with friends also going to 4-year were 12% more likely.</td>
</tr>
<tr>
<td></td>
<td>Students who took and SAT prep class were 4% more likely.</td>
</tr>
<tr>
<td></td>
<td>If the school provided application support students were 5% more likely.</td>
</tr>
<tr>
<td></td>
<td>Compare high school academic experiences, especially math curricula, of first generation</td>
</tr>
<tr>
<td></td>
<td>students with peers whose parents more education.</td>
</tr>
<tr>
<td><strong>Hurtado, Inkelas, Briggs, &amp; Rhee (1997)</strong></td>
<td>College-application behaviors of students from different racial/ethnic backgrounds.</td>
</tr>
<tr>
<td></td>
<td>High ability 8th graders may benefit from information that can help prepare them for college</td>
</tr>
<tr>
<td></td>
<td>but not all minorities act on that information (40% of high ability African American students</td>
</tr>
<tr>
<td></td>
<td>had not taken the SAT by 12th grade).</td>
</tr>
<tr>
<td></td>
<td>At the end of 12th grade, 34% of white, 45% of black, 47% of Hispanic and 25% of Asian students</td>
</tr>
<tr>
<td></td>
<td>had not submitted an application.</td>
</tr>
<tr>
<td></td>
<td>Submitting fewer applications was significantly associated with attending a first choice college.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Select Findings from Studies of Application Actions, Continued

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plank &amp; Jordan (2001)</td>
<td>Talent loss is most severe among lowest SES students.</td>
</tr>
<tr>
<td></td>
<td>Significant factors in attending a 4-year included:</td>
</tr>
<tr>
<td></td>
<td>Parental encouragement for the SAT/ACT</td>
</tr>
<tr>
<td></td>
<td>Taking an SAT/ACT prep course</td>
</tr>
<tr>
<td></td>
<td>Planning to take college-entrance exam</td>
</tr>
<tr>
<td></td>
<td>College guidance and help from school</td>
</tr>
<tr>
<td></td>
<td>Visiting a PEI with parent</td>
</tr>
<tr>
<td></td>
<td>Applying for financial aid</td>
</tr>
<tr>
<td></td>
<td>Applying to a PEI</td>
</tr>
<tr>
<td></td>
<td>Factors that explain talent loss (qualified students not attending college) among low-SES individuals with specific attention to the search phase of the college choice process</td>
</tr>
<tr>
<td></td>
<td>Talent loss is most severe among lowest SES students.</td>
</tr>
<tr>
<td></td>
<td>Significant factors in attending a 4-year included:</td>
</tr>
<tr>
<td></td>
<td>Parental encouragement for the SAT/ACT</td>
</tr>
<tr>
<td></td>
<td>Taking an SAT/ACT prep course</td>
</tr>
<tr>
<td></td>
<td>Planning to take college-entrance exam</td>
</tr>
<tr>
<td></td>
<td>College guidance and help from school</td>
</tr>
<tr>
<td></td>
<td>Visiting a PEI with parent</td>
</tr>
<tr>
<td></td>
<td>Applying for financial aid</td>
</tr>
<tr>
<td></td>
<td>Applying to a PEI</td>
</tr>
<tr>
<td>Roderick, Nagaoka, Coca, Moeller, Roddie, Gillian, Patton (2008)</td>
<td>Only 41% of Chicago Public Schools (CPS) seniors who aspired to complete a 4-year degree took the steps and enrolled in fall (aspire to 4-year, planned to attend 4-year, applied to 4-year, accepted to 4-year). Students of all levels of qualification faced difficulty with the process. Latino students had the most difficulty – fewer than half applied to a 4-year college compared to 65% of other races. Students who attended high schools with a strong “college climate” (as reported by teachers) were most likely to take enrollment steps. 62% of students who attended college chose a mismatch by attending an institution below their qualifications (including 2-year or not enrolling); mismatches were common at all ability levels.</td>
</tr>
<tr>
<td></td>
<td>Understand if Chicago Public Schools students are taking the steps to enroll in 4-year institutions; and how they navigate the college search and application process to learn where they experience difficulty and success</td>
</tr>
</tbody>
</table>

In the majority of the studies reviewed, the act of submitting an application was identified as a factor in deterring enrollment in a four-year institution (Avery & Kane, 2004; Berkner & Chavez, 1997; Cabrera & La Nasa, 2001; Hurtado et al., 1997; Klasik, 2012; Plank & Jordan, 2001; Roderick et al., 2008). Many students affected by this barrier were from low-income backgrounds (Avery & Kane, 2004; Berkner & Chavez, 1997; Cabrera & La Nasa, 2001; Klasik, 2012) and Latino students were shown to be at a particular disadvantage and were more likely to opt for a two-year institution (Adelman,
2006; Berkner & Chavez, 1997; Hurtado et al., 1997; Roderick et al., 2008). Because this step is necessary, submitting an application to a four-year institution was utilized in this study to reflect the choice stage of the college choice process.

Attaining minimal college qualifications was also a significant factor in students’ inability to enroll in a four-year institution. Berkner and Chavez (1997) documented a number of differences in students who meet minimal college qualifications based on race, family income, and parents’ education. However, Cabrera and La Nasa (2001) revealed the most dramatic statistic, finding that 71% of students in the lowest-SES group failed to achieve minimal college qualifications, before background characteristics were controlled. Cabrera and La Nasa (2001) also noted that within the NELS:88 population, 99% of those who attained minimal college qualifications also graduated, but only 48% of students who graduated applied to a four-year institution (p. 120-121).

Roderick et al. (2008) and Avery and Kane (2004) found similar patterns of difficulty in achieving college qualifications for low-income and minority students on their path to college. Although filling out the Free Application for Federal Student Aid (FAFSA) was not one of the more common steps analyzed across the studies, its importance for low-income students was noted by Roderick et al. (2008).

Authors of the college-application action studies looked at a variety of steps related to college-entrance exams including PSAT, planning to take the ACT/SAT, registering for the ACT/SAT, preparing for the ACT/SAT, and actually taking the ACT/SAT. While this may seem redundant, it does point out that there are a variety of ways a student can fail to complete this task. Avery and Kane (2004) include vivid
descriptions and reasons why urban Boston students were unable to take the SAT/ACT despite being registered. From too long of a commute, to not knowing the location of the testing center in more suburban areas, to simply deciding to stay home, the barriers to completing the college-entrance exam identified were many and wide-ranging.

**Summary of Application-Action Studies**

Among the nine articles relating to application actions, there was relative consistency in terms of which theoretical and disciplinary lenses the researchers applied and there was also consistency in methods used and relative agreement in terms of the background factors that have been accounted for and/or controlled. Overall, common findings point to the fact that students who grew up in higher-income families have higher likelihoods of successfully completing the required application actions to make them eligible for enrollment in a four-year institution. Some racial group differences were reported, but generally, when background characteristics were controlled, the differences were reduced, if not eliminated. Most commonly, white and Asian students were more likely to be eligible to enroll in four-year institutions while black and Latino/Latina students were more likely to lag behind, unless controls were applied (Berkner & Chavez, 1997; Hurtado et al., 1997; Roderick, 2008).

Despite the number of barriers identified by these studies in the application process alone, hope does exist. A consistent finding across these studies was that students who are college qualified, including low-income and minority students, attend college at higher rates. Improving student’s outlook to believe that they have the capability to
pursue college and take those initial steps early in the process to build academic momentum is critical.

Although none of the studies reviewed in this section included academic self-efficacy, many described various elements of it providing further justification for its inclusion. Hurtado et al. (1997) explored differences between racial groups of students who had scored in the highest quartile of an eighth-grade cognitive test, suggesting that “Although many students can increase their skills in subsequent years in order to prepare for college, these early high achievers would have the highest probability of attending college based on aptitude” (p. 52), which, as described in the academic self-efficacy section, is likely true since efficacious individuals are more likely to work harder and persist through difficulty (Bandura, 1997). Additionally, in explicating social capital theory, Plank and Jordan (2001) state that “Indeed, social networks may be at least as potent in facilitating college choice as a student’s individual agency or judgment” (p. 950), which directly calls out the fact that the study does not consider any elements of individual agency in its analysis. These statements foreshadow two key points: that early achievement matters because students who are identified as high ability are more likely to receive important information to help them prepare for college (Hurtado et al., 1997, p. 52) and academic self-efficacy may be a missing link.

Chapter Summary

Overall, there are several primary limitations in the college choice literature.
• First, it relies heavily on sociological and economic lenses for combined models of college choice (Bergerson, 2009; Mwangi, 2015; Perna, 2006), which do not account for the many layers in the complex process, which is well suited for an ecological framework.

• Second, historically, there has been limited use of psychological variables to help describe and explain the college choice process at the individual level. Specifically, no known studies have explored the construct of academic self-efficacy in the context of college choice with a national dataset.

• Third, it has been a relatively new phenomenon to view the college-application process as a series of potential barriers to college enrollment. Factors that influence individual application steps remain understudied.

From the literature, it is clear that there is a significant opportunity to explore the constructs of academic self-efficacy in the context of the college choice and application process. Self-efficacy may provide a vital link between aspiration and action, and availability of the measures of English and math self-efficacy in the ELS:2002 exposes an opportunity to test this link.
CHAPTER THREE

METHODOLOGY

Using the Education Longitudinal Study of 2002 (ELS:2002/04) dataset, the research questions addressed in this study focused on completion of two critical steps in the college-application process for four-year institutions—taking a college-entrance exam and submitting an application to a four-year institution—and their association with bachelor’s aspirations and higher levels of academic self-efficacy (i.e., English and math). Due to the binary nature of the research questions—whether the student completed the step or not—the logistic regression technique was the appropriate statistical analysis. Once again, this study added to the literature that views the application process as a potential barrier to enrollment in a four-year institution because, if any of the steps are missed, it could result in ineligibility (Plank & Jordan, 2001).

Research Design and Rationale

This investigation was a nonexperimental research design that involved analysis of secondary survey data. The research questions were complex, associational questions and the Education Longitudinal Study of 2002 (ELS:2002/04) was selected as a suitable dataset because it aligns with the chronology of the college choice process. Additionally, ELS:2002 includes a wealth of questions about students’ experiences as they make the transition from high school to postsecondary education or alternative career and life paths.
Again, the ELS:2002/04 data was collected by the National Center for Education Statistics (NCES) to report on the state of education nationwide. Participants in the ELS:2002 represented a national sample of students who were in tenth grade in 2002 and were measured longitudinally.

**Research Context**

There are a wide variety of proximal and distal factors that can significantly impact the college choice process. While many of the proximal factors, including family and school influences, have been covered in the literature review and were used as control variables in this study (see full description in Individual Control Variables section), it is important to consider some of the distal factors as well. Political forces, such as the No Child Left Behind Act adopted in 2001, and historic events like the 9/11 attacks and the subsequent economic recession were likely forces that impacted the cohort of students who were attending high school and preparing for postsecondary education during the timing of the ELS:2002 data collections (Bergerson 2009; Roderick et al., 2008). By emphasizing a reduction in gaps of educational achievement between minority- and lower-socioeconomic-status students, No Child Left Behind may have served to increase the educational aspirations of all students (Roderick et al., 2008). Additionally, recession trends which include scarcity of jobs push more students to consider postsecondary education as a valid option after high school (Barr & Turner, 2013). However, financial instability experienced by many families may have caused some students to consider lower-cost options for postsecondary education outside
selective institutions (Barr & Turner, 2013). This cohort of students also likely reflected broader societal values of higher education, which is evident in their desire to pursue some form of college (Adelman, 2006; Bergerson, 2009).

**Data Collection Procedures**

The ELS:2002 survey was first administered to high-school sophomores in 2002 and follow-up measures were conducted in 2004 (grade 12) and 2006 (two years out of high school), if the student graduated on time. A final round of data collection occurred in 2012, or eight years after high school. Since the focus of this study was on traditional-age students going through the college choice and application processes, only the first two student surveys (2002 and 2004) were used (ELS:2002/04). Despite the age of the data, the ELS:2002 remains one of the more robust datasets used by researchers given its rich information of a national sample (Lee, 2015; Olitsky, 2014; Peguero & Shaffer, 2015).

It is also important to note that the ELS:2002/04 dataset contained multiple respondent groups including parents, teachers, and administrators from which some of the variables used in this study were utilized for accuracy. Adelman (2006) made a compelling argument that, when possible, parent responses should be used for better accuracy since students are often providing a “best guess” about factors such as their parents’ education level. This study utilized only publicly accessible data from the ELS:2002/04 dataset.
In the ELS:2002/04 dataset, the target population was all schools with sophomore students in 2002. From that group, 750 schools were selected (accessible population/sampling frame) and students from those schools were randomly selected by administrators of the survey (the selected sample). The actual sample for ELS:2002/04 represents more than 15,000 students. For this study, the final sample set was filtered to include only participants who were observed in both rounds of relevant data collection surveys (2002 and 2004) and only participants who had responses to all the variables of interest. Finally, weights were applied to account for the complex sample design (Ingels et al., 2004) and the subsample of respondents in this study was narrowed to 2,967. Even with the reduction in sample size, it still exceeds even the most rigorous guidelines for observation to predictor ratios recommended for logistic regression (Peng, So, Stage, & St. John, 2002). To substantiate the sample size, the confidence interval (plus or minus 2%) was calculated and the sample size needed to establish a 95% confidence level was 2070 (Sample Size Calculator, 2017).

To align with best practices and produce accurate results when conducting analyses with data collected through a complex sample design, such as NCES surveys, both data weights and design effects were applied (described next). Sophisticated research methods have become more broadly used with statistical software programs and publicly accessible data. With this access, it has become even more pressing to ensure quality of research by accounting for the complex sample design embedded in these datasets. Several authors and organizations (i.e., Association of Institutional Research,
AIR) have demonstrated the application of appropriate weights (Perna, 2000; Cabrera & La Nasa, 2001) and importance of design effects (Hahs-Vaugh, 2005, 2006).

**Weights Employed**

Weights were applied to account for oversampling of specific populations in complex sample design. The weight used in this study was the F1PNLWT, which applies to students who responded both in the base year and first follow-up surveys. As per the example set by Perna (2000) and Cabrera and La Nasa (2001), and highlighted as a best practice by Hahs-Vaughn (2005), the panel weight was divided by the average weight in the sample (average weight = 221.09) to obtain a normalized weight that reflected the actual sample size. According to Cabrera and La Nasa (2001), “This adjusted weight minimizes the effect of large sample size on standard errors brought about by stratified weights (p. 126).”

**Design Effects**

Beyond accommodating for oversampling, a second step is necessary to account for the similarity of responses of students drawn from the same schools, which violates the assumption of independence of responses. Applying a design effect is one recommended technique to ensure the results of the analysis can be generalized beyond the present sample. Based on Hahs-Vaughn’s (2005) documentation, the normalized weight obtained was then divided by the design effect for the survey item “plan to continue education right after high school.” Design effects are generated by the NCES and provided in the User’s Manual (Ingels et al., 2004). Of the design effects provided for
the dataset, the option that represented the student's’ plans after high school was determined to be the closest fit for the present study. The design effect for that item was 1.87 (Ingels et al., 2004, p. 282). The normalized weight for the sample was then divided by the design effect to produce an adjusted weight that accounted for both the unequal opportunity for inclusion as well as homogeneity of responses based on multiple students from the same school.

**ELS Sample vs. Subsample Comparison**

A comparison of basic demographic characteristics between the overall ELS:2002 sample (Ingels, Burns, Chen, Cataldi, & Charleston, 2005) and the subsample in the present study is provided in Table 3. Ultimately, the subsample includes a higher proportion of females (55.4% in the subsample versus 50% in the overall ELS:2002 sample) and white students (72.7% compared to 60.3%) that generally had higher aspirations to earn a bachelor’s degree in tenth grade (89.2% compared to 71.6%). These demographic characteristics are controlled in the analyses, which helps to mitigate the differences between the ELS:2002 population and the sample in this study.
Table 3. Overall vs Sample Population Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ELS:2002 Overall</th>
<th>Study Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>50%</td>
<td>44.6%</td>
</tr>
<tr>
<td>Female</td>
<td>50%</td>
<td>55.4%</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>1%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>4.2%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Black</td>
<td>14.4%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>15.9%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Multiracial</td>
<td>4.3%</td>
<td>3.5%</td>
</tr>
<tr>
<td>White</td>
<td>60.3%</td>
<td>72.7%</td>
</tr>
<tr>
<td>Educational Expectations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school/GED</td>
<td>8.2%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Attend or complete 2-year college</td>
<td>6.4%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Attend 4-year (not complete)</td>
<td>3.9%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Graduate from college</td>
<td>35.8%</td>
<td>40.1%</td>
</tr>
<tr>
<td>Master’s degree/equivalent</td>
<td>19.7%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Ph.D., M.D., other advanced</td>
<td>16.1%</td>
<td>22.3%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>9.8%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Variables and Constructs

This investigation builds on Klasik’s (2012) study, “The College Application Gauntlet: A Systematic Analysis of the Steps to Four-Year College Enrollment”, which examined the individual steps high-school students must take to enroll in a four-year institution. His findings indicate that five steps were critical for enrollment in college. Those five steps included bachelor’s aspirations in tenth grade, bachelor’s aspirations in twelfth grade, completing SAT or ACT, applying to a four-year college, and enrolling in a four-year institution. Several elements of the critical steps are included in the logistic regression models in this study. The only step excluded was bachelor’s aspirations in twelfth grade, which is more in line with educational expectations as described in the literature review.
This study included two dependent variables, three independent variables, and nine control variables, presented in Table 4. Two application steps served as dependent variables in this study: completion of a college-entrance exam, also referred to as exam status (1 = took/planned to take SAT or ACT; 0 = no plan to take or hadn’t thought about it) and submission of an application to a four-year institution (1 = planned to attend 4-year and submitted at least 1 application; 0 = did not plan to attend 4-year and had not submitted any applications). The exam status variable represented the search stage of the college choice process and application status represented the choice phase.

While the primary focus of this study was to determine the influence of the independent variables—college aspirations, English self-efficacy, and math self-efficacy—on taking steps required for college enrollment, it was also important to control for additional factors known to influence students’ college enrollment. Two sets of control variables were included in the analysis. Consistent with the ecological framework, four factors were used to control for individual-level variables known to impact college enrollment. Those four factors included gender, race, socioeconomic status, and academic ability. Then, five factors were used to control for microsystem influences on college enrollment. These five factors included measures of family capital, social capital, parental encouragement, school context, and curriculum track. Each variable and its construction are described in greater detail following Table 4. Additionally, descriptive statistics for each variable including mean, range, standard deviations, or frequencies are provided for context.
Table 4. Table of Specifications for Variables in the Study

<table>
<thead>
<tr>
<th>Construct (survey item)</th>
<th>Survey question</th>
<th>Coding for nominal variables</th>
<th>Ranges for scale variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Exam status F1S21C     | Have you taken or are you planning to take any of the following tests: SAT or ACT? | 1 = had taken or planned to take  
0 = No plan to take or hadn’t thought about it |
| Application status F1S49 + F1S50 | (a) Which of the following will you most likely attend? (1 = four-year or above  
0 = less than four-year)  
(b) To how many schools have you applied? (1 = one or more application  
0 = no applications) | 1 = four-year and submitted at least 1 application  
0 = no applications |
| **Independent Variables** |                                                                                 |                              |                            |
| Aspirations BYS56     | As things stand now, how far in school do you think you will get? (10th grade questionnaire) | 0 = less than a 4-year degree  
1 = bachelor’s degree or advanced |
Table 4. Table of Specifications for Variables in the Study, Continued

| English self-efficacy BYSENGSE | Describe how often you experience the feelings in response to the following questions: (Response options: 1 = almost never, 2 = sometimes, 3 = often, and 4 = almost always) 1. I’m confident I can do an excellent job on my English tests. 2. I’m certain I can understand the most difficult material presented in English texts 3. I'm confident I can understand the most complex material presented by my English teacher. 4. I'm confident I can do an excellent job on my English assignments. 5. I'm certain I can master the skills being taught in my English class. | Scale variable representing the composite index provided by ELS:2002 Min. = -2.20 Max. = 1.60 Mean = 0.12 Median = 0.14 SD = 0.97 |
Table 4. Table of Specifications for Variables in the Study, Continued

<table>
<thead>
<tr>
<th>Math self-efficacy</th>
<th>Describe how often you experience the feelings in response to the following questions: (Response options: 1 = almost never, 2 = sometimes, 3 = often, and 4 = almost always) 1. I’m confident I can do an excellent job on my math tests. 2. I’m certain I can understand the most difficult material presented in math texts 3. I’m confident I can understand the most complex material presented by my math teacher. 4. I’m confident I can do an excellent job on my math assignments. 5. I’m certain I can master the skills being taught in my math class.</th>
<th>Scale variable representing the composite index provided by ELS:2002 Min. = -1.83 Max. = 1.77 Mean = 0.13 Median = 0.09 SD = 0.99</th>
</tr>
</thead>
<tbody>
<tr>
<td>BYSMATHSE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control Variables

<table>
<thead>
<tr>
<th>Gender</th>
<th>Gender of student (male or female)</th>
<th>1 = Female 0 = Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>BYS14 (individual)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Table of Specifications for Variables in the Study, Continued

| Race BYRACE (individual) | Race of student | 1 = American Indian or Alaska Native, not Hispanic or Latino  
2 = Asian, Hawaiian or other Pacific Islander, not Hispanic or Latino  
3 = Black, not Hispanic or Latino  
4 = Hispanic or Latino  
5 = More than one race, non-Hispanic  
6 = White, not Hispanic or Latino  
Race variables were dummy coded for logistic regression analyses, white students were the reference group. |
| Academic ability BYTXCSTD (individual) | Standardized test composite score—math/reading. The composite score is the average of the math (BYTXMSTD) and reading (BYTXRSTD) standardized scores, re-standardized to a national mean of 50.0 and standard deviation of 10.0. | A scale composite variable based on responses from the parent questionnaire was provided by the ELS:2002.  
Min. = 20.91  
Max. = 81.04  
Mean = 54.04  
Median = 54.75  
SD = 9.12 |
| Socioeconomic status BYSES1 (individual) | SES was based on five equally weighted, standardized components: father’s/guardian’s education (FATHED), mother’s/guardian’s education (MOTHED), family income (INCOME), father’s/guardian’s occupation (OCCUFATH), and mother’s/guardian’s occupation (OCCUMOTH). | A scale variable to represent the composite variable based on responses from the parent questionnaire was provided by the ELS:2002.  
Min. = -2.11  
Max. = 1.82  
Mean = 0.20  
Median = 0.22  
SD = 0.69 |
<table>
<thead>
<tr>
<th>Table 4. Table of Specifications for Variables in the Study, Continued</th>
</tr>
</thead>
</table>
| **Family capital index**<br>BY86 A, B, D (microsystem)      | What do the following people think is the most important thing for you to do right after high school? (Response options: 1 = go to college, 0 = alternative path)<br>A – Your mother  
B – Your father  
D – A close relative | A composite scale index was created to represent support for college from family members.<br>Min. = 0.00  
Max. = 3.00  
Mean = 2.28  
Median = 3.00  
SD = 1.08 |
| **Social capital index**<br>BY86 C, E, F, G (microsystem)  | What do the following people think is the most important thing for you to do right after high school? (Response options: 1 = go to college, 0 = alternative path)<br>C – Your friends  
E – School counselor  
F – Your favorite teacher  
G – Coach | A composite scale index was created to represent support for college from members of a student’s social network.<br>Min. = 0.00  
Max. = 4.00  
Mean = 2.33  
Median = 3.00  
SD = 1.48 |
| **Parental encouragement index**<br>BY86A-G (microsystem)  | In the first semester or term of this school year, how often have you discussed the following with either or both of your parents or guardians? (Response options: 1 = never, 2 = sometimes, 3 = often)<br>A – Selecting courses or programs at school  
B – School activities or events that are of particular interest to you  
C – Things you’ve studied in class  
D – Your grades  
E – Transferring to another school  
F – Plans and preparation for ACT or SAT tests  
G – Going to college | A composite scale variable was created to represent parental encouragement.<br>Min. = 6.00  
Max. = 18.00  
Mean = 13.37  
Median = 13.00  
SD = 2.92 |
Table 4. Table of Specifications for Variables in the Study, Continued

<table>
<thead>
<tr>
<th>School context index F1A20A-E (microsystem)</th>
<th>Administrator questionnaire: What percentage of 12th grade students do the following at or through your school? (Response options: 1 = none 2 = 1-10 percent, 3 = 11-24 percent, 4 = 25-49 percent, 5 = 50-74 percent, 6 = 75-100 percent) A – Attend college fairs B – Attend programs on financial aid C – Attend school SAT or ACT courses D – Attend college fairs E – Attend meetings with college representatives</th>
<th>A composite scale index was created to represent school context. Min. = 5.00 Max. = 30.00 Mean = 20.77 Median = 21.00 SD = 5.14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum BYSCHPRG (microsystem)</td>
<td>High school program reported on student questionnaire: If you had to limit yourself to one of the following three choices, which comes nearest to describing your high school program?</td>
<td>1 = College preparatory-academic 0 = General and Vocational-including technical/business</td>
</tr>
</tbody>
</table>

Dependent Variables

**Search.** This variable was measured by the question (F1S21C) “Have you taken or are you planning to take the any of the following tests: SAT/ACT?” Responses were coded as 1 = Yes (took or plan to take), 0 = No (haven’t thought about it or no plan to take it). Berkner and Chavez (1997) and Klasik (2012) also measured completion of college-entrance exams in the same manner. Most students in the sample, 90.8% (n = 2695), took or planned to take a college-entrance exam.
Choice. The operationalization of choice included two questions (F1S49 and F1S50). The first asked, “Which of the following will you most likely attend?” 1 = Four-year college or university, 0 = all other responses. Once again, because four-year institutions have a more demanding application process, students must have reported plans to attend a four-year institution to qualify as a yes. The second part of this variable asked students, “To how many schools have you applied?” 0 = none, 1 = one school or more. To qualify as yes, students must have reported that they had submitted at least one application. Similar measures have been used by the likes of Cabrera and La Nasa (2001) and Klasik (2012). Nearly two-thirds of the sample, 65.7% (n = 1949), submitted an application whereas just over a third did not, 34.3% (n = 1018).

Independent Variables

Two measures of academic self-efficacy and a measure of college aspiration comprised the independent variables in this study.

English self-efficacy and Math self-efficacy. Consistent with Peguero and Shaffer’s (2015) measure of Math and English self-efficacy (BYMATHSE, BYENGLSE), each measure was comprised of an index score based on the four-item scale in the base-year student survey (tenth grade) that asked students, “How often do these things apply to you?” (1 = almost never, 2 = sometimes, 3 = often, and 4 = almost always) in response to the following questions which they answered separately for math and English:

- I’m confident I can do an excellent job on my math/English tests.
I’m certain I can understand the most difficult material presented in math/English texts.

I’m confident I can understand the most complex material presented by my math/English teacher.

I’m confident I can do an excellent job on my math/English assignments.

I’m certain I can master the skills being taught in my math/English class.

The composite measure utilized was created with a principal-factor analysis made available in the ELS:2002/04 in the publicly accessible file. According to ELS:2002/04 description, “higher values represent greater self-efficacy.” The standardized English self-efficacy score ranged between -2.20 and 1.60 with a mean of 0.12 (SD = 0.97) and median of 0.14, meaning a greater portion of the students had higher levels of English self-efficacy. Math self-efficacy on the other hand ranged between -1.83 and 1.77 with a mean of 0.13 (SD = 0.99) and a median of 0.09. This indicated a relatively normal distribution.

Aspirations. The construct (BYS56) was measured based on the student’s response to the following question from the base-year survey, “As things stand now, how far in school do you think you will get?” Original response options included: 1 = less than high-school graduation, 2 = high-school graduation or GED only, 3 = attend or complete 2-year college/school, 4 = attend college, 5 = 4-year degree incomplete, 6 = graduate from college, 7 = obtain a master’s degree or equivalent, obtain Ph.D., MD, or other advanced degree. Based on exploratory data analysis, issues with rare events (i.e., low cell counts found in crosstab analyses) were identified when the 1 through 7 scale of
aspirations was used (Allison, 2012). Therefore, the variable was ultimately
dichotomized to signify whether students aspired to earn a bachelor’s degree (coded as 1)
or not (coded as 0). The decision to dichotomize the variable was made to ensure
parsimony in the analysis, and it also aligns with how many previous studies have treated
the aspiration variable (Cabrera & La Nasa, 2001; Frost, 2007; Wells, Lynch, & Seifert,
2011). Also, students who responded “I don’t know” to the question about their
educational aspirations were excluded from the sample as this was considered a key
independent variable in this study, again consistent with previous studies (Wells, Lynch,
& Seifert, 2011). Most tenth-grade students aspired to at least a bachelor’s degree,
89.2% (n = 2,647), compared to only 10.7% (n = 321) who did not aspire to at least a
four-year degree in tenth grade.

Individual Control Variables

The first layer of control variables, labeled individual controls, was comprised of
background characteristics including the student’s race, gender, socioeconomic status,
and academic ability, which have consistently been used as controls by a variety of
researchers (Hurtado et al., 1997; Cabrera & La Nasa, 2001; Klasik, 2012; Plank &

Gender. This was the composite sex variable (BYSEX) taken from the student
questionnaire. Females were coded as 1, males were coded as 0. The sample was 55.4%
female (n = 1,644) and 44.6% male (n = 1323).
Race. This factor was obtained from the student questionnaire (BYRACE) and categories included 1 = American Indian/Alaska Native, non-Hispanic; 2 = Asian, Hawaii/Pacific Islander, non-Hispanic; 3 = Black or African American, non-Hispanic; 4 = Hispanic, no race specified; 5 = Hispanic, race specified; 6 = more than one race; 7 = white, non-Hispanic. Consistent with other researchers (Klasik, 2012), the two separate Hispanic groups were combined into one group. The sample was predominantly white 72.7% (n = 2,158). Hispanics accounted for 10.5% of the sample (n = 309), blacks represented 8.5% (n = 250), Asian/Hawaii Pacific Islanders made up 4.3% (n = 126), and American Indian/Alaska-native students represented 0.7% of the sample (n = 19).

Academic Ability. This was measured by the students’ composite reading and math score on the standardized test (BYTXCSTD). This variable was used in lieu of GPA, which is suppressed in the public dataset from ELS:2002. Academic ability ranged between 20.91 and 81.04 with a mean of 54.04 (SD = 9.12) and a median of 54.75 indicating a slightly greater portion of students were below the mean despite a relatively normal distribution.

Socioeconomic Status. This was measured by a composite index of several variables (BYSES). While the original intent was to distinguish variables to best align with their theoretical constructs, the decision was made to use a composite measure of socioeconomic status for two important reasons: (a) to reduce collinearity and (b) to improve the reliability of the measure. The composite measure combined five survey items into a single, more parsimonious and reliable metric. The five, individual, survey
items were all taken from the parent questionnaire and included father’s education, mother’s education, family income, father/guardian’s occupation, and mother/guardian’s occupation. Initially, parent’s education was conceived as a measure of cultural capital in alignment with Coleman’s (1988) conceptualization and it would have been ideal to isolate its contribution in the analyses. Similarly, family income was considered a background characteristic and isolating its influence would have been ideal as well (Perna, 2006). However, it can be reasoned that parent’s education and family income are related since education likely determines occupation, which in turn influences income (Plank & Jordan, 2001). This overlap in the construct these variables are intended to measure can cause collinearity between the factors (Leech, Barrett, & Morgan, 2008). Thus, the socioeconomic measure was used rather than attempting to parse out the contributions of each construct individually. Additionally, the composite socioeconomic variable provides a more reliable measure because income can vary year to year (i.e., if a parent had been laid off and reported a lower household income for that year, it would be less reliable) (Cabrera & La Nasa, 2001). Students’ socioeconomic statuses ranged between -2.11 and 1.82 with a mean of 0.20 ($SD = 0.691$), a median of 0.22, and a normal distribution.

**Microsystem Control Variables**

The second layer of control variables based on the ecological framework, labeled microsystem controls, was comprised of several indices representing family capital, social capital, parental encouragement, school context, and curriculum track, which have
consistently been used as controls by a variety of researchers (Hurtado et al., 1997; Cabrera & La Nasa, 2001; Klasik, 2012; Perna, 2006; Plank & Jordan, 2001).

**Academic Curriculum.** The student’s curricular track (BYSCHPRG) was measured based on the question, “If you had to limit yourself to one of the following three choices, which comes nearest to describing your high-school program?” 1 = general, 2 = college preparatory/academic, 3 = vocational including technical/business. Due to limited numbers of students that selected vocational or general curricular tracks, these groups were combined. The final coding was 1 = college preparatory and 0 = general/vocational. A similar control was used by Park et al. (2015). In terms of high-school curriculum track, 38.8% (n = 1,152) were pursuing a general or vocational curriculum track while 61.3% (n = 1,806) were in a college-preparatory curriculum.

**Data Reduction Techniques**

Several of the microsystem control variables comprised a series of questions intended to measure a latent construct. Factor analyses were performed to reduce the number of individual variables that measured a single construct.

**Measures of Capital.** Social and cultural capital were operationalized by two distinct sets of survey items (BYS66A-G and BY86A-G) and resulted in a total of three distinct factors to represent parental encouragement and family capital and social capital.

**Parental Encouragement.** This index was determined by a factor analysis (see Table 5) from a set of responses to the following question on the base-year student survey
(BYS86A-G): “In the first semester or term of this school year, how often have you discussed the following with your parents?” (0 = never, 1 = sometimes, 2 = often)

- School courses
- School activities
- Things studied in class
- Grades
- Transferring
- ACT/SAT prep
- Going to college

Assumptions of the factor analysis were checked and met and results of the analysis with varimax rotation revealed that all the items loaded on a single factor except for “transferring.” Transferring had low correlations ($r < .16$ or less) with all the other variables. Since not all students have the option to transfer, this item was excluded from the analysis and an index variable of all other items was created. Together, the six survey items measuring parental encouragement accounted for nearly 56% of variance in the construct. The reliability of the parental encouragement factor was assessed and the Cronbach’s Alpha was a strong 0.84. Given the strength and reliability of the six survey items, an index was created simply by adding the responses together where higher numbers represented more engagement with parents on academic topics. This measure is utilized based on social-capital proxies articulated by Plank and Jordan (2001), as well as usage by Cabrera and La Nasa, 2001 and Klasik (2012). The parental encouragement
index ranged from 6 to 18 with a mean of 13.37 ($SD = 2.9$) and a median of 13.00, which suggested above average discussion with parents about academic topics.

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Parental Encouragement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussed school courses</td>
<td>0.79</td>
</tr>
<tr>
<td>Discussed school activities</td>
<td>0.77</td>
</tr>
<tr>
<td>Discussed class studies</td>
<td>0.77</td>
</tr>
<tr>
<td>Discussed grades</td>
<td>0.73</td>
</tr>
<tr>
<td>Discussed SAT/ACT</td>
<td>0.66</td>
</tr>
<tr>
<td>Discussed going to college</td>
<td>0.74</td>
</tr>
</tbody>
</table>

| Eigenvalues | 3.34 |
| % of variance | 55.59 |

**Social Capital.** A second measure of social capital in the microsystem, or direct surroundings of the student, was measured by a set of questions that asked students “What do the following people think is the most important thing for you to do right after high school?” The list of individuals included: mother, father, friend, close relative, school counselor, favorite teacher, and coach. Response options included: 1 = go to college, 2 = get a full-time job, 3 = enter trade school or apprenticeship, 4 = enter military service, 5 = get married, 6 = they think I should do what I want. This variable was first dichotomized to reflect support for college or support for an alternative path. Next, a categorical principal-component analysis was performed to assess the number of components represented by the seven survey items (see results in Table 6). Results revealed that familial connections, including mother, father, and close relative, loaded on the same component and accounted for 35% of the variance in college support. The second factor, comprised of friend, school counselor, favorite teacher, and coach,
explained nearly 31% of variance in college support. These two groups were labeled *family capital* and *social capital* and reliability assessments were run on each variable. Cronbach’s Alpha was 0.80 for family capital and 0.77 for social capital, both indicating a high degree of reliability, and each was added to create an index in which higher numbers signified greater support for college. Similar operationalization of social capital was used by Klasik (2012) and Park et al. (2015). The family-capital index ranged from 0 to 3 with a mean of 2.28 ($SD = 1.08$) and a median of 3.00, which demonstrated greater than average levels of support for college over alternative work or military paths after high school. The social-capital index ranged from 0 to 4 with a mean of 2.33 ($SD = 1.48$) and a median of 3.00, which was above average support for college, but not as exaggerated as family support for college.

Table 6. Factor Loadings for Social Capital Measures

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Family Capital</th>
<th>Social Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s desire</td>
<td><strong>0.87</strong></td>
<td>0.21</td>
</tr>
<tr>
<td>Father’s desire</td>
<td><strong>0.88</strong></td>
<td>0.16</td>
</tr>
<tr>
<td>Close relative’s desire</td>
<td><strong>0.65</strong></td>
<td>0.45</td>
</tr>
<tr>
<td>Friend’s desire</td>
<td>0.34</td>
<td><strong>0.58</strong></td>
</tr>
<tr>
<td>School counselor’s desire</td>
<td>0.21</td>
<td><strong>0.78</strong></td>
</tr>
<tr>
<td>Favorite teacher’s desire</td>
<td>0.25</td>
<td><strong>0.80</strong></td>
</tr>
<tr>
<td>Coach’s desire</td>
<td>0.11</td>
<td><strong>0.75</strong></td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>2.42</td>
<td>2.15</td>
</tr>
<tr>
<td>% of variance</td>
<td>34.54</td>
<td>31.21</td>
</tr>
</tbody>
</table>

School Context. Like Klasik’s study (2012), school context was operationalized with a series of questions from the administrator survey (F1A20A – E) that asked, “What percentage of twelfth-grade students do the following at or through your school?” (a)
attend college-application programs, (b) attend programs on financial aid, (c) attend school SAT or ACT courses, (d) attend college fairs, (e) attend meetings with college representatives. Response options included: 1 = none; 2 = 1-10 percent; 3 = 11-24 percent; 4 = 25-49 percent; 5 = 50-74 percent 6 = 75-100 percent. A varimax factor analysis was performed once assumptions were checked and met to assess the underlying constructs measured by the five survey items (see results Table 7). All five items loaded on a single factor which accounted for nearly 56% of variance in participation in high-school-based resources. The reliability of the school-support factor was assessed and the Cronbach’s Alpha was a strong 0.79. An index was created by adding the responses together where higher numbers represented higher levels of participation in high-school-based resources that support college attendance. The school-context index ranged between 5 and 30 with a mean of 20.77 ($SD = 5.14$) and a median of 21.00. Again, this suggested above-average participation in college-going activities in most schools.

Table 7. Factor Loadings for Participation in High-School-Based Support

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Parental Encouragement</th>
</tr>
</thead>
<tbody>
<tr>
<td>% attend college-application programs</td>
<td>0.81</td>
</tr>
<tr>
<td>% attend program on financial aid</td>
<td>0.84</td>
</tr>
<tr>
<td>% attend school SAT or ACT courses</td>
<td>0.57</td>
</tr>
<tr>
<td>% attend college fairs</td>
<td>0.72</td>
</tr>
<tr>
<td>% attend meetings with college reps</td>
<td>0.74</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>2.76</td>
</tr>
<tr>
<td>% of variance</td>
<td>55.24</td>
</tr>
</tbody>
</table>
The scales for math self-efficacy and English self-efficacy were borrowed from the Programme for International Student Assessment (PISA). As such, the Organisation for Economic Cooperation and Development (OECD), released a report about the development of PISA measures (Marsh et al., 2009). The OECD report tested “many of educational psychology’s most useful constructs” in 25 countries to verify their cross-cultural reliability. The researchers established a “target reliability of at least 0.70” and all of the measures surpassed this metric. The mean reliability score for the self-efficacy measure was 0.77 and the Cronbach’s Alpha score for the United States specifically was 0.83.

While the reliability of the PISA measure of self-efficacy was high, it is important to note that, according to the U.S. Department of Education (2003), the measure of self-efficacy that was included in the ELS:2002 dataset was a “slightly modified” version of the original. In line with Bandura’s (1997) recommendation to develop domain-specific variables, a more general PISA self-efficacy measure was replaced with specific math self-efficacy and English self-efficacy. Reliability test scores of ELS:2002 exceeded those of the PISA measures with a Cronbach’s alpha of 0.93 for both English self-efficacy and math self-efficacy, which was explained by the fact that it was a homogenous country group.
**File Preparation**

The variables of interest were selected in the Education Data Analysis Tool (EDAT) on the National Center for Educational Statistics (NCES) website, which enables download of NCES datasets. Cases that were not represented in both the 2002 and 2004 rounds of surveys were eliminated. Next, the dataset was sorted and filtered to eliminate cases with missing data.

**Data Analysis**

In preparation for analysis using logistic regression, the file was imported into SPSS version 24. The variables were coded and labeled nominal, ordinal, and scale as appropriate and preliminary analyses were run, including frequencies for nominal variables, descriptive reports for ordinal and scale variables, and a Spearman correlation matrix, with all the variables to test for collinearity and check the assumption of normal distribution by evaluating skewness and Kurtosis (Leech, Barrett, & Morgan, 2008). Depending on results, variables were modified as described in the previous section.

The data file was prepared for two sets of logistic regression analyses that used a hierarchical modeling strategy to answer the two primary research questions under study. The first research question asked, “Is completion of a college-entrance exam associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?” Students had to report they either had taken or planned to take the SAT/ACT to count as 1; those who did not plan to take the
test or had not thought about it were coded 0. The individual-level control variables included gender, race, socioeconomic status, and academic ability. The microsystem control variables included indices of family capital, social capital, parental encouragement, and school context as well as curriculum track (as previously described).

Set 1

- Model a: Exam status = bachelor’s aspirations
- Model b: Exam status = bachelor’s aspirations + individual controls
- Model c: Exam status = bachelor’s aspirations + individual + microsystem controls

Set 2

- Model a: Exam status = English self-efficacy
- Model b: Exam status = English self-efficacy + individual controls
- Model c: Exam status = English self-efficacy + individual controls + microsystem controls

Set 3

- Model a: Exam status = math self-efficacy
- Model b: Exam status = math self-efficacy + individual controls
- Model c: Exam status = math self-efficacy + individual controls + microsystem controls

Set 4

- Model a: Exam status = bachelor’s aspirations + English self-efficacy + math self-efficacy
• Model b: Exam status = bachelor’s aspirations + English self-efficacy + math self-efficacy + individual controls

• Model c: Exam status = bachelor’s aspirations + English self-efficacy + math self-efficacy + individual controls + microsystem controls

The second research questions asked, “Is submission of an application to a four-year institution associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?” The second set of analyses explored the variables and application status, or whether or not the student had submitted a college application, as the dependent variable.

Set 1

• Model a: Application status = bachelor’s aspirations

• Model b: Application status = bachelor’s aspirations + individual controls

• Model c: Application status = bachelor’s aspirations + individual + microsystem controls

Set 2

• Model a: Application status = English self-efficacy

• Model b: Application status = English self-efficacy + individual controls

• Model c: Application status = English self-efficacy + individual controls + microsystem controls

Set 3

• Model a: Application status = math self-efficacy
Model b: Application status = math self-efficacy + individual controls

Model c: Application status = math self-efficacy + individual controls + microsystem controls

Set 4

Model a: Application status = bachelor’s aspirations + English self-efficacy + math self-efficacy

Model b: Application status = bachelor’s aspirations + English self-efficacy + math self-efficacy + individual controls

Model c: Application status = bachelor’s aspirations + English self-efficacy + math self-efficacy + individual controls + microsystem controls

Logistic Regression Assumptions

Peng, So, Stage, and St. John (2002) identified several advantages of logistic regression, especially its ability to include scale and categorical variable, and the fact that it does not require equal variance or normality. The assumptions of logistic regression are relatively few and are described to demonstrate that each was evaluated and met in this investigation. First, dependent variables must be dichotomous with mutually exclusive outcomes (Cabrera, 1994; Leech et al., 2008; Wright, 1995). Both of the dependent variables, test status and application status, meet this assumption and indicate whether or not a student completed that application step. Second, a large sample is required (Leech et al., 2008). Guidelines for sample size range from 10 observations per predictor to a 40-to-1 ratio of observations to predictors (Peng et al., 2002). The present dataset exceeds
both sets of guidelines (n = 2,967). Third, the outcomes must be independent (Wright, 1995). This is difficult with the complex sample design of national datasets, but, as described above, a design effect has been applied to the data to account for the clustering of responses in schools. Fourth, the model must include all relevant predictors to meet the specificity assumption. Through a thorough review of the literature, this study attempts to meet this assumption by incorporating theoretically and empirically necessary factors. Finally, the researcher must check for collinearity (Leech et al., 2008). Several steps were taken to check this assumption. First, variables were carefully selected to improve parsimony with the model. Examples included using the composite measure of socioeconomic status and collapsing the aspiration variable into a binary indicator as described previously. Second, a Spearman correlation matrix was run with the independent variables to identify issues with highly correlated factors (greater than 0.6) and no issues were identified (see Table 8). Based on Cohen’s guidelines for interpretation of strength of relationship where less than |0.50| is either smaller than typical or typical, most of the associations were medium or small (Leech, Barrett, & Morgan, 2008). Overall, the correlations ranged between $r = 0.002$ and $r = 0.40$ indicating medium to small relationships, with one exception. The highest correlation, $r = 0.56$, occurred between two variables—family capital and social capital—that were derived via factor analysis from the same question (see description above). The next highest correlation, $r = 0.40$, was between academic ability and socioeconomic status, and the third highest correlation, $r = 0.34$, was between math and English self-efficacy.
Table 8. Correlation Matrix of Scale Independent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>English self-eff.</th>
<th>Math self-eff.</th>
<th>Socioecon.</th>
<th>Acad. ability</th>
<th>Family capital</th>
<th>Social capital</th>
<th>Parent encour.</th>
<th>School support</th>
</tr>
</thead>
<tbody>
<tr>
<td>English self-efficacy</td>
<td>1.00</td>
<td>0.34**</td>
<td>0.15**</td>
<td>0.29**</td>
<td>0.07**</td>
<td>0.10**</td>
<td>0.31**</td>
<td>0.01</td>
</tr>
<tr>
<td>Math self-efficacy</td>
<td>0.34**</td>
<td>1.00</td>
<td>0.16**</td>
<td>0.32**</td>
<td>0.05*</td>
<td>0.09**</td>
<td>0.17**</td>
<td>-0.13</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.15**</td>
<td>0.16**</td>
<td>1.00</td>
<td>0.40**</td>
<td>0.15**</td>
<td>0.13**</td>
<td>0.21**</td>
<td>0.08**</td>
</tr>
<tr>
<td>Academic ability</td>
<td>0.29**</td>
<td>0.32**</td>
<td>0.40**</td>
<td>1.00</td>
<td>0.08**</td>
<td>0.03</td>
<td>0.16**</td>
<td>0.04*</td>
</tr>
<tr>
<td>Family capital</td>
<td>0.07**</td>
<td>0.05*</td>
<td>0.15**</td>
<td>0.08**</td>
<td>1.00</td>
<td>0.56**</td>
<td>0.21**</td>
<td>0.03</td>
</tr>
<tr>
<td>Social capital</td>
<td>0.10**</td>
<td>0.09**</td>
<td>0.13**</td>
<td>0.03</td>
<td>0.56**</td>
<td>1.00</td>
<td>0.26**</td>
<td>0.04*</td>
</tr>
<tr>
<td>Parental encourage.</td>
<td>0.31**</td>
<td>0.17**</td>
<td>0.21**</td>
<td>0.16**</td>
<td>0.21**</td>
<td>0.26**</td>
<td>1.00</td>
<td>-0.00</td>
</tr>
<tr>
<td>School support</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.08**</td>
<td>0.04**</td>
<td>0.03</td>
<td>0.04*</td>
<td>-0.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Last, although SPSS does not provide collinearity diagnostics for categorical dependent variables, the IBM support documentation (Multicollinearity Diagnostics, 2017) offers a workaround to obtain variable inflation factors (VIF) and collinearity diagnostics. Instead of the dichotomous dependent variables, English and math self-efficacy were used as substitution dependent variables and the analysis was run several times. The results of the diagnostics did not indicate issues. The variance inflation factors ranged from 1.1 to 1.6, well below the guideline of 2.5 that signifies potential collinearity issues (Allison, 2012).

Diagnostic Measures for Logistic Regression Models

Diagnostic measures and ancillary analyses were used to ensure the appropriateness of the logistic regression models. These included: chi-square ($\chi^2$), Delta-$\rho$, McFadden $R^2$, adjusted McFadden $R^2$, and the classification table. As recommended
by Peng et al. (2002), each measure used to assess the logistic regression models is briefly described to clarify the purpose and term.

First, the $\chi^2$ was evaluated to ensure that the independent variables in the model correlate as a group with the dependent variable. The $\chi^2$ indicates whether the combination of predictor variables together are significant (Leech et al., 2008).

Second, the McFadden $R^2$ was calculated to measure goodness-of-fit. Goodness-of-fit statistics determine how well the data fit with the logistic model (Peng & So, 2002). The McFadden $R^2$ is preferable to other measures such as Cox & Snell or Nagelkerke pseudo $R^2$ because it is akin to the $R^2$ in linear regression and is, therefore, more easily interpretable (Allison, 2012; Peng & So, 2002). Specifically, the McFadden $R^2$ is more understandable for two main reasons. First, it is like-variance explained and, the more variance explained, the better the model. Second, the McFadden $R^2$ compares the model fit (with predictors) to the null model (no predictors) and estimates the improvement in the form of a ratio. Therefore, a smaller ratio yields a larger $R^2$ signifying improvement in the model. However, Peng et al. (2002) make clear that it is inappropriate to interpret $R^2$ measures in logistic regression as percent of variance explained by predictors; rather it compares models with predictors to the null model (“FAQ: What are pseudo R-squareds”) to help assess model fit. Guidelines from McFadden (1974) suggest that an $R^2$ of 0.2 to 0.4 indicates “excellent” fit. In addition to the McFadden $R^2$, the adjusted McFadden $R^2$ was also calculated and reported. The adjusted $R^2$ measure helps to ensure that an increase in the value of the measure is not simply due to the additional independent variables, but rather an actual improvement in model fit. The adjusted $R^2$
values account for the number of predictors in the model and reflect a reduction when too many independent variables are included that are not associated to the dependent variable ("FAQ: What are pseudo R-squareds").

Third, the Delta-p was used to assess the contributions of individual predictors (Peng et al., 2002). Specifically, the Delta-p represents the change in predicted probability of each unit increase in the independent variable, while holding all other predictor variables constant at their mean values (Cruce, 2009). As per Cruce’s (2009) revised calculation, it should be noted that Delta-p for continuous variables should be interpreted as “the change in the estimated probability of the outcome given a one-unit change in the independent variable from its mean value” (p. 609). In contrast, the interpretation for categorical independent variables of interest should be “the difference in estimated probability of the outcome between the target group and reference group” (p. 609). In line with Cabrera’s (1994) recommendation, Delta-p was only calculated for variables that were significant since an estimation of statistical significance is not available for this test.

In addition to Delta-p, two final analyses were used to assess the variables and models. A t test was used to evaluate the significance of change in the B coefficients between the models as the blocks of individual and microsystem control variables were added. This was done to determine if the influence of the independent variable on the outcome variable changed substantively while controlling for factors that could also influence the dependent variable. Finally, to validate how well the predicted probabilities
of the logistic regression align with actual outcomes, the classification table was used (Peng & So, 2002).

**Study Reliability and Validity**

Validity is a way to judge the quality of a study and is assessed in three ways: internal, external, and measurement (Gliner, Morgan and Leech, 2009). In associational approaches, such as the one performed, there is only a single group (meaning there is inherent bias) and no comparisons are made; therefore, none of the results should be interpreted as evidence of causation no matter the strength of the statistical association (Gliner et al., 2009). The second component of internal validity, which relates to “control of extraneous variables,” is applicable to associational approaches (p. 104). The individual and microsystem control variables included in this study help to increase the internal validity by accounting for alternative explanations of the outcome variables. In the case of a longitudinal national dataset, the internal validity may be rated moderately since the cohort is likely a reflection of historical events, such as the recession that followed 9/11, and ELS:2002 may also be rated medium on testing since receipt of the surveys may have influenced the students to more carefully consider postsecondary options. Although this study cannot presume any causality, another concept that should be mentioned is that of time order. Time order simply states that, for one event to impact another, it must precede that event chronologically (Gliner et al., 2009). This comes into play when considering constructs like predispositions, which come before other aspects of the college choice process.
External validity relates to generalizability (Gliner et al., 2009) and there are two primary evaluation criteria measures: population and ecological. Population external validity assesses the “representativeness” of a sample. Given the cluster random sample of ELS:2002 and the subsample of students, the population validity may be rated medium. Ecological external validity considers the conditions in which the study was conducted to determine how well it could be generalized to “real life” (p. 129). The ELS:2002/04 data set could be rated high on naturalness of settings/conditions since students were in their normal environment rather than a lab. Naturalness of procedures may only receive a medium rating since the ELS:2002 survey was unfamiliar; however, most high-school students are accustomed to filling out surveys and test forms. Since the goal was to follow the transition from high school to college, ELS:2002 would also be high on appropriateness of length. Finally, in terms of how results based on ELS:2002 are restricted to that point in time, it may be considered medium because more online tools have become more accessible (particularly through mobile technology) to a wider portion of the population since these surveys were conducted.

This quantitative study used secondary data, and the responses provided by students were taken at face value. In the case of instrument development, ideally the questions would be evaluated for measurement reliability or “consistency” and measurement validity or “accuracy” (Gliner et al., 2009). However, since this study did not include instrument development, other measures were used (i.e., factor analysis) to assess and improve aspects of the design.
Chapter Summary

This chapter provided an overview of the methodology used in this study. The methodology was appropriate for the examination of binary outcomes, and descriptions of the research design, sample, variables, and data collection were provided. An overview of the hierarchical models, as well as diagnostic analyses used to assess the models, were also provided. The subsequent chapter presents the results of the analysis.
CHAPTER FOUR

RESULTS

To answer the proposed research questions, the two sets of logistic regression analyses were conducted using a hierarchical modeling strategy. In both research questions, the dependent variables were binary and represented completion of an application step or non-completion of the step. The first research question asked, “Is completion of a college-entrance exam associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?” The first set of analyses explored the variables on exam status, meaning whether or not the student took or planned to take an SAT or ACT, as the dependent variable. The second research question asked, “Is submission of an application to a four-year institution associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?” The second set of analyses explored the variables and application status, or whether or not the student had submitted a college application, as the dependent variable.

Analytic Approach and Analysis Results

When the outcome of interest is a dichotomous variable and multiple predictors including a mix of nominal and continuous variables, logistic regression is the best
method of analysis. Descriptive statistics were run on the sample population and results were covered in the Variables and Constructs section of Chapter Three. A brief overview is provided to reinforce the underlying scales of the variables, which are important for the interpretation of the results, especially as they relate to the delta-p statistic. The sample was comprised of 2,967 cases which had complete data on the variables under study and weights were applied in all analyses.

The dependent variables in this study had some characteristics worth discussion. Within the sample of ELS:2002/04, most students, 90.8% (n = 2,695), took or planned to take a college-entrance exam. Peng et al. (2002) indicate that, when data is “ill-conditioned,” or most cases fall in one category as in this case, a larger sample size is needed. Given the nature of a national dataset, even with the reduction of the overall size, the sample still exceeds the most extreme observations to predictor ratio recommended (Peng et al., 2002). Although not as extreme, the application-status dependent variable also included more cases that submitted an application status than those that did not. Approximately two-thirds of ELS:2002/04 students, 65.7% (n = 1,949), applied.

The independent variables exhibited the following characteristics. Most students in the sample, 89.2% (n = 2,647), aspired to a bachelor’s degree. More students in the sample reported higher levels of English self-efficacy given that the minimum was -2.20, the maximum was 1.60, and the mean was 0.12 (SD = 0.97). For the math self-efficacy measure where the minimum was -1.83 and the maximum was 1.77 with a mean of 0.13 (SD = 0.99), the distribution was fairly normal.
A descriptive profile of the control variables revealed the sample was 55.4% female (n = 1,644) and predominantly white, 72.7% (n = 2,158). Just less than two-thirds of students, 61.3%, were in an academic-curriculum track compared to 38.8% in a general or vocational curriculum. The socioeconomic status measure followed a normal distribution with a minimum of -2.11, a maximum of 1.82, and a mean of 0.20 (SD = 0.69, median = 0.22). Although academic ability was close to normally distributed, slightly more students were below the mean of 54.04 (SD = 9.12, median = 54.75) (minimum 20.91, maximum 81.04). Most students’ mothers, fathers, and close relatives thought the student should go to college over alternative options after high school. The family capital index range was 0 to 3 and the mean was 2.28 (SD = 1.08, median = 3). The social capital index, captured whether or not the students’ friend, favorite teacher, school counselor, and coach thought they should go to college after high school, ranged from 0 to 4, with a mean of 2.33 (SD = 1.48) and a median of 3.00. This also demonstrated above-average support for college among the students’ social networks. The parental-encouragement index reflected the frequency and variety of academic topics students discussed with the parents. The index ranged from 6 to 18 with a mean of 13.37 (SD = 2.9) and a median of 13.00, again revealing above-average discussion with parents about academic topics. The school context index was reported by the school administrator and represented the percentage of student participation in college-preparatory activities such as application programs, financial-aid programs, and college fair attendance. The index ranged between 5 and 30 with a mean of 20.77 (SD = 5.14) and a median of 21.00. Again, this provided evidence of above-average participation in
college-going activities in most schools. Table 9 provides a summary of the variables employed in the logistic regression models.

Table 9. Descriptive Statistics of Variables in the Logistic Regression Models

<table>
<thead>
<tr>
<th>Variable</th>
<th>Count</th>
<th>Cell%</th>
<th>Mean</th>
<th>Median</th>
<th>S.D.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam Status</td>
<td>2967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not taken</td>
<td>272</td>
<td>9.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Took or plan to take</td>
<td>2965</td>
<td>90.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application status</td>
<td>2967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not apply</td>
<td>1018</td>
<td>34.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied (4-year)</td>
<td>1949</td>
<td>65.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Independent Variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspirations</td>
<td>2967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than BA</td>
<td>321</td>
<td>10.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA or higher</td>
<td>2647</td>
<td>89.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English self-efficacy</td>
<td>2967</td>
<td>-----</td>
<td>0.12</td>
<td>0.14</td>
<td>0.97</td>
<td>-2.20</td>
<td>1.60</td>
</tr>
<tr>
<td>Math self-efficacy</td>
<td>2967</td>
<td>-----</td>
<td>0.13</td>
<td>0.09</td>
<td>0.99</td>
<td>-1.83</td>
<td>1.77</td>
</tr>
<tr>
<td><strong>Individual Control Variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>2967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1323</td>
<td>44.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1644</td>
<td>55.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>19</td>
<td>0.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Hawaii Pac Islander</td>
<td>126</td>
<td>4.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>250</td>
<td>8.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>309</td>
<td>10.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than one race</td>
<td>105</td>
<td>3.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2158</td>
<td>72.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td>2967</td>
<td>-----</td>
<td>0.20</td>
<td>0.22</td>
<td>0.69</td>
<td>-2.11</td>
<td>1.82</td>
</tr>
<tr>
<td>Academic ability</td>
<td>2967</td>
<td>-----</td>
<td>54.04</td>
<td>54.75</td>
<td>9.12</td>
<td>20.91</td>
<td>81.04</td>
</tr>
<tr>
<td><strong>Microsystem Control Variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family capital index</td>
<td>2967</td>
<td>-----</td>
<td>2.28</td>
<td>3.00</td>
<td>1.08</td>
<td>0.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Social capital index</td>
<td>2967</td>
<td>-----</td>
<td>2.33</td>
<td>3.00</td>
<td>1.48</td>
<td>0.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Parental encouragement index</td>
<td>2967</td>
<td>-----</td>
<td>13.37</td>
<td>13.00</td>
<td>2.92</td>
<td>6.00</td>
<td>18.00</td>
</tr>
<tr>
<td>School context index</td>
<td>2967</td>
<td>-----</td>
<td>20.77</td>
<td>21.00</td>
<td>5.14</td>
<td>5.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Curriculum track</td>
<td>2967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 9. Descriptive Statistics of Variables in the Logistic Regression Models, Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Count</th>
<th>Cell%</th>
<th>Mean</th>
<th>Median</th>
<th>S.D.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational/general</td>
<td>1152</td>
<td>38.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College preparatory</td>
<td>1816</td>
<td>61.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Model Building**

A hierarchical model-building strategy guided by the conceptual framework of this dissertation was used. For each analysis, the key independent variable of interest (aspirations, English self-efficacy, or math self-efficacy) was entered individually. Entering the independent variables of interest before any controls provides an estimate of the relationship with the dependent variable (Frost, 2007; Lewis, 2007). Additionally, this model-building strategy enables assessment of how the addition of relevant control variables changes the relationship between the independent variable and the dependent variable. After the independent variable was entered alone, the second block of variables added to the model included a set of four, individual-level control variables including gender, race, socioeconomic status, and academic ability. The set of individual-level control variables was added to test the influence of bachelor’s aspirations in combination with the demographic factors inherent to individuals on the dependent variable. The third set of variables entered were controls for microsystem variables or proximal experiences. These included indices of parental encouragement, family support for college, influential other support for college, school context, and a variable representing the students’ curriculum track.
The first set of analyses explored the first research question: “Is completion of a college-entrance exam associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?” The analyses also included the individual and microsystem control variables to determine the unique influence of the key independent variables. To qualify as having taken the test, students had to report (a) they had taken it or (b) they had plans to take it (coded 1). Students who (a) did not plan to take it or (b) hadn’t thought about it were coded as 0.

Set 1: Exam Status and Aspirations

The first set of analyses explored the influence of students’ bachelor’s aspirations on exam status (i.e., whether or not they took an SAT or ACT). Table 10 displays the B coefficient and standard errors for the predictor variable and controls across all three models as well as the Delta-p for significant predictors in the full model. The final model with bachelor’s aspirations, individual controls, and microsystem controls was significant ($\chi^2 = 422.20, df = 14, N = 2,967, p < 0.001$). The McFadden $R^2$ was 0.23 indicating a good fit for the final model and the adjusted McFadden $R^2$ closely mirrored the McFadden $R^2$, indicating that the variables in the model were related to the dependent variable and the number of variables included did not weaken the model fit. The correct classifications improved from 90.8% in the first model to 91.5% in the full model. The
independent variable and many of the controls were significant. Each is discussed below in the order they were entered in the model.

Set 1, Block 1: Aspirations

Aspirations. The results of the analyses revealed that bachelor’s aspirations were significant across the logistic regression models. Accounting for all other variables in the analysis, students who had bachelor’s aspirations in tenth grade had an increased probability of completing a college-entrance exam by 9.46% compared to students with lower levels of educational aspirations. As shown in Table 10, the B coefficient for bachelor’s aspirations were reduced across the models as meaningful control variables were added to the analysis. The t tests revealed a significant reduction in the bachelor’s aspiration B coefficient between models 1 and 2, \( t (1) = -39.38; p < 0.01 \), as the individual-level controls (gender, race, academic ability, and socioeconomic status) were added. The contribution of the aspiration coefficient was further reduced in the third model with the addition of the microsystem controls (family capital, social capital, parental encouragement, school context, and curriculum), \( t (1) = -13.58; p < 0.05 \). The control variables reduced the explanatory power of bachelor’s aspirations on exam completion, which accounted for the reduction in the bachelor’s aspiration B coefficient across the models (significant controls are addressed below). Overall, the measure of bachelor’s aspirations made a significant individual contribution in the full model, reinforcing its importance as a factor in college-entrance-exam completion.
Set 1, Block 2: Individual Controls

In addition to aspirations, which remained in the model throughout the analyses, all four individual controls—gender, race, academic ability, and socioeconomic status—were significant and helped to explain whether or not a student completed a college-entrance exam. The individual controls increased the McFadden $R^2$ value to 0.20 (from 0.11) signifying a good model fit. They also increased the correct classification to 91.2% (from 90.8%). All individual controls maintained significance with the addition of microsystem controls in the third model; however, the coefficients for the independent variable and significant control factors were reduced. The contributions and changes in the individual controls are discussed.

**Gender.** Female students had a 2.54% increase in probability of completing a college-entrance exam compared to male students, controlling for all other predictors. The gender B coefficient was reduced by a significant amount ($t(1) = -8.90; p < 0.05$), when microsystem controls (family capital, social capital, parental encouragement, school context, and curriculum) were added suggesting that students’ proximal environments help to explain some of the relationship between gender and exam completion.

**Race.** White students were the reference group in this set of variables and no differences were found between white students and American Indian/Alaska Native, Asian/Hawaii Pacific Islander, or multiracial students in terms of the likelihood of completing a college-entrance exam when all other predictors in the model were
controlled. Black and Hispanic students differed significantly from the reference group throughout the second and third models. In the final model, black students had an increased probability of completing a college-entrance exam by 4.73% compared to white students while controlling for all individual and microsystem variables in the model (blocks 2 and 3). Hispanic students also had an increased the probability of exam completion of 3.61% compared to whites with all other variables controlled in the model. The B coefficients for black and Hispanic students were reduced when microsystem controls were added; however, neither reduction was significant at the 0.05 level indicating that the microsystem controls did not explain aspects of exam completion that were unique to black and Hispanic students.

**Academic Ability.** A one-unit increase in a student’s academic ability, as measured by the student’s composite score on the ELS:2002 standardized test, increased the probability of college-entrance-exam completion by 0.72%. The B coefficient measuring academic ability was not reduced between models 2 and 3, showing that the microsystem controls did not reduce the explanatory power of academic ability.

**Socioeconomic Status.** Socioeconomic status was also significant throughout models 2 and 3. A one-unit increase resulted in a 2.84% increase in the probability of completing a college-entrance exam. The socioeconomic measure was a composite of variables of parents’ education, parents’ occupation, and family income. The socioeconomic B coefficient was not reduced significantly when microsystem controls were added. This indicated that controlling for social and environmental factors in the
student’s home and school did not impact the influence of socioeconomic status on students’ probability of taking a college-entrance exam.

**Set 1, Block 3: Microsystem Controls**

In the last block of variables entered, all variables were carried forward and the significant variables from prior blocks, including aspirations, female, black, Hispanic, academic ability, and socioeconomic status, maintained significance. Additionally, three of the microsystem controls, school support, social capital, and curriculum track, also added significantly to the model predicting exam status. The additional controls entered in block 3 increased the McFadden $R^2$ to 0.23 (from 0.20) suggesting an improvement on an already well-fitted model from block 2. This microsystem block of controls also improved the classification to 91.5% (from 91.2%).

**Social Capital.** A one-unit increase in support for college from the student’s social network resulted in a 1.10% increase in probability of taking a college-entrance exam. Once again, this variable included support for college from a student’s friend, favorite teacher, school counselor, and coach, and it was a significant influence on exam completion.

**School Support.** Administrators indicated what portion of students participated in college-preparatory activities, such as attending college fairs, and an index of the responses was calculated. A one-unit increase in school support for college preparation increased the probability of completing a college-entrance exam by 0.33%.
Curriculum. Compared to students in a vocational or general curriculum, students in a college-preparatory or academic curriculum had a 5.04% higher probability of college-entrance-exam completion. Curriculum was a significant finding and was an important contributor in explaining exam completion.

Summary. In the analyses with bachelor’s aspiration, nine of the factors in the full model were significant. It is important to restate that the Delta-p should be interpreted with care. Nominal variables are correctly interpreted as “the difference in estimated probability” compared with the reference group; continuous variables are correctly interpreted as an “estimated probability of the outcome given a one-unit change” in the predictor under study (Cruce, 2009, p. 609). Influential factors are therefore presented in the order in which they were entered into the model. It is also necessary to reinforce that the following results control for all other factors in the model. Bachelor’s aspirations were associated with a 9.46% increased probability of completing a college-entrance exam compared to students with less than bachelor’s aspirations. Female students had a 2.54% increased probability of exam completion compared to male students. Black students and Hispanic students had a 4.73% and 3.61% increased probability of taking an SAT or ACT compared to white students. A one-unit increase in academic ability increased the probability of exam completion by 0.72%. A one-unit increase in socioeconomic status increased the likelihood of exam completion by 2.84%. One additional vote of support for college from the students’ social network increased the probability of exam completion by 1.10%. A one-unit increase in participation in college-preparatory activities at school increased the chances of taking a college-entrance test by
0.33%. Enrollment in an academic curriculum increased the probability of exam completion by 5.04% compared to general or vocational curriculum tracks.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Delta-P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>B (SE)</td>
<td>T-Value</td>
<td></td>
</tr>
<tr>
<td><strong>Aspirations (Less than BA = reference)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA or higher</td>
<td>2.12 (0.14)***</td>
<td>1.23 (0.16)***</td>
<td>-39.38**</td>
<td>-13.58*</td>
</tr>
<tr>
<td><strong>Gender (Male = reference)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.45 (0.14)**</td>
<td>0.30 (0.15)*</td>
<td>-8.90*</td>
<td></td>
</tr>
<tr>
<td><strong>Race (White = reference)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>-0.69 (0.58)</td>
<td>-0.56 (0.60)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.37 (0.40)</td>
<td>0.38 (0.41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.91 (0.26)***</td>
<td>0.68 (0.27)**</td>
<td>-3.27</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.56 (0.22)**</td>
<td>0.48 (0.22)*</td>
<td>-1.65</td>
<td></td>
</tr>
<tr>
<td>More than one race</td>
<td>-0.13 (0.34)</td>
<td>-0.17 (0.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Academic Ability</strong></td>
<td>0.09 (0.01)***</td>
<td>0.09 (0.01)***</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Socioeconomic Status</strong></td>
<td>0.52 (0.12)***</td>
<td>0.40 (0.12)**</td>
<td>-2.78</td>
<td></td>
</tr>
<tr>
<td><strong>Family Capital Index</strong></td>
<td>0.12 (0.07)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social Capital Index</strong></td>
<td>0.14 (0.06)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Parental Encouragement Index</strong></td>
<td>0.04 (0.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>School Context Index</strong></td>
<td>0.04 (0.01)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Curriculum Track (Voc/General = ref.)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>0.63 (0.12)***</td>
<td>-3.76 (0.45)***</td>
<td>-5.47 (0.60)***</td>
<td></td>
</tr>
<tr>
<td>(\chi^2, df)</td>
<td>193.99, 1***</td>
<td>367.52, 9***</td>
<td>422.20, 14***</td>
<td></td>
</tr>
<tr>
<td>McFadden R(^2)</td>
<td>0.11</td>
<td>0.20</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Adjusted McFadden R(^2)</td>
<td>0.11</td>
<td>0.20</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>90.8%</td>
<td>91.2%</td>
<td>91.5%</td>
<td></td>
</tr>
</tbody>
</table>

\(\*p < 0.05, \**p < 0.01, \***p < 0.001\)
Set 2: Exam Status and English Self-efficacy

The second set of analyses examined the influence of English self-efficacy on exam status. The B coefficients, standard errors, and results of ancillary analyses for the predictor variable as controls were added in blocks 2 and 3 and are presented in Table 11. The final model with English self-efficacy was significant ($\chi^2 = 404.00$, $df = 14$, $N = 2,967$, $p < 0.001$). The McFadden $R^2$ was 0.22 signifying a good fit for the final model, and the percent of correct classifications were 91.1% (from 90.8%). English self-efficacy and many of the control variables were significant; each is discussed subsequently.

Set 2, Block 1: English Self-Efficacy

The results of the analyses demonstrate that English self-efficacy was a significant factor in exam completion. The original survey item measuring English self-efficacy asked students a series of questions in which they indicated how often (almost never, sometimes, often, and almost always) they experienced feelings such as confidence or understanding related to English coursework, which were converted to a composite index measure. The influence of English self-efficacy was reduced as individual and microsystem controls were added; however, it maintained significance across all three models. Ultimately, when all other predictors were accounted for, a single-unit increase in English self-efficacy increased the probability of taking a college-entrance exam by 1.54%. Compared to model 1, when English self-efficacy was the only independent variable, its B coefficient was reduced significantly when individual characteristics (race, gender, socioeconomic status, and academic ability) were added, $t(1) = -47.79; p < 0.01$. When the third block of microsystem controls were included in
the model, the influence of English self-efficacy was again significantly reduced, $t (1) = -20.31; p < 0.01$. These significant reductions indicate that the control variables were important in explaining exam completion and reduced the explanatory power of English self-efficacy.

Set 2, Block 2: Individual Controls

When combined with English self-efficacy, all the individual-level controls—gender, race, academic ability, and socioeconomic status—significantly influenced exam completion. This collection of controls increased the McFadden $R^2$ from 0.04 with only English self-efficacy to 0.18, showing an improvement in model fit. The percent of correct classifications also increased from 90.8% to 90.9%, a modest improvement with the addition of the individual controls. All four factors maintained significance; however, the influence on exam status was reduced for certain variables when the microsystem controls were added. Changes in the coefficients and a discussion for each variable is presented below.

Gender. Female students had an increased probability of 2.89% of completing a college-entrance exam compared to their male counterparts in the model with English self-efficacy and both blocks of control variables. The B coefficient for females was significantly reduced when microsystem controls were added to the model $t (1) = -9.50; p < 0.05$), indicating that the second block of controls help to explain the relationship with exam completion.
Race. Compared to white students (the reference group), only black and Hispanic students were significantly different in terms of exam completion. No differences were found between the reference group and American Indian/Alaska Native, Asian/Hawaii Pacific Islanders, or multiracial students. In the final model, when individual and microsystem controls were accounted for, blacks had an increased probability of exam completion of 4.84% and Hispanics had an increased probability of 3.55% compared to white students. The B coefficients were not significantly reduced for either black or Hispanic students when the microsystem controls were added. This suggested that the influence of black or Hispanic racial groups had a unique influence on completion of college-entrance exams that was not significantly decreased by the microsystem controls.

Academic Ability. A single-unit increase in a student’s academic ability increased the probability of college-entrance-exam completion by 0.80%. The B coefficient for academic ability was not significantly reduced from model 2 to model 3; it held a distinct influence apart from school context, social support variables, and curriculum.

Socioeconomic Status. Socioeconomic status was also an influential factor in the final model. A one-unit increase in socioeconomic status resulted in an increased probability of 3.13% of taking an SAT or ACT. The B coefficient decreased significantly when the microsystem controls were added, $t (1) = -11.81; p < 0.05$. This means that the impact of the student’s school environment and interactions at home and school help explain some of the relationship with exam completion and socioeconomic status.
Set 2, Block 3: Microsystem Controls

When the final block of microsystem controls were added, the McFadden $R^2$ increased from 0.18 to 0.22 signifying a good model fit and an improved likelihood of exam completion compared to lower level models. The additional controls also increased the classification from 90.9% to 91.1% indicating better alignment with actual outcomes. Additionally, all significant factors from previous blocks (English self-efficacy, gender, race, academic ability, and socioeconomic status) remained significant. Four of the five microsystem variables were significant. The only factor that did not produce a unique contribution to exam-completion status was the index of parental encouragement, which measured how often a student discussed various academic topics with his or her parents.

**Family Social Capital.** Family social capital was an index that reflected whether or not a student’s mother, father, and close relative thought he or she should go to college after high school. Family social capital was significant and a one-unit increase in support for college yielded a 1.25% increased probability of completing a college-entrance exam.

**Social Capital.** Social capital was also an index that captured whether or not a student’s friend, favorite teacher, school counselor, and coach thought he or she should go to college after high school. Social capital was significant and a one-unit increase in support for college resulted in a 1.25% increased probability of taking a college-entrance exam.

**School Context.** The school-context index was derived from a survey item that asked administrators the percent of students that participate in college-preparatory
activities such as attending college fairs or taking exam-preparatory courses. School context was significant and a one-unit increase in this metric resulted in a 0.33% increased probability of exam completion.

**Curriculum.** Students in an academic or college-preparatory curriculum had a 5.60% increase in probability of completing a college-entrance examination controlling for other factors in the model. This variable was significant and uniquely influenced exam completion in the models exploring English self-efficacy.

**Summary.** In the analyses with English self-efficacy, 10 of the factors in the model were significant. All significant factors were significant when controlling for all other variables in the model. A single-unit increase in English self-efficacy increased the probability of college-entrance-exam completion by 1.54%. Female students had a 2.89% increased probability of exam completion compared to male students. Black students and Hispanic students had a 4.84% and 3.55% increased probability of taking an SAT or ACT compared to white students. A one-unit increase in academic ability increased the probability of exam completion by 0.80%. A one-unit increase in socioeconomic status increased the likelihood of exam completion by 3.13%. An additional vote of support for college from the students’ family or social network increased the probability of exam completion by 1.25% for each. A one-unit increase in participation in college-preparatory activities at school increased the chances of taking a college-entrance test by 0.33%. Enrollment in an academic curriculum increased the probability of exam completion by 5.60% compared to general or vocational curriculum tracks.
Table 11. Logistic Regressions Parameter Estimates: Exam Status on English Self-efficacy and Control Variables (N = 2,967)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Delta-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Self-efficacy</td>
<td>0.60 (0.07)***</td>
<td>0.33 (0.08)***</td>
<td>-47.79**</td>
<td>1.54%</td>
</tr>
<tr>
<td>Gender (Male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.54 (0.14)**</td>
<td>0.34 (0.15)*</td>
<td>-9.50*</td>
<td>2.89%</td>
</tr>
<tr>
<td>Race (White = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>-0.57 (0.58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.45 (0.40)</td>
<td>0.34 (0.41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.94 (0.26)***</td>
<td>0.70 (0.26)**</td>
<td>-3.55</td>
<td>4.84%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.56 (0.22)**</td>
<td>0.47 (0.22)*</td>
<td>-1.86</td>
<td>3.55%</td>
</tr>
<tr>
<td>More than one race</td>
<td>-0.01 (0.34)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Ability</td>
<td>0.10 (0.01)***</td>
<td></td>
<td></td>
<td>0.80%</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.62 (0.12)***</td>
<td>0.45 (0.12)**</td>
<td>-11.81*</td>
<td>3.13%</td>
</tr>
<tr>
<td>Family Capital Index</td>
<td>0.16 (0.07)*</td>
<td></td>
<td></td>
<td>1.25%</td>
</tr>
<tr>
<td>Social Capital Index</td>
<td>0.16 (0.06)*</td>
<td></td>
<td></td>
<td>1.25%</td>
</tr>
<tr>
<td>Parental Encouragement Index</td>
<td>0.05 (0.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Context Index</td>
<td>0.04 (0.01)</td>
<td></td>
<td></td>
<td>0.33%</td>
</tr>
<tr>
<td>Curriculum Track (Vocat/General = ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td></td>
<td></td>
<td></td>
<td>5.60%</td>
</tr>
<tr>
<td>Constant</td>
<td>2.35 (0.07)***</td>
<td>-3.32 (0.45)***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ \chi^2, df \]

<table>
<thead>
<tr>
<th></th>
<th>2.35, 1***</th>
<th>329.93, 9***</th>
<th>404.00, 14***</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>McFadden R(^2)</td>
<td>0.04</td>
<td>0.18</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Adjusted McFadden R(^2)</td>
<td>0.04</td>
<td>0.19</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>90.8%</td>
<td>90.9%</td>
<td>91.1%</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, *** p < 0.001
Set 3: Exam Status and Math Self-efficacy

The third set of analyses explored the relationship between students’ math self-efficacy and college-entrance-exam status. Table 12 shows the B coefficients, standard errors, and significance levels of the variables explored. It also displays results of the ancillary analyses including t tests, Delta-p, McFadden $R^2$, and classification percentage. The final model with math self-efficacy was significant ($\chi^2 = 398.53, df = 14, N = 2,967, p < .001$). The McFadden $R^2$ indicated a well-fit model (0.22) with many of the factors significant. Again, the adjusted McFadden $R^2$ was 0.23, closely aligned with the unadjusted $R^2$ indicating the model was not being penalized for including unrelated variables in the model (“FAQ: What are pseudo R-squareds”).

Set 3, Block 1: Math Self-efficacy

Math self-efficacy was not significant in the final model exploring its influence on exam status. While math self-efficacy was significant in models 1 and 2, its significance was eliminated in model 3 when the microsystem controls were added. To further explore this phenomenon, additional analyses were conducted. The third block of variables was tested one at a time to determine which variable reduced and/or eliminated the influence of math self-efficacy. In this process, three of the microsystem-control variables were found to eliminate the significance of math self-efficacy. The three factors that eliminated the influence of math self-efficacy were parental encouragement, social capital, and curriculum track. This suggested that, when these factors were entered, they reduced the distinct effect of math self-efficacy on exam completion.
Set 3, Block 2: Individual Controls

Once again, all the individual controls—gender, race, socioeconomic status, and academic ability—were significant in both the second and third logistic regression models demonstrating an influence on college-entrance-exam completion. When only math self-efficacy and the individual block of controls were added, the McFadden $R^2$ increased from 0.02 to 0.17 signaling an improved model fit, but not quite to the 0.2 threshold that signifies a good fit (McFadden, 1974). The classification percentage did not change (90.8%).

Gender. In the final model, female students had a 3.15% increased probability of taking an SAT or ACT test compared to male students, when all other variables in the model were controlled. The B coefficient for gender was reduced significantly ($t(1) = -11.40; p < 0.05$) when the microsystem controls were added. This signified that some of the microsystem controls reduced the explanatory power of gender on exam completion.

Race. White students were the reference group and no significant differences were detected between exam-completion rates of whites and American Indian/Alaska Native, Asian/Hawaii Pacific Islanders, or multiracial students. Once again, however, black and Hispanic students had increased probabilities of taking college-entrance exams when accounting for individual and microsystem factors. Blacks had an increased probability of 5.04% and Hispanics had an increased probability of 3.88% of exam completion compared to white students. The block of microsystem controls did not significantly reduce the B coefficients of either black or Hispanic students.
Academic Ability. In the final model, accounting for all factors in the model, a one-unit increase in academic ability increased the probability of taking a college-entrance exam by 0.80%. The addition of the third set of variables reduced the B coefficient of academic ability significantly, $t (1) = -100.00; p < 0.01$, yet it remained a significant factor in exam completion.

Socioeconomic Status. Socioeconomic status was again a significant factor and increased the probability of taking an exam by 3.20% with a one-unit increase when other factors were controlled. The B coefficient for socioeconomic status was significantly reduced when the microsystem controls were added. Thus, some of the influence of socioeconomic status was explained by other factors in the third model.

Set 3, Block 3: Microsystem Controls

The microsystem controls included curriculum track and indices for family capital, social capital, parental encouragement, and school context. In the final model, all five of the microsystem controls were significant. The addition of these controls increased the McFadden $R^2$ to 0.22, a good model fit (from 0.17). It also improved the classification percentage from 90.8% to 91.1%.

Family Capital. A one-unit increase in the family-capital index resulted in an increased probability of taking a college-entrance exam by 1.25% when all other variables in the model were included.
Social Capital. Controlling for other variables, the social capital index was responsible for an increased probability of completing an SAT or ACT by 1.25%.

Parental Encouragement. A one-unit increase in the parental-encouragement index increased the probability of exam completion by 0.49%. Parental encouragement was significant in the third model.

School Context. A single-unit increase in the school-context index increased the probability of test taking by 0.33%, controlling for other variables in the model.

Curriculum. Compared to students in a vocational or general-curriculum track, students in an academic or college-preparatory curriculum have an increased probability of completing a college-entrance exam of 5.90% (accounting for all other factors in the model).

Summary. In the analyses with math self-efficacy, 10 of the factors in the model were significant, but math self-efficacy lost significance in the final model. Again, the significant factors are not in order of magnitude since some of the variables are nominal and others are continuous (Cruce, 2009). Like the previous analyses, females had a 3.15% increased probability of taking the exam over male students. Compared to white students, black and Hispanic students had increased probabilities of exam completion by 5.04% and 3.88%. A one-unit increase in socioeconomic status increased the probability of exam completion by 3.20%, whereas a one-unit increase in academic ability increased the probably of taking an SAT or ACT by 0.80%. A one-unit increase in family capital or
social capital increased the probability of exam completion by 1.25% each. An increase in parental encouragement increased the probability of taking an SAT or ACT by 0.49%. Higher proportions of students at a school who participated in college-preparatory activities (i.e., college fairs, SAT/ACT-prep courses, etc.) increased the probability of exam completion by 0.33%. Finally, students in an academic-curriculum track had an increased probability of SAT or ACT completion of 5.90% compared to students in a general or vocational curriculum.
Table 12. Logistic Regressions Parameter Estimates: Exam Status on Math Self-efficacy and Control Variables (N = 2,967)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Delta-P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>B (SE)</td>
<td>T-Value</td>
<td>B (SE)</td>
</tr>
<tr>
<td>Math Self-efficacy</td>
<td>0.41 (0.07)***</td>
<td>0.18 (0.08)*</td>
<td>-40.71**</td>
<td>0.07 (0.08)*</td>
</tr>
<tr>
<td>Gender (Male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.61 (0.14)***</td>
<td></td>
<td>0.37 (0.15)*</td>
<td>-11.40*</td>
</tr>
<tr>
<td>Race (White = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>-0.64 (0.58)</td>
<td>-0.47 (0.61)</td>
<td>-11.40*</td>
<td>3.15%</td>
</tr>
<tr>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.43 (0.40)</td>
<td>0.44 (0.41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.01 (0.26)***</td>
<td>0.74 (0.26)**</td>
<td>-3.99</td>
<td>5.04%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.62 (0.22)**</td>
<td>0.52 (0.22)*</td>
<td>-2.07</td>
<td>3.88%</td>
</tr>
<tr>
<td>More than one race</td>
<td>-0.02 (0.34)</td>
<td>-0.09 (0.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Ability</td>
<td>0.11 (0.01)***</td>
<td>0.10 (0.01)***</td>
<td>-100.0**</td>
<td>0.80%</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.63 (0.12)***</td>
<td>0.46 (0.12)***</td>
<td>-11.81*</td>
<td>3.20%</td>
</tr>
<tr>
<td>Family Capital Index</td>
<td>0.16 (0.07)*</td>
<td>0.16 (0.06)**</td>
<td></td>
<td>1.25%</td>
</tr>
<tr>
<td>Social Capital Index</td>
<td>0.16 (0.06)**</td>
<td>0.16 (0.06)**</td>
<td></td>
<td>1.25%</td>
</tr>
<tr>
<td>Parental Encouragement Index</td>
<td>0.06 (0.03)*</td>
<td></td>
<td></td>
<td>0.49%</td>
</tr>
<tr>
<td>School Context Index</td>
<td>0.04 (0.01)**</td>
<td></td>
<td></td>
<td>0.33%</td>
</tr>
<tr>
<td>Curriculum Track (Vocat/General = ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.32 (0.07)***</td>
<td>-3.60 (0.45)***</td>
<td>0.66 (0.15)***</td>
<td>5.90%</td>
</tr>
</tbody>
</table>

\[
\chi^2, df \quad 38.03, 1*** \quad 316.84, 9*** \quad 398.58, 14***
\]

McFadden R^2

\[

Adjusted McFadden R^2

\[

Classification

90.8%  90.8%  91.1%

*p < 0.05, **p < 0.01, ***p < 0.001
Set 4: Exam Status and Aspirations, English Self-efficacy, and Math Self-efficacy

The fully specified model exploring test status included all three of the independent variables under investigation (aspirations, English self-efficacy, and math self-efficacy) as well as the individual and microsystem control variables. Table 13 shows the results of the analysis. The final model was significant ($\chi^2 = 427.31$, $df = 16$, $N = 2,967$, $p < .001$). The McFadden $R^2$ was 0.23, indicative of a good fit, and the correct classifications were 91.5%, the best match with actual outcomes of all the models exploring exam completion (compared to 90.8%).

Set 4, Block 1: Aspirations, English Self-efficacy, and Math Self-efficacy

Aspirations. Consistent with prior models, bachelor’s aspirations were significant throughout all three of the models. Holding bachelor’s aspirations increased the probability of completing a college-entrance exam by 9.18% compared to having lower educational goals, when English self-efficacy, math self-efficacy, individual-level, and microsystem variables were controlled. The influence of aspirations was reduced when both blocks of controls were added. A $t$ test revealed a significant reduction in the bachelor’s aspiration $B$ coefficient between models 1 and 2, $t (1) = -29.94; p < 0.01$, as the individual-level controls were added. The contribution of the aspirations coefficient was further reduced in the third model with the addition of the microsystem controls, $t (1) = -11.38; p < 0.05$. 
**English Self-efficacy.** English self-efficacy also maintained significance across all three models. Ultimately, a single-unit increase in English self-efficacy accounted for an increased probability of college-entrance-exam completion of 1.40%, accounting for all other variables. T tests were conducted and, when both blocks of controls were added, there was a significant reduction in the influence of English self-efficacy. When individual controls were added, the coefficient was reduced, $t (1) = -18.75; p < 0.05$. Once again, the contribution of the English self-efficacy coefficient was reduced in the third model with the addition of the microsystem controls, $t (1) = -9.66; p < 0.05$.

**Math Self-efficacy.** Math self-efficacy was not significant in the fully specified model. It was significant in the block 1 with only aspirations and English self-efficacy included, but lost significance when the individual controls were added in block 2. The reduction in the math self-efficacy B coefficient was significant between model 1 and 2, $t (1) = -17.93; p < 0.05$. In the subsequent model, math self-efficacy remained insignificant.

**Set 4, Block 2: Individual Controls**

As in prior models, all four individual-level controls—gender, race, socioeconomic status, and academic ability—were significant in the fully specified model. The addition of this set of factors improved the McFadden $R^2$ to 0.21 (from 0.13), suggesting a well-fit model with just the first two blocks. This set of controls also increased the correct classification percentage to 91.2%, up from 90.8%.
Gender. In the final model, female students had an increased probability of 2.46% of completing a college-entrance exam compared to male students when all other variables were controlled. While it remained significant, t test results showed the B coefficient for the gender variable was reduced significantly when the microsystem controls were added, $t (1) = -6.65; p < 0.05$.

Race. Like in previous models, black and Hispanic students differed significantly from white students, while American Indian/Alaska Native, Asian/Hawaii Pacific Islander, and multiracial students did not. Black students had an increased probability of 4.47% compared to white students of completing an entrance exam, controlling for other variables. Compared to white students, Hispanics had a 3.34% increase in probability of completing an exam with controls in place. The B coefficient for black or Hispanic racial groups was not reduced significantly between models 2 and 3 when additional controls were added.

Academic Ability. A single-unit increase in a student’s academic ability increased his or her probability of entrance-exam completion by 0.72%, when all other variables in the final model were controlled. The B coefficient for academic ability was not reduced significantly between model 2 and 3 when the microsystem controls were added.

Socioeconomic Status. A one-unit increase in socioeconomic status increased the probability of exam completion by 2.84%, accounting for all other variables in the model. A t test revealed the B coefficient for socioeconomic status was reduced significantly
from model 2 when the microsystem variables were added in model 3, \( t (1) = -7.64, p < 0.05 \).

Set 4, Block 3: Microsystem Controls

In the final model, when the microsystem controls were added, three of the factors were significant. Social capital, school context, and a college-preparatory-curriculum track all positively influenced a student’s likelihood of completing a college-entrance exam. The addition of these factors increased the McFadden R\(^2\) from 0.21 to 0.23 demonstrating an improved model fit. Additionally, the microsystem controls increased the percent of correct classifications to 91.5% (from 91.2%).

**Social Capital.** A one-unit increase in the students’ social capital, measured by peer and school personnel support for college, resulted in an increased probability of completing an exam by 1.1% when controlling other factors in the model.

**School Context.** Accounting for the independent variables, individual and other microsystem controls in the model, a one-unit increase in participation in college-preparatory activities in the school context meant a 0.33% increase in probability of taking an SAT or ACT test.

**Curriculum.** Students in a college-preparatory curriculum had an increased probability of exam completion by 4.67% compared to those in a vocational or general curriculum with other factors in the model controlled.
Summary

Nine variables were significant in the models predicting college-entrance-exam completion. Again, all the other variables in the model were controlled, and there is no attempt to order the factors in order of magnitude since the model was comprised of both nominal and continuous variables. Nominal variables are interpreted by comparing the target group to the reference group, and continuous variables are interpreted as an increase in probability base on a one-unit increase in the factor (Cruce, 2009).

- Students with bachelor’s aspirations had an increased probability of exam completion of 9.18% compared to students with lower levels of educational aspirations.
- A one-unit increase in English self-efficacy enhanced the chance of exam completion by 1.40%.
- Female students had a 2.46% increased probability of exam completion compared to male students.
- Black students had a 4.47% increased probability and Hispanic students had a 3.34% increased probability of exam completion compared to white students.
- A one-unit increase in academic ability increased the likelihood of exam completion by 0.72%.
- A one-unit increase in socioeconomic status increased the probability of exam completion by 2.84%.
- A one-unit increase in social capital increased the probability of exam completion by 1.10%.
• A one-unit increase in school context resulted in a 0.33% increase in likelihood of taking an SAT/ACT.

• Students in an academic curriculum had an increased probability of exam completion of 4.67% compared to students in a vocational or general curriculum.
### Table 13. Logistic Regressions Parameter Estimates: Exam Status on Aspirations, English and Math Self-efficacy, Control Variables (N = 2,967)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Delta-P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>T-Value</td>
<td>B (SE)</td>
<td>T-Value</td>
</tr>
<tr>
<td>Bachelor's Aspirations</td>
<td>1.87 (0.15)***</td>
<td>-29.94**</td>
<td>0.84 (0.17)***</td>
<td>-11.38*</td>
</tr>
<tr>
<td>English Self-efficacy</td>
<td>0.37 (0.08)***</td>
<td>-18.75</td>
<td>0.18 (0.09)*</td>
<td>-9.66</td>
</tr>
<tr>
<td>Math Self-efficacy</td>
<td>0.17 (0.08)*</td>
<td>-17.93*</td>
<td>0.00 (0.09)</td>
<td>-4.94</td>
</tr>
<tr>
<td>Gender (Male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.43 (0.14)**</td>
<td>0.29 (0.15)*</td>
<td>-6.65*</td>
<td>2.46%</td>
</tr>
<tr>
<td>Race (White = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>-0.68 (0.59)</td>
<td>-0.57 (0.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.36 (0.40)</td>
<td>0.37 (0.41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.80 (0.26)**</td>
<td>0.63 (0.27)*</td>
<td>-2.42</td>
<td>4.47%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.50 (0.22)*</td>
<td>0.44 (0.22)*</td>
<td>-1.24</td>
<td>3.34%</td>
</tr>
<tr>
<td>More than one race</td>
<td>-0.11 (0.35)</td>
<td>-0.15 (0.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Ability</td>
<td>0.09 (0.01)***</td>
<td>0.09 (0.01)***</td>
<td>0.00</td>
<td>0.72%</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.51 (0.12)***</td>
<td>0.40 (0.12)**</td>
<td>-7.64*</td>
<td>2.84%</td>
</tr>
<tr>
<td>Family Capital Index</td>
<td>0.12 (0.07)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Capital Index</td>
<td>0.14 (0.06)*</td>
<td></td>
<td></td>
<td>1.10%</td>
</tr>
<tr>
<td>Parental Encouragement Index</td>
<td>0.03 (0.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Context Index</td>
<td>0.04 (0.01)**</td>
<td></td>
<td></td>
<td>0.33%</td>
</tr>
<tr>
<td>Curriculum Track (Vocat/General = ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.85 (0.01)***</td>
<td>-3.35 (0.47)***</td>
<td>0.53 (0.15)***</td>
<td>4.67%</td>
</tr>
<tr>
<td>$\chi^2$, df</td>
<td>235.00, 3***</td>
<td>375.81, 11***</td>
<td>427.31, 16***</td>
<td></td>
</tr>
<tr>
<td>McFadden R$^2$</td>
<td>0.13</td>
<td>0.21</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Adjusted McFadden R$^2$</td>
<td>0.13</td>
<td>0.21</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>90.8%</td>
<td>91.2%</td>
<td>91.5%</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, *** p < 0.001
The second group of analyses explored the second research question, “Is submission of an application to a four-year institution associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?” Again, all of the individual and microsystem variables were used to assess the unique contribution of the independent variables on application submission. To qualify as having applied, students had to report that they (a) planned to attend a four-year institution and (b) submitted one or more application(s) for admission.

Set 1: Application Status and Aspirations

The first set of models explored the influence of bachelor’s aspirations on application status. Table 14 displays the B coefficients, standard errors, significance of factors, and the models, as well as ancillary analyses, including t tests, delta-p and McFadden $R^2$ that were used to evaluate the factors within, and fit of the overall model. The final model exploring bachelor’s aspirations, individual controls, and microsystem controls was significant ($\chi^2 = 931.36, df = 14, N = 2,967, p < 0.001$). The McFadden $R^2$ was 0.24 indicating a good fit for the final model. In addition, the percent of correct classifications increased from 72.0% to 76.1%, validating that the predicted probabilities aligned more closely with actual outcomes in the final model. The independent and many of the control variables were significant in the model. Significant variables are discussed.
Set 1, Block 1: Aspirations

The logistic regression results revealed that bachelor’s aspirations were significant across all three of the models. When controlling for all individual and microsystem factors, students with bachelor’s aspirations had a 22.16% increased probability of applying compared to students who did not have bachelor’s degree aspirations. The B coefficient for aspirations was reduced significantly between models 1 and 2, \( t(1) = -38.94, p < 0.01 \), when individual controls were added to the model. The coefficient was again significantly reduced between models 2 and 3, \( t(1) = -17.19; p < 0.05 \), when the microsystem controls were added. Although some of the controls reduced the influence of aspirations on application submission, it was still a highly significant factor in the models.

Set 1, Block 2: Individual Controls

All four of the individual controls—gender, race, academic ability, and socioeconomic status—were significant in helping to explain whether or not a student submitted an application. This set of individual controls improved the model fit, increasing the McFadden R\(^2\) to 0.21 from 0.08 in model 1 with just aspirations. The set of factors also improved the correct classifications from 72.0% to 75.1%. Additionally, all the individual controls maintained significance when the microsystem controls were included, indicating their unique and positive contribution to application status.

Gender. Compared to male students, female students had an 8.37% increased probability of applying when accounting for all other variables in the full model. The B
coefficient for gender was reduced by a significant amount from model 2 to model 3 when the microsystem controls were added ($t(1) = -14.81; p < 0.05$); however, it remained significant.

**Race.** In the final model, compared to white students (i.e., the reference group), both Asian/Hawaii Pacific Islanders and black students were significantly more likely to submit an application when controlling for all individual and microsystem factors. Asian/Hawaii Pacific Islanders had an increased probability of application submission by 15.36% over white students. Black students had a 13.24% increased probability of applying compared to white students (keeping in mind all controls were in place). No significant differences were found between white students and American Indian/Alaska Native, Hispanic, or multiracial students in terms of application submission. When the microsystem controls were added, the reduction in the B coefficient of Asian/Hawaii Pacific Islander students was not significant, suggesting that this characteristic contributes uniquely to a student’s likelihood to apply to college. The reduction in the B coefficient for black students, on the other hand, was significant, $t(1) = -6.23; p < 0.05$. The overall significance of Asian and black racial groups suggests an influence on college-application submission.

**Academic Ability.** In the final model, a one-unit increase in academic ability resulted in an increased probability of submitting a college application by 2.00%. Although the B coefficient for academic ability was reduced, it was not reduced by a significant amount when the microsystem variables were added to the model.
Socioeconomic Status. This factor was significant throughout models 2 and 3. Accounting for all independent, individual, and microsystem controls, a one-unit increase in socioeconomic status increased the probability of a student applying to college by 11.33%. The B coefficient for socioeconomic status was reduced by a significant amount when the third block of controls was added, \( t (1) = -23.01; p < 0.05 \). Despite the reduction in the coefficient, socioeconomic status was a significant influence on application submission.

Set 1, Block 3: Microsystem Controls

In the final model, aspirations and all four of the individual controls (gender, race, socioeconomic status, and academic ability) remained significant. In addition, all five microsystem controls were significant; thus every factor in the model was significant. The microsystem controls improved the model fit to 0.24 from 0.21, indicating a well-fit model. The final set of controls also improved the correct classifications from 75.1% to 76.1%. Each microsystem control is briefly presented.

Family Capital. This measure captured the student’s mother, father, and close relative’s support for college. A one-unit increase in support resulted in a 3.72% increased likelihood that a student would submit a college application when all other factors were accounted for in the model.

Social Capital. Social capital reflected whether a student’s friend, favorite teacher, school counselor, and coach thought they should go to college after high school or pursue another path. With all other factors in the model accounted for, a one-unit increase in
support for college from a student’s social network increased the probability of applying by 2.87%.

**Parental Encouragement.** This measurement represented the frequency of discussions with parents about various academic topics such as things studied in class or going to college. A one-unit increase in parental encouragement (either more frequency or an additional topic discussed) increased the probability of application submission by 1.78%.

**School Context.** The school-context variable represented the percentage of students who participated in college-preparation activities. Results showed that a one-unit increase in school context increased the probability of applying by 0.90%, when controlling all other variables in the model.

**Curriculum.** Compared to students in a vocational or general curriculum, those in a college-preparatory curriculum had an increased probability of submitting an application of 11.18% with all other factors in the model controlled.

**Summary.** In the analyses focused on application status and bachelor’s aspirations, all of the factors in the model were significant. All were significant when controlling for all other variables in the model. Students with bachelor’s degree aspirations (compared to lower educational goals) had a 22.15% increased probability of applying. Female students had an 8.37% increased probability of applying compared to male students. Asian/Hawaii Pacific Island and black students had 15.36% and 13.24%
increased probabilities of applying compared to white students. A one-unit increase in academic ability resulted in a 2.00% increased probability of applying. A one-unit increase in socioeconomic status increased the probability of application submission by 11.33%. A one-unit increase in family support for college increased the probability of applying by 3.72% and a one-unit increase in social capital increased the probability of application submission by 2.87%. A one-unit increase in parental encouragement resulted in a 1.78% increase in application submission. An increase in participation in college-preparatory activities at school increased the probability of applying by 0.90%. Additionally, compared to students in a general or vocational curriculum, those in a college-preparatory curriculum had an 11.18% increased probability of applying.
Table 14. Logistic Regressions Parameter Estimates: Application Status on Aspirations and Control Variables (N = 2,967)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Delta-P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>T-Value</td>
<td>B (SE)</td>
<td>T-Value</td>
</tr>
<tr>
<td>Aspirations (Less than BA = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA or higher</td>
<td>2.24 (0.14)***</td>
<td>-38.94**</td>
<td>0.92 (0.16)***</td>
<td>-17.19*</td>
</tr>
<tr>
<td>Gender (Male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.49 (0.09)***</td>
<td></td>
<td>0.37 (0.09)***</td>
<td>-14.81*</td>
</tr>
<tr>
<td>Race (White = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>0.01 (0.51)</td>
<td></td>
<td>0.20 (0.53)</td>
<td></td>
</tr>
<tr>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.71 (0.26)**</td>
<td>0.75 (0.26)**</td>
<td>0.59</td>
<td>15.36%</td>
</tr>
<tr>
<td>Black</td>
<td>0.81 (0.17)***</td>
<td>0.63 (0.17)***</td>
<td>-6.23</td>
<td>13.24%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.01 (0.15)</td>
<td>-0.05 (0.15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than one race</td>
<td>0.38 (0.25)</td>
<td></td>
<td>0.41 (0.25)</td>
<td></td>
</tr>
<tr>
<td>Academic Ability</td>
<td>0.09 (0.01)***</td>
<td></td>
<td>0.09 (0.01)***</td>
<td>0</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.69 (0.07)***</td>
<td></td>
<td>0.56 (0.08)***</td>
<td>-23.01*</td>
</tr>
<tr>
<td>Family Capital Index</td>
<td>0.17 (0.05)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Capital Index</td>
<td>0.13 (0.04)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Encouragement Index</td>
<td>0.08 (0.02)***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Context Index</td>
<td>0.04 (0.01)***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Track (Voc/General = ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.34 (0.14)***</td>
<td>-5.68 (0.35)***</td>
<td>-7.82 (0.45)***</td>
<td></td>
</tr>
<tr>
<td>(\chi^2, df)</td>
<td>306.41, 1***</td>
<td>785.38, 9***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McFadden R(^2)</td>
<td>0.08</td>
<td>0.21</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Adjusted McFadden R(^2)</td>
<td>0.08</td>
<td>0.21</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>72.0%</td>
<td>75.1%</td>
<td>76.1%</td>
<td></td>
</tr>
</tbody>
</table>

\*p < 0.05, \**p < 0.01, \***p < 0.001
Set 2: Application Status and English Self-efficacy

The second set of analyses explored the influence of English self-efficacy on submission of a college application. Table 15 displays the results, and the final model with English self-efficacy, individual controls, and microsystem controls was significant ($\chi^2 = 902.93$, df = 14, $N = 2,967$, $p < 0.001$). The McFadden $R^2$ was 0.24, which suggested a good fit for the model. All the independent, individual-level and microsystem variables in the model were significant and each is discussed individually.

Set 2, Block 1: English Self-efficacy

English Self-efficacy. The results of the analyses showed that English self-efficacy maintained significance across the logistic regression models. With all other factors in the analysis controlled, a one-unit increase in English self-efficacy increased the probability of applying to college by 2.43%. When the individual controls were added, a t test showed that the B coefficient for English self-efficacy was reduced by a significant amount, $t (1) = -112.20$, $p < 0.01$. It was again reduced by a significant amount when the microsystem controls were included, $t (1) = -48.00$, $p < 0.01$. While the control variables helped explain some of the relationship with application submission, English self-efficacy significantly influenced whether students submitted an application.

Set 2, Block 2: Individual Controls

All four of the individual controls—gender, race, academic ability, and socioeconomic status—were significant in the final model. The addition of the second block of controls improved the model fit to 0.19 from 0.04, on the cusp of a good fit
based on the guideline that a good fit is generally between 0.2 and 0.4 (McFadden, 1974). Significant microsystem variables are discussed below.

**Gender.** In the final model, controlling for all other variables in the analysis, female students had an increased probability of applying of 9.05% compared to male students. The B coefficient for gender was reduced by a significant amount between model 2 and 3 when the microsystem controls were added ($t(1) = -19.75; p < 0.05$). Although the third block of controls added meaningfully to the model and helped explain application status, gender remained significant.

**Race.** While no significant differences were identified between white students and American Indian/Alaska Native, Hispanic, or multiracial students, there were significant differences with Asian/Hawaii Pacific Islanders and black students—both of whom had a higher likelihood of submitting an application. Controlling for all other factors in the model, Asian students had an increased probability of application submission of 16.19% and blacks had a 13.43% increased probability of applying compared to their white counterparts. The B coefficient for Asian students was not significantly reduced when the microsystem controls were added. On the other hand, the B coefficient for black students was reduced significantly when the third block was entered ($t(1) = -6.57; p < 0.05$).

**Academic Ability.** In the final model, a one-unit increase in academic ability increased the probability of applying by 2.00%, while all other factors were controlled.
Socioeconomic Status. In the final model, a one-unit increase in socioeconomic status increased the probability of application submission by 11.86%, controlling for all other variables in the model. The influence of socioeconomic status was reduced significantly between models 2 and 3 ($t (1) = -26.55; p < 0.05$), yet it significantly influences application submission.

Set 2, Block 3: Microsystem Controls

The final block of variables entered, all five of the microsystem variables—indices of family capital, social capital, parental encouragement, school context, and curriculum—were significant and the independent and individual controls all maintained significance in the model examining application status. The McFadden $R^2$ increased from 0.19 to 0.24 with the addition of the third block. Additionally, the percent of correct classifications was increased from 74.0% in model 2 to 75.5% in model 3, demonstrating better alignment with actual outcomes.

Family Capital. The family-capital index, a measure of familial support for college, was significant. One additional family member who expressed support for college meant an increased probability of applying by 4.36% accounting for all other factors.

Social Capital. Like the family-capital index, this item measured social capital in the student’s school and peer groups. Accounting for the English self-efficacy and individual-level controls, a one-unit increase in social capital increased the probability of applying by 3.08%.
Parental Encouragement. Discussions with parents about academic topics was significantly influential on applying for college. A one-unit increase in parental encouragement meant an increased probability of applying by 1.78% controlling for all other factors in the model.

School Context. In the final model, a one-unit increase in students’ participation in college-preparatory activities at school meant an increased probability of applying by 0.90%, while controlling for all variables in the model.

Curriculum. Being enrolled in a college-preparatory curriculum increased a student’s probability of applying to college by 12.11% compared to students in a vocational or general curriculum (controlling for all other factors).

Summary

In the analyses focused on application status and English self-efficacy, all the factors in the model were significant when controlling for other variables in the model. Students with a single-unit increase in English self-efficacy had a 2.43% increased probability of applying. Female students had a 9.05% increased probability of applying compared to male students. Compared to white students, Asian/Hawaii Pacific Island and black students had 16.19% and 13.43% increased probabilities of applying. A one-unit increase in academic ability and socioeconomic status increased the probability of applying by 2.00% and 11.86%. Additionally, students who received more support for college from family members and their social network had 4.36% and 3.08% increased probabilities of completing an application. A one-unit increase in parental encouragement
increased the probability of applying by 1.78%. A single-unit increase in participation in college-preparation activities at school increased the probability of applying by 0.90%. Students taking an academic curriculum (compared to general or vocational) had a 12.11% increased probably of submitting an application.
Table 15. Logistic Regressions Parameter Estimates: Application Status on English Self-efficacy and Control Variables (N = 2,967)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Delta-P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>B (SE)</td>
<td>T-Value</td>
<td>B (SE)</td>
</tr>
<tr>
<td>English Self-efficacy</td>
<td>0.46 (0.004)**</td>
<td>0.23 (0.05)**</td>
<td>-112.20**</td>
<td>0.11 (0.05)*</td>
</tr>
<tr>
<td>Gender (Male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.56 (0.09)**</td>
<td></td>
<td></td>
<td>0.40 (0.09)**</td>
</tr>
<tr>
<td>Race (White = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>-0.03 (0.51)</td>
<td>0.16 (0.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.75 (0.25)**</td>
<td>0.79 (0.26)**</td>
<td>0.61</td>
<td>16.19%</td>
</tr>
<tr>
<td>Black</td>
<td>0.83 (0.17)**</td>
<td>0.64 (0.17)**</td>
<td>-6.57</td>
<td>13.43%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.03 (0.15)</td>
<td>-0.06 (0.15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than one race</td>
<td>0.43 (0.24)</td>
<td>0.43 (0.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Ability</td>
<td>0.09 (0.01)**</td>
<td>0.09 (0.01)**</td>
<td>0</td>
<td>2.00%</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.71 (0.07)**</td>
<td>0.59 (0.08)**</td>
<td>-26.55*</td>
<td>11.86%</td>
</tr>
<tr>
<td>Family Capital Index</td>
<td>0.20 (0.05)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Capital Index</td>
<td>0.14 (0.04)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Encouragement Index</td>
<td>0.08 (0.02)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Context Index</td>
<td>0.04 (0.01)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Track (Voc/General = ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.62 (0.04)**</td>
<td>-4.81 (0.34)**</td>
<td>-7.42</td>
<td></td>
</tr>
<tr>
<td>( \chi^2, df )</td>
<td>126.32, 1***</td>
<td>723.57, 9***</td>
<td>902.93, 14***</td>
<td></td>
</tr>
<tr>
<td>McFadden R(^2)</td>
<td>0.04</td>
<td>0.19</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Adjusted McFadden R(^2)</td>
<td>0.04</td>
<td>0.19</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>65.9%</td>
<td>74.0%</td>
<td>75.5%</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, *** p < 0.001
The third set of analyses investigated math self-efficacy on application status. Table 16 displays the results of the logistic regression and relevant analyses used to assess model fit and significance of individual variables. The final model, which included math self-efficacy, individual controls, and microsystem controls, was significant ($\chi^2 = 915.78$, $df = 14$, $N = 2,967$, $p < .001$). The McFadden $R^2$ was 0.24 indicating a good fit for the final model. The independent variable and all the controls were significant. Each is discussed below in the order they were entered in the model.

**Set 3, Block 1: Math Self-Efficacy**

Math self-efficacy maintained significance throughout all three of the models. Controlling for all other variables, a one-unit increase in math self-efficacy resulted in an increased probability of applying by 4.57%. Table 16 shows how the B coefficient was reduced across the models when important individual and microsystem control factors were added. The reduction between the first and second model was significant as evidenced by the t test, $t(1) = -92.68$; $p < 0.01$. The reduction in the B coefficient for math self-efficacy was again significant when the microsystem controls were added, $t(1) = -28.00$; $p < 0.05$. This suggested that the individual and microsystem measures contributed explanatory power that reduced the impact of math self-efficacy on application submission. Nonetheless, math self-efficacy was a significantly influential factor in applying to college.
Set 3, Block 2: Individual Controls

Gender, race, academic ability, and socioeconomic status were all once again significant in model 2 when explaining application status. The addition of the controls improved the model fit, increasing the McFadden $R^2$ from 0.04 to 0.19. They also improved the correct classification percentage to 73.9%, up from 65.4%. Additionally, when the microsystem controls were added in block 3, all the individual controls maintained significance.

Gender. Female students had an increased probability of applying of 10.87% over male students. The B coefficient for gender was significantly reduced between models 2 and 3 when the microsystem controls were added, $t (1) = -20.99$; $p < 0.05$.

Race. Although no significant differences were found between white students and American Indian/Alaska Native, Hispanic, or multiracial students, there were differences with Asian/Hawaii Pacific Islanders and black students. Controlling for all variables in the model, Asian/Hawaii Pacific Islanders had a 15.54% increased probability of applying compared to white students. Black students also had a 12.86% increased probability of applying to college over their white counterparts, with all other factors controlled. The reduction in the B coefficient for Asian/Hawaii Pacific Islanders was not significant between models 2 and 3. However, the reduction in the B coefficient for black students was significant, $t (1) = -7.71$; $p < 0.05$, suggesting the microsystem controls helped explain some of the relationship with application status.
**Academic Ability.** In the final model with all variables accounted for, a one-unit increase in academic ability increased the probability of applying by 2.00%. It was not significantly reduced when the microsystem controls were added.

**Socioeconomic Status.** The socioeconomic status measure revealed that a one-unit increase in socioeconomic status increased the probability of applying by 11.86%. Once more, the microsystem controls explained some of the relationship with applying to college, and the B coefficient was reduced significantly between model 2 and 3 ($t (1) = -26.55; \ p < 0.05$).

**Set 3, Block 3: Microsystem Controls**

In the final block of controls entered, math self-efficacy and all four individual controls maintained significance, and all five of the microsystem variables were found to be significant. This block increased the McFadden $R^2$ to 0.24 (from 0.19), signifying a good fit for the final model. They also improved the percent of correct classifications from 73.9% to 75.8%.

**Family Capital.** A one-unit increase in support from a family member for college resulted in a 4.36% increase in the probability of applying for college, controlling for all other variables in the model.

**Social Capital.** Increased support from influencers in the microsystem, such as friends and school personnel, increased the probability of college application by 2.87%
when accounting for math self-efficacy, individual factors, and other microsystem variables.

**Parental Encouragement.** A one-unit increase in parental encouragement resulted in a 1.78% increased probability of submitting a college application, when all other variables are controlled.

**School Context.** A one-unit increase in support for college-preparatory activities in the school environment were responsible for a 0.90% increase in the probability of applying for college, when accounting for the rest of the variables.

**Curriculum.** Compared to students in a vocational or general curriculum, students enrolled in a college-preparatory curriculum had an increased the probability of application submission by 12.11%.

**Summary**

In the analyses focused on application status and math self-efficacy, all the factors in the model were significant when controlling for other variables in the model. The results were quite similar to the results from the exploration of English self-efficacy. Students with a single-unit increase in math self-efficacy had a 4.57% increased probability of applying. Female students had a 10.87% increased probability of applying compared to male students. Compared to white students, Asian/Hawaii Pacific Island and black students had increased probabilities of applying of 15.54% and 12.86%. A one-unit increase in socioeconomic status increased the probability of applying by 11.86%. A one-
unit increase in academic ability increased the probability of application submission by 2.00%. Students who received more support for college from family members and their social network had increased probabilities of applying of 4.36% and 2.87%. A one-unit increase in parental encouragement had a 1.78% increased probability of applying.

Similarly, a one-unit increase in participation in college-preparation at school increased the probability of applying by 0.90%. Students in an academic-curriculum track (compared to general or vocational) had a 12.11% increased probability of submitting an application.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Delta-P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>B (SE)</td>
<td>T-Value</td>
<td>B (SE)</td>
</tr>
<tr>
<td>Math Self-efficacy</td>
<td>0.47 (0.004)***</td>
<td>0.28 (0.05)***</td>
<td>-92.68**</td>
<td>0.21 (0.05)***</td>
</tr>
<tr>
<td>Gender (Male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.67 (0.09)***</td>
<td>0.48 (0.09)***</td>
<td>-20.99*</td>
<td>0.00</td>
</tr>
<tr>
<td>Race (White = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>-0.08 (0.51)</td>
<td>0.14 (0.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.71 (0.25)**</td>
<td>0.76 (0.26)**</td>
<td>0.77</td>
<td>15.54%</td>
</tr>
<tr>
<td>Black</td>
<td>0.82 (0.16)**</td>
<td>0.61 (0.17)***</td>
<td>-7.71*</td>
<td>12.86%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.03 (0.15)</td>
<td>-0.08 (0.15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than one race</td>
<td>0.41 (0.24)</td>
<td>0.43 (0.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Ability</td>
<td>0.09 (0.01)***</td>
<td>0.09 (0.01)***</td>
<td>0.00</td>
<td>2.00%</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.74 (0.07)***</td>
<td>0.59 (0.08)***</td>
<td>-26.55*</td>
<td>11.86%</td>
</tr>
<tr>
<td>Family Capital Index</td>
<td>0.20 (0.05)***</td>
<td>0.20 (0.05)***</td>
<td></td>
<td>4.36%</td>
</tr>
<tr>
<td>Social Capital Index</td>
<td>0.13 (0.04)***</td>
<td>0.13 (0.04)***</td>
<td></td>
<td>2.87%</td>
</tr>
<tr>
<td>Parental Encouragement Index</td>
<td>0.08 (0.02)***</td>
<td>0.08 (0.02)***</td>
<td></td>
<td>1.78%</td>
</tr>
<tr>
<td>School Context Index</td>
<td>0.04 (0.01)***</td>
<td>0.04 (0.01)***</td>
<td></td>
<td>0.90%</td>
</tr>
<tr>
<td>Curriculum Track (Vocat/General = ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Preparatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.62 (0.04)***</td>
<td>-4.76 (0.34)***</td>
<td>-7.31 (0.45)***</td>
<td>12.11%</td>
</tr>
<tr>
<td>$\chi^2, df$</td>
<td>133.76, 1***</td>
<td>734.95, 9***</td>
<td>915.78, 14***</td>
<td></td>
</tr>
<tr>
<td>McFadden R²</td>
<td>0.04</td>
<td>0.19</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Adjusted McFadden R²</td>
<td>0.04</td>
<td>0.19</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>65.4%</td>
<td>73.9%</td>
<td>75.8%</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p < 0.001
Set 4: Application Status and Aspirations, English Self-efficacy, and Math Self-efficacy

The fully specified model that explored application status included all three of the independent variables under investigation as well as the individual and microsystem control variables. Table 17 shows the results of the analysis. The final model was significant ($\chi^2 = 949.88, df = 16, N = 2,967, p < 0.001$). The McFadden $R^2$ was 0.25, indicative of a good fit and the correct classifications were 76.4%. Of all the models, this had the highest McFadden $R^2$ demonstrating that including all the variables was appropriate and improved the model fit.

Set 4, Block 1: Aspirations, English Self-efficacy, and Math Self-efficacy

In the first model, with only aspirations, English self-efficacy, and math self-efficacy entered, all three of the independent variables were significant. In model 2, when the individual controls (gender, race, socioeconomic status, and academic ability) were added, all three of the independent variables remained significant. However, when the microsystem variables were added in model 3, only two of the three independent variables under study maintained significance. Both aspirations and math self-efficacy exerted significant influence on applying for college. English self-efficacy, however, lost significance when the microsystem controls were added to the model, indicating that English self-efficacy no longer contributed a distinguishable influence on application submission.
Aspirations. The significance of aspirations held throughout all the models in this set of analyses. Compared to students with less than bachelor’s degree aspirations, those who aspired to at least a bachelor’s degree in tenth grade had a 21.91% increased probability of applying to college when all other variables were controlled. The B coefficient for aspirations was reduced significantly when individual controls ($t(1) = -31.19; p < 0.01$) and microsystem controls ($t(1) = -13.94; p < 0.05$) were added to the models and helped explain a portion of the relationship with application submission. However, aspirations were a significant factor in the final model explaining application submission.

English Self-efficacy. The measure of English self-efficacy was significant in the first model, maintained significance in the second model, but lost significance in the third model, when the microsystem controls were added. The reduction in the B coefficient was significant between models 1 and 2 ($t(1) = -56.00; p < 0.01$) and between models 2 and 3 ($t(1) = -28.00; p < 0.01$). The loss of significance for English self-efficacy in the third model suggests that individual and microsystem controls diminished the unique contribution of the construct on application submission. Parental encouragement specifically eliminated the influence of English self-efficacy.

Math Self-efficacy. Math self-efficacy was significantly associated with a college application and a one-unit increase resulted in an increased probability of applying by 4.36%, controlling all other factors in the model. A t test showed the B coefficient of math self-efficacy was reduced by a significant amount between models 1 and 2, $t(1) = -$
44.00; \( p < 0.01 \). It is also reduced significantly between models 2 and 3, \( t (1) = -12.00; p < 0.05 \). Although some of the individual and microsystem controls help explain part of the relationship between math self-efficacy and applying to college, math self-efficacy was still influential.

Set 4, Block 2: Individual Controls

As was the case in all of the prior models, all four of the individual controls (gender, race, academic ability, and socioeconomic status) were significant factors when they were added to the model in block 2, and all four maintained significance in the final model. The addition of the individual-level controls to the three independent variables significantly reduced the B coefficient of aspirations, English self-efficacy, and math self-efficacy, and it also improved the model fit, increasing the McFadden \( R^2 \) from 0.11 to 0.21. The individual controls also boosted the correct classifications from 71.6% to 75.1% showing enhanced alignment with actual outcomes.

**Gender.** In the final model with all other factors controlled, female students had a 9.96% increased probability of application submission compared to male students. The B coefficient for female students was reduced significantly when the third block of controls were added (\( t (1) = -12.15; p < 0.05 \)). Despite the reduction, gender was still a significant factor in application submission with females more likely to apply.

**Race.** As in the previous models, the race variable revealed that both Asian/Hawaii Pacific Islanders and black students had increased probabilities of applying of 15.00% and 11.91% compared to white students when all other predictors were
controlled. No significant differences were found in the likelihood of applying between white students and American Indian/Alaska Natives, Hispanic, or multiracial students when controls for individual and microsystem variables were in place. The B coefficient for Asian/Hawaii Pacific Islanders was not reduced significantly between models 2 and 3. However, the B coefficient for black students was reduced by a significant amount when the microsystem variables were added \((t(1) = -4.84; p < 0.05)\).

**Academic Ability.** Controlling for other factors in the model, a one-unit increase in academic ability resulted in a 1.78% increased probability of applying. The B coefficient of academic ability was not reduced significantly when block 3 was added.

**Socioeconomic Status.** In terms of application submission, a one-unit increase in socioeconomic status increased the probability of applying by 11.33%, when accounting for all other independent and control variables. Results of a t test indicate that the addition of the microsystem controls significantly reduced the B coefficient, \(t(1) = -19.47, p < 0.05\). Although the third block of controls explains some of the relationship with application submission, socioeconomic status remains a significant factor.

**Set 4, Block 3: Microsystem Controls**

The final block of variables, which included indices of family capital, social capital, parental encouragement, and school context, as well as curriculum, were all significant. Except for English self-efficacy, all other variables in the model held their significance when these factors were added. Again, the model fit was strong in model 2, and was improved with the additional controls as shown by the increase in McFadden \(R^2\).
from 0.22 to 0.25. The percent of correct classifications also improved to 76.4% (from 75.1%). Each of the microsystem factors is briefly discussed.

**Family Capital.** The measure of family capital revealed that a one-unit increase in familial support for college increased the probability of applying by 3.93%, controlling for all other factors. Thus, family support had a significant relationship with applying for college.

**Social Capital.** Support for college from a student’s school and friend network also had a significant relationship with application submission. A one-unit increase in social support for college produced a 2.56% increased probability of applying for college.

**Parental Encouragement.** Discussions with parents about academic topics was also significant in explaining application submission. A one-unit increase in parental encouragement resulted in a 1.34% increase in application completion probability when controlling all other variables in the model.

**School Context.** Levels of participation in college-preparation activities in the school environment also increased the likelihood of applying. A one-unit increase in the school-context index produced a 0.90% increase in the probability of applying (accounting for all other factors).

**Curriculum.** Students in a college-preparatory curriculum had an increased probability of applying 10.49% above those in a general or vocational curriculum with all
other factors controlled. This revealed a significant relationship between curriculum track and college-application submission.

Summary of Application Status Models

Nearly all of the independent, individual, and microsystem controls were significant in explaining application submission. Only English self-efficacy and three of the racial groups—American Indian/Alaska Native, Hispanic, and multiracial—were not significant factors.

- Students with bachelor’s aspirations had an increased probability of application submission of 21.91% compared to students with lower levels of educational aspirations.
- A one-unit increase in math self-efficacy enhanced the chance of application submission by 4.36%.
- Female students had a 9.96% increased probability of applying compared to male students.
- Asian/Hawaii Pacific Island students had a 15.00% increased probability, and black students had an 11.91% increased probability of application submission compared to white students.
- A one-unit increase in academic ability increased the likelihood of application submission by 1.78%.
- A one-unit increase in socioeconomic status increased the probability of application submission by 11.33%.
• A one-unit increase in family capital increased the probability of applying by 3.93%.

• A one-unit increase in social capital increased the probability of application submission by 2.56%.

• A one-unit increase in parental encouragement increased the probability of applying by 1.34%.

• A one-unit increase in school context resulted in a 0.90% increase in likelihood of submitting an application.

• Students in an academic curriculum had an increased probability of exam completion of 10.49% compared to students in a vocational or general curriculum.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th></th>
<th></th>
<th>Model 2</th>
<th></th>
<th></th>
<th>Model 3</th>
<th></th>
<th></th>
<th>Delta-P</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>B (SE)</td>
<td>T-Value</td>
<td>B (SE)</td>
<td>T-Value</td>
<td>B (SE)</td>
<td>T-Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Aspirations</td>
<td>2.04 (0.15)**</td>
<td>1.29 (0.16)**</td>
<td>-31.19**</td>
<td>0.91 (0.17)**</td>
<td>-13.94</td>
<td>21.91%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Self-efficacy</td>
<td>0.27 (0.05)**</td>
<td>0.13 (0.05)**</td>
<td>-56.00**</td>
<td>0.06 (0.05)</td>
<td>-28.00**</td>
<td>4.36%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math Self-efficacy</td>
<td>0.34 (0.05)*</td>
<td>0.23 (0.05)</td>
<td>-44.00**</td>
<td>0.20 (0.05)**</td>
<td>-12.00*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (Male = reference)</td>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>0.55 (0.09)**</td>
<td>0.44 (0.10)**</td>
<td>-12.15*</td>
<td>9.96%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race (White = reference)</td>
<td></td>
<td></td>
<td></td>
<td>American Indian/Alaska Native</td>
<td>-0.25 (0.51)</td>
<td>0.15 (0.53)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Asian/Hawaii Pacific Islander</td>
<td>0.69 (0.26)**</td>
<td>0.73 (0.26)**</td>
<td>0.59</td>
<td>15.00%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Black</td>
<td>0.70 (0.17)**</td>
<td>0.56 (0.17)**</td>
<td>-4.84</td>
<td>11.91%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hispanic</td>
<td>-0.70 (0.15)</td>
<td>-0.09 (0.15)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>More than one race</td>
<td>0.40 (0.25)</td>
<td>0.42 (0.25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academy Ability</td>
<td>0.08 (0.01)**</td>
<td>0.08 (0.01)**</td>
<td>0.00</td>
<td>1.78%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.67 (0.07)**</td>
<td>0.56 (0.08)**</td>
<td>-19.47*</td>
<td>11.33%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Capital Index</td>
<td>0.18 (0.05)**</td>
<td>0.12 (0.04)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Capital Index</td>
<td>0.06 (0.02)**</td>
<td>0.04 (0.01)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Encouragement Index</td>
<td></td>
<td></td>
<td></td>
<td>College Preparatory</td>
<td>0.46 (0.10)**</td>
<td>10.49%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Context Index</td>
<td>0.12 (0.04)**</td>
<td>2.56%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Track (Vocat/General = ref.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.21 (0.14)**</td>
<td>-5.11 (0.36)**</td>
<td>-7.33 (0.47)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\chi^2$, df</td>
<td>433.27, 3***</td>
<td>820.74, 11***</td>
<td>949.88, 16***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McFadden R^2</td>
<td>0.11</td>
<td>0.21</td>
<td>0.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted McFadden R^2</td>
<td>0.11</td>
<td>0.22</td>
<td>0.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>71.6%</td>
<td>75.1%</td>
<td>76.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, *** p < 0.001
Chapter Summary

A brief summary of results from each set of analyses designed to answer the research questions is offered, followed by common factors that were influential in both steps. The focus of this summary is on findings from the fully specified model for each step.

College-Entrance-Exam-Completion Results

Of the independent variables predicting exam completion, both aspirations and English self-efficacy were significantly influential on exam completion. In the fully specified model predicting college-entrance-exam completion, bachelor’s aspirations increased the probability by 9.18%. English self-efficacy increased the probability of completing a college-entrance exam by 1.40% with a one-unit increase. The unique influence of math self-efficacy was eliminated in the fully specified model.

As far as independent controls, gender was significant in all of the models showing that females were more likely than males to complete an SAT or ACT exam. Similarly, black and Hispanic students were more likely than their white counterparts to complete a college-entrance exam when accounting for all of the independent, individual, and microsystem control variables in the models. Academic ability and socioeconomic status were also significant across all four of the models, and their coefficients were reduced when the microsystem controls were added, explaining some of the relationship with exam completion.
Three of the microsystem controls—social capital, school context, and enrollment in an academic curriculum—significantly contributed to explaining exam completion in the fully specified model. The baseline classification started at 90.8%, since most students take an SAT or ACT, and was improved to 91.5% in the final model with all variables.

**Application Submission Results**

In the fully specified model, bachelor’s aspirations and math self-efficacy were significantly influential on application submission. In this application step, English self-efficacy lost significance, which was in contrast to the exam-completion models in which math self-efficacy lost significance.

As in the exam-status models, all of the individual-level variables were significant with one key difference. Race was significant in both steps; black students were more likely than white students to take a college-entrance exam and submit an application when controlling for the independent, individual, and microsystem controls. However, while Hispanic students were more likely than whites to take a college-entrance exam, they did not differ significantly from whites when it came to application submission. The racial group that did differ from whites in terms of submitting an application was the Asian/Hawaii Pacific Islander group, who were more likely than whites to complete this step. Other than the racial-group difference, other individual controls, including gender, socioeconomic status, and academic ability, were significant.

All five of the microsystem control variables were significant in all of the application submission models. This demonstrates that students’ families, parents, social
networks, school environments, and curriculum all exert a significant influence on application submission.

Common Factors that Influenced Exam Completion and Application Submission

In the fully specified model for both steps that included all of the independent and control variables, several commonalities emerged. First, bachelor’s aspirations were a highly influential factor in explaining exam completions and application submission. English self-efficacy was significant in predicting college-entrance-exam completion; however, it was not significant in predicting application status, underscoring the dynamic nature of the application process. Conversely, math self-efficacy was significant in predicting application submission; however, it was not a significant factor in exam completion. All of the factors from the individual level of control variables were significant, although varied in terms of influence between the two steps. In both steps, black students were more likely than whites to complete the step when accounting for all other factors in the model. From the microsystem layer, social capital and school context were significant factors in both steps. Family capital and parental encouragement were not significant in exam completion, but were significant in application submission. Additional discussion and interpretation of the results follow in Chapter Five.
The aspiration-attainment paradox was a key impetus for this study. Only a little more than half of students are able to realize their bachelor’s aspirations and this unfortunate phenomenon requires examination (Klasik, 2012; Roderick et al., 2008). By investigating each step in the application process and factors that influence those steps, it may be possible to discover better ways to facilitate the application process. To refresh the context of this study, the application steps are intertwined with the college choice process. The college choice process is comprised of three phases: predisposition, search, and choice (Hossler & Gallagher, 1987). Predisposition is when students decide if they want to pursue postsecondary education (Hossler & Gallagher, 1987). It was operationalized by three independent variables (bachelor’s aspirations, English self-efficacy, and math self-efficacy). Search is when students gather information about colleges and universities, establish a choice-set of potential colleges, and when they typically take the SAT or ACT (Hossler & Gallagher, 1987; Hossler et al., 1999). Completion of a college-entrance exam was selected to operationalize the search phase of the college choice process. Choice is when students ultimately select an institution to attend (Hossler & Gallagher, 1987). Given the focus of this study on the application process itself, application submission was selected to signify choice—a nonnegotiable step that must occur before admission to a four-year institution.
Many studies have explored the college choice process; however, the unique contribution of this study is the use of a national dataset to examine two distinct measures of academic self-efficacy: English self-efficacy and math self-efficacy. These measures were new in the Education Longitudinal Study of 2002 (ELS:2002). Academic self-efficacy offers many natural links to college choice and has been cited by a number of authors as an important component of college-preparation programs (Arnold, Lu, & Armstrong, 2012; Bergerson, 2009; Corwin, Colyar, & Tierney, 2005; Tierney & Hagedorn, 2002). Therefore, it is important to understand the influence of academic self-efficacy in conjunction with bachelor’s aspirations on important steps in the application process. A better understanding may support a variety of stakeholders who can help prepare students to navigate the college-application process.

Research Questions

This study was guided by two primary research questions:

1. Is completion of a college entrance exam associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?

2. Is submission of an application to a four-year institution associated with (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively?
To describe the unique contributions of the independent variables under investigation, it was necessary to account for individual and microsystem factors that also influence the college choice process.

**Summary of Methodology**

A quantitative analysis of secondary data was conducted to explore the research questions. The analyses were run with a nationally representative sample from the publicly accessible ELS:2002/04 dataset. The sample included students who were observed in both the 2002 and 2004 rounds of data collection and provided responses to relevant factors under study. A series of four logistic regression analyses were conducted to answer each research questions under investigation. In the first set of analyses the dependent variable was completion of a college-entrance exam (i.e., SAT/ACT). In the second set of models, the submission of an application was the dependent variable. In both sets of analyses, a hierarchical model-building strategy was used. In each model, the independent variable(s) was added first (aspirations, English self-efficacy, and/or math self-efficacy). Next, a set of individual-level controls (gender, race, academic ability, and socioeconomic status) were added. Last, a set of microsystem controls (family capital, social capital, parental encouragement, school context, and curriculum) were added. The results provided information about the significance of each factor in terms of increased probability (Delta-p) of completing each of the application steps. The results of the study are summarized along with related literature.
The conclusions are organized by each research question and the answers are drawn from the final models in the analyses that include all independent, individual, and microsystems control variables, unless otherwise noted. Thus, response to part D of the research question (are the variables collectively associated with college-entrance-exam completion) are embedded in each response below. Consequently, each independent, individual, and microsystem variable discussed in the subsequent sections controlled for all other factors in the analyses.

**College Entrance-Exam-Completion Conclusions**

The first research question sought to understand how college-entrance-exam completion, a key application action in the search phase, was influenced by bachelor’s aspirations, English self-efficacy, and math self-efficacy. The findings were mixed.

**Bachelor’s Aspirations.** In response to part A of research question 1, this study found that bachelor’s degree aspirations were positively associated with completion of a college-entrance exam. Students with bachelor’s aspirations had a 9.18% increased probability of completing an SAT or ACT compared to students who did not aspire to at least a bachelor’s degree. This represents a substantial increase for a single variable considering that there are many dynamic factors, such as background, family support, and school culture, that also impact whether or not a student takes an SAT or ACT. The significant influence of bachelor’s aspirations is consistent with prior research, and supports the importance of high academic aspirations early in high school (Adelman,
Earning a bachelor’s degree has lifelong implications in terms of earning potential and other quality of life factors including health and leisure activities (Pascarella & Terenzini, 2005; Perna, 2005). Baum (2014) reported a $21,300 difference between the median earnings of high-school graduates and bachelor’s-degree holders based on 2012 Census data. Students who do not set their sights on a least a bachelor’s degree are at a disadvantage when it comes to completing key steps in the application process. An early predisposition or aspiration to earn a bachelor’s degree has been noted as an essential first step that prompts students to gather the requisite information to take the appropriate steps (Hurtado et al., 1997; Cabrera & La Nasa, 2000; Wells, Lynch, & Seifert, 2011). Fortunately, research has demonstrated an overall trend of increased levels educational aspirations among students. Comparing aspirations in three different cohorts of students from NCES surveys that began in 1980, 1990, and 2002, Goyette (2008) demonstrated a 42% increase in bachelor’s degree aspirations. In 1980, only 43% of student’s reported that they aspired to earn a bachelor’s degree, but by 2002, the portion of students who aspired to a bachelor’s degree had increased to 85%. Per Roderick et al. (2008), this universal increase in aspirations may be attributable, at least in part, to the No Child Left Behind Act, which promised to reduce educational achievement gaps for minority students. Regardless of the increases in aspirations across the board, continued effort to foster aspirations are warranted given its significance as a key factor in predisposition toward college and taking application steps.
English Self-efficacy. In response to part B of the first research question, this study found that English self-efficacy was positively associated with completion of a college-entrance exam. A one-unit increase in English self-efficacy increased the probability of completing an SAT/ACT by 1.40%. While a 1.40% increase in probability should not be over emphasized, it is important to take into account the continuous nature of the underlying measure. The English self-efficacy scale ranged from -2.20 to 1.60 (with the mean standardized at 0) and a standard deviation of 0.99 (approximately one unit). In the original survey items, students reported how often (almost never, sometimes, often, and almost always) they experienced feelings of confidence and understanding regarding English assignments and courses. Depending on how much a student’s English self-efficacy could be increased, it could be more influential on exam completion, particularly students with low initial English self-efficacy. However, that is not to underestimate the task of increasing a student’s self-efficacy. The four sources of self-efficacy include mastery experiences, verbal persuasion, vicarious experience, and physiological response (Bandura, 1997), and it would require time and consistent effort to improve a student’s English self-efficacy meaningfully. However, one study demonstrated that student math self-efficacy can be improved through teacher training and implementation of appropriate strategies (Siegle & McCoach, 2007); thus the same may be true for English self-efficacy. This is an important finding since many factors that influence college-entrance-exam completion are static traits (i.e., race, gender, socioeconomic status) and it is noteworthy that both bachelor’s aspirations and English self-efficacy are potentially malleable and could be increased.
Math Self-efficacy. In response to part C of the first research question, this study did not find a significant association between math self-efficacy and college-entrance-exam completion. The non-significance of math self-efficacy on exam status was unexpected. This finding is contrary to literature on college choice which singles out math as a particularly salient predictor of college enrollment and attainment (Adelman, 1999, 2006; Horn & Nunez, 1997). However, this finding does serve to highlight the fluid nature of the college choice process. As students go through the college choice process, the factors that influence their actions may change.

Further analyses revealed that several other variables in the model diminished the influence of math self-efficacy on exam completion. Although a number of the individual and control variables reduced the math self-efficacy coefficient, three factors from the microsystem eliminated the contribution of math self-efficacy altogether. The three microsystem factors that caused math self-efficacy to lose significance included parental encouragement, social capital, and curriculum. Although parental encouragement was not a significant influence on college-entrance exam either, it was one of the factors that eliminated the significance of math self-efficacy. Perhaps controlling for parents’ encouragement diminishes the effect of math self-efficacy because math self-efficacy may be influenced by parents through vicarious experience (i.e., if my mom is good at math, I am too) or verbal persuasion (a parent telling the student he/she can do it) (Bandura, 1999). Accounting for discussions between students and their parents about academic topics, which could encompass these sources of self-efficacy, may have contributed explanatory power that would have otherwise been attributed to math self-
efficacy. Social capital, or student’s perceptions of support to go to college from his/her friend, favorite teacher, school counselor, and coach also eliminated the influence of math self-efficacy. Again, this may suggest that any math self-efficacy gained through vicarious experience or verbal persuasion from these influential individuals in the students’ school and community may be better explained by social capital as it related to test completion. Finally, curriculum also caused math self-efficacy to lose significance. If students are pursuing an academic curriculum, they have likely exhibited academic ability. Academically inclined students have also likely experienced some sense of subject mastery, the most influential source of self-efficacy, which helps build confidence and motivation to pursue challenging college-preparatory courses (Hagedorn & Fogel, 2002). Despite these possible explanations, additional research to better understand this finding may be necessary.

Exam Status and Significant Individual and Microsystem Controls

In response to part D of the first research question, significant control variables that were positively associated with college-entrance-exam completion are discussed. Bachelor’s aspirations, English self-efficacy, and math self-efficacy were the primary focus of this study, yet many of the individual and control variables were also significant and warrant discussion as they relate to the independent variables, exam completion, and the search phase of the college choice process.

Gender. In this study, female students had a 2.46% increased probability of completing an SAT or ACT compared to male students. Females have represented a
larger portion of college enrollees since the 1990s (Perna, 2006). Although females remain a minority in certain majors, particularly sciences and engineering, they are a slight majority on college campuses (Bergerson, 2009; Perna, 2006). Since the 1970s, shifts in the labor market, social norms, and policies, such as Title IX, have fostered higher levels of educational expectations among female students that exceed those of men (Reynolds & Burge, 2008). These are all likely explanations for why female students in this study were more likely to complete the application steps compared to men. In terms of academic self-efficacy, however, males tend to have slightly higher levels of self-efficacy (effect size of 0.08) based on a meta-analysis of 187 studies (Huang, 2013). Males, specifically, had higher levels of math, computer, and social-science self-efficacy, while females had higher levels of language arts self-efficacy (Huang, 2013). Despite the gender differences in college enrollment and academic self-efficacy, students should be encouraged equally to achieve high levels of education and increase academic self-efficacy in support of college-entrance-exam completion.

Race. In this study, race was influential in exam completion. Black students had a 4.47% increased probability, and Hispanic students had a 3.34% increased probability of exam completion compared to white students. While surprising at first glance, other research has produced similar results (Cabrera & La Nasa, 2001; Plank & Jordan, 2001). Plank and Jordan (2001) specifically explored the search phase of the college choice process to determine how various factors (background, parental encouragement, college-entrance-exam preparation and completion, and information sources) ultimately influenced students’ postsecondary destinations (four-year, two-year, or not enrolled). In
their analysis of National Educational Longitudinal Study of 1988 (NELS:88) data, controlling for similar background factors, they also reported that Hispanic, black, and Asian students were more likely than white students to attend a four-year institution (rather than attending a two-year college or never enrolling). Additionally, Klasik (2012), found a significant advantage for Hispanic students compared to white students in college entrance-exam-completion, conditional on having college aspirations in tenth grade. While black and Hispanic students have been shown to have high college aspirations (Bergerson, 2009; Villalpando & Solorzano, 2005), there are some contrary findings in the literature. Many studies that do not employ controls for background characteristics have found black and, especially, Hispanic students to be at a distinct disadvantage compared to other racial groups (Berkner & Chavez, 1997; Roderick et al., 2008). There is some encouragement to be drawn from these two groups having an increased likelihood of exam completion when accounting for individual and microsystem controls. In their study of 1992 high-school graduates, Berkner & Chavez (1997) found that low-income black and Hispanic students were less likely than white students to complete a college-entrance exam, and less likely to apply for college. However, if minority students did complete both of those tasks, the racial differences were essentially eliminated for college enrollment among college-qualified students (Berkner & Chavez, 1997).

**Academic Ability.** The probability of completing a college-entrance exam increased by 0.72% for each unit increase in a student’s academic ability. The measure underlying academic ability was based on a standardized test result and was transformed into a continuous variable ranging from 20.91 to 81.04 (standardized to a mean of 50).
Once more, while the unit increase 0.72% appears underwhelming, the potential for impact is significant if a student were to improve his or her score on a standardized test by a substantial amount. The connection between academic ability and college-entrance-exam completion was unsurprising. Self-efficacy research shows a clear advantage for mastery experience to build self-efficacy in specific subjects over other forms of building self-efficacy, such as verbal persuasion or vicarious experience (Bandura, 1997; Pajares, 2008). Hossler, Schmit, and Vesper (1999) reported that 91% of students who earn A grades, and 65% of students who earn B grades attended four-year institutions. The association between academic ability and college-entrance-exam completion is promising because ability could potentially be enhanced by strengthening academic self-efficacy in specific subjects.

**Socioeconomic Status.** In this study, a one-unit increase in socioeconomic status yielded a 2.84% increase in probability of completing a college-entrance exam. The socioeconomic measure was a composite of parents’ education, parents’ occupation, and family income and was transformed into a continuous variable ranging between -2.11 and 1.82 (mean standardized at zero). Although students have virtually no control over their socioeconomic status, the influence of a one-unit difference is larger than the other continuous measures emphasizing the impact of this factor. In the literature, socioeconomic status has also consistently been a strong factor in all three phases of the college choice process (Perna, 2006). In a study comparing urban, low-socioeconomic-status students with wealthier suburban counterparts, Avery and Kane (2004) reported that 97% of the suburban students had taken the SAT or ACT by October of their senior
year compared to only 32% of low-socioeconomic, urban students. Additionally, in a qualitative study of 110 high-school seniors from high-poverty Chicago schools, Deil-Amen and Tevis (2010) reported low levels of understanding about the role of the SAT and ACT in college admission before senior year. The result was that seniors were behind in terms of exam preparation and registration. This once again highlights the importance of early bachelor’s aspirations to trigger students to begin gathering information so they understand the required steps and can make informed decisions about how to prepare and when to act (Cabrera & La Nasa, 2000; Hossler & Gallagher, 1987; Hossler, Braxton, & Coopersmith, 1989; Hossler, Schmit, & Vesper, 1999).

**Social Capital.** This study found that social capital increased a student’s probability of completing a college-entrance exam by 1.10% for each unit increase. Again, this measure was based on four individuals including the student’s friend, favorite teacher, school counselor, and coach. As students move through the search phase of the college choice process, they begin to look to resources beyond their families and friends for college information, seeking out counselors, admissions materials, and college representatives (Hossler et al., 1999). Hossler, Schmit, and Vesper (1999) identify a couple ways social capital is instrumental in college choice. First, social capital yields the information students need to make decisions about college. Second, it can be accessed outside the home, (i.e., teachers, counselors, etc.), which enables students to surpass their parents’ education. Additionally, in his study of the search phase, Schmit (1991) identified three distinct information-gathering strategies: attentive, active, and interactive. Attentive search is a passive stage in which students do not initiate conversation about
college, but pay attention if it comes up in conversation. Active search is characterized by a student “seeking out discussions about education options” (Schmit, p. 60). Finally, interactive search is when a student may initiate conversations with anyone in their microsystem (teacher, family, college representative), request materials, or visit campuses. These phases provide context for the importance of social capital since students in the attentive and active phases may be more likely to overhear and or engage in a conversation about college, if they spend time around people who possess college knowledge.

On a related note, it was somewhat unexpected that parental encouragement and family capital were not significant in terms of college-entrance-exam completion. However, when considered through the lens of the college choice process, this finding is less surprising. As students move from the predisposition phase which is heavily influenced by parents, to the search phase, which generally coincides with junior year, they typically rely less on familial sources of information and look more to external sources (i.e., social capital) (Hossler et al., 1999).

School Context. A unit increase in the school context index, was associated with a 0.33% increase probability of completion of a college-entrance exam. School context ranged between 5 and 30 and represented levels of student participation in activities like college fairs, SAT/ACT-preparation courses, and college-application programs. While research has emphasized the importance of a college-going culture and school support for college preparation (Arnold et al., 2012; McLafferty, McDonough, & Nunez, 2002; Roderick et al., 2008), the school-context index exerted a relatively small amount of
influence in this study. Perhaps the discrepancy is explained in part by a difference in measure. School context was measured by student participation in college-related activities; however, a robust college culture involves support and participation of not only students, but school administrators, teachers, counselors, and parents, to regularly reinforce an expectation for college and discuss postsecondary options with students (McLafferty, McDonough, & Nunez, 2002). In addition, Roderick et al. (2008) use the term “college-going culture” to refer to teachers who report that “they [the teachers] and their colleagues pushed students to go to college, worked to ensure students would be prepared, and were involved in supporting students in completing their college applications” (p. 4). Despite its limited impact, school context was significantly influential in completion of a college-entrance exam. This factor may also be an important element to support development of academic self-efficacy. Students can gain an enhanced sense of self-efficacy through vicarious experience, which may mean that cultivating an environment where students fully engage in college-preparatory activities could help students successfully navigate the application steps.

Curriculum Track. In this study, enrollment in an academic or college-preparatory-curriculum track increased the probability of exam completion by 4.67% compared to a vocational or general curriculum. Rigorous college-preparatory curriculum has been shown to be a pivotal force for educational achievement in a variety of studies (Adelman, 1999; 2006; Hagedorn & Fogel, 2002; Hossler et al., 1989; Perna, 2005, 2006). Like the discussion of academic ability, students who demonstrate an academic propensity receive more encouragement by teachers and others to enroll in more rigorous
courses (Perna, 2005; Bergerson, 2009), which also likely reinforces a strong sense of academic self-efficacy. Additionally, students with at least bachelor’s aspirations are more likely to take steps to enroll in a college-preparatory curriculum (Cabrera & La Nasa, 2000).

Summary. Both bachelor’s aspirations and English self-efficacy were significant influences on college-entrance-exam completion. Unexpectedly, math self-efficacy was not significant in completion of an SAT or ACT. Several microsystem factors eliminated the influence of math self-efficacy and those included parental encouragement, family capital, and curriculum.

Application Submission Conclusions

The second research question focused on how submission of an application to a four-year institution was influenced by (a) bachelor's degree aspirations, (b) higher levels of English self-efficacy, (c) higher levels of math self-efficacy, and (d) all three of these factors (aspirations, English self-efficacy, and math self-efficacy) collectively. Again, submission of an application to a four-year institution was intended to operationalize the choice phase of the college choice process.

Bachelor’s Aspirations. In response to part A of research question 2, this study found that bachelor’s degree aspirations were positively associated with submission of an application to a four-year institution. Students with bachelor’s aspirations had a 21.91% increased probability of applying compared to lower levels of educational aspirations. In another study examining application submission, Cabrera and La Nasa (2001) found that,
in a national sample of students who were in eighth grade in 1988 (NELS:88), bachelor’s expectations (in grade 12) increased student’s probability of applying by 28% compared to students with lower aspirations. The 7% difference in the influence of aspirations and expectations could be due to many factors. Perhaps students are more confident in their plans by senior year and are more likely to execute the necessary actions. Or perhaps, general increase in number of students aspiring to higher levels of education in the ELS:2002 dataset compared to the NELS:88 dataset could explain the difference (Goyette, 2008). As stated previously, the trend over the last few decades has been for all students to aspire to higher levels of education (Goyette, 2008; Roderick et al., 2008; Arnold et al., 2012).

English Self-efficacy. In response to part B of research question 2, this study did not find a significant association between English self-efficacy and submission of an application to a four-year institution. The second measure of predisposition, English self-efficacy, was not significant in the analysis when all of the independent, individual, and microsystem variables were included. In ancillary analysis of the loss of significance, there was only one factor that caused it to fully lose significance and that was the index of family capital. Previous studies have shown a strong connection between academic self-efficacy and family. Kim (2014) used a path analysis to demonstrate that family background comprised of income, parents’ educational expectations, and parental encouragement, explained 50% of students’ academic self-efficacy, which in turn predicted students career and life expectations. Aside from familial influence, however,
limited work in this area had been done and alternate explanations are speculative and require additional research.

**Math Self-efficacy.** In response to part C of research question 2, this study found that math self-efficacy was positively associated with application submission. A one-unit increase in math self-efficacy increased the probability of application submission by 4.36%. Math self-efficacy was measured on a continuous scale that ranged between -1.83 and 1.77 (mean standardized at 0, and a standard deviation of approximately 1). The continuous measure was derived via principal factor analysis from a series of survey items that asked students how frequently they experienced feelings of confidence and understanding in their abilities related to math coursework, assignments, and tests. If a one-unit increase in math self-efficacy can increase the probability of application submission by 4.36%, this finding has potential to increase a student’s likelihood of applying, especially for those with low initial math self-efficacy. While no other studies examining applications included math self-efficacy, there is broad support in the literature for the importance of math on college attendance and performance. Adelman (2006) described the highest math course taken as “a key marker in pre-collegiate momentum” (p. xix). Adelman (2006) also notes the inequity of access to higher-level math courses indicating that Latino and low-income students are less likely to have access to courses above Algebra II. While inequities are not in the purview of this study, the finding that building math self-efficacy may have the potential to help students complete a college application is an opportunity. As mentioned, Siegle and McCoach
(2007) demonstrated that math self-efficacy could be increased through teacher training in a four-week mathematics unit.

Application Status and Significant Individual and Microsystem Controls

In response to part D of the research question, significant control variables that were positively associated with college-entrance-exam completion are presented. All of the individual level and microsystem control variables contributed significantly to application submission and are discussed.

**Gender.** In this study, female students were more likely than male students to submit a college application. Female students had a 9.96% increased probability of applying compared to male students. This finding contrasts with Cabrera and La Nasa’s (2001) finding that female and male students in twelfth grade did not differ in likelihood of application submission. The difference between the findings may simply be accounted for by the use of different datasets. Cabrera & La Nasa used the NELS:88 dataset and this study used the ELS:2002 dataset. Females have continued to participate in college at higher levels and, according to Reynolds and Burge (2008), the proportion of men and women students was approximately equal in the 1980s; but by the 1990s, women surpassed men. Despite the differences, it is important to encourage application submission for all students.

**Race.** In this study, black students had an 11.91% increased probability of applying compared to white students. Asian/Hawaii Pacific Island students also had a
15.00% increased probability of submitting an application compared to white students. In two studies that used the NELS:88 dataset and measured application submissions while controlling for similar background characteristics, both reported similar results (Hurtado et al., 1997; Cabrera and La Nasa, 2001). Cabrera and La Nasa (2001) reported that African-American and Asian-American students were 13% more likely to apply to college than white students. The advantage for minority students over white students is typically only when control variables are in place. With no controls, Cabrera & La Nasa (2001) reported that students in the lowest socioeconomic quartile were 55% less likely to apply to a four-year institution than students from the highest socioeconomic quartile. However, when controls for parental involvement, college qualifications, aspirations, school assistance, and student characteristics are in place, the difference was 26.4%; nearly half. This dramatic decrease illustrates how the use of control variables can reduce and, in some cases even reverse, the otherwise negative association with a specific variable. Race was a significant factor in application submission and, depending on whether or not controls are applied, the advantage for minorities changes.

**Academic Ability.** Academic ability significantly influenced application submission. A one-unit increase in ability produced a 1.78% increased probability in applying. As is the case with other continuous measures, it is necessary to recall the scale. Academic ability ranged from 20.91 to 81.04, with the mean standardized at 50, and was measured by a standardized test score. Therefore, depending on improvement in ability, the potential to greatly increase students’ likelihood of applying exists. The literature supports that students with higher grades are more likely to have higher aspirations and
consider a greater number of college options (Hossler et al., 1999). Additionally, increases in test scores, when controlling for background characteristics, are associated with attending four-year institutions (Perna, 2005). Hurtado et al. (1997) also found that students with higher SAT scores submitted more applications across all racial groups in their study of application behaviors of students from different race groups. The significance of academic ability also reinforces one of the principles of self-efficacy theory, which is that past performance is one of the strongest influences on motivation and behavior (Bandura, 1997).

**Socioeconomic Status.** A one-unit increase in socioeconomic status increased the likelihood of submitting an application by 11.33%. The measure of socioeconomic status was a composite of parents’ education, parents’ occupation, and family income, and was transformed into a continuous variable. The range was between -2.11 and 1.82, even a single-unit increase in socioeconomic status could produce a substantial increase in the likelihood of applying. The expense of college is intimidating and lower-socioeconomic-status students are likely to rely on financial aid to pay for college (Arnold et al., 2012). Hurtado et al. (1997) reported that more than half (52%) of students from the lowest socioeconomic quartile in the NELS:88 dataset did not apply to college compared to 25% who did not apply from the top income quartile. Additionally, Avery and Kane (2004) found that low socioeconomic students from Boston tended to overestimate the cost of college in the absence of accurate information about the actual costs. Bergerson (2009) also documents price sensitivity as well as relatively low levels of understanding about the availability of financial aid among students in lower socioeconomic groups. Thus, the
significance of this finding is well supported in the literature. The magnitude of this finding coupled with the misperceptions and concerns of low-socioeconomic students highlight this as one of the most significant barriers to application submission. To overcome such a barrier, encouraging high aspirations and building a strong sense of academic self-efficacy may be some of the most productive strategies.

**Family Capital.** A one-unit increase in family capital translated into a 3.93% increase in probability of submitting a college application. Family capital represented whether the students mother, father, and close relative thought he or she should go to college after high school. Tierney and Auerbach (2005) explain that college educated family members have the “relevant cultural and social capital” and can help interject at appropriate times to be sure the students stay on track for college. Family capital is advantageous for students with college-educated parents and family members whereas students who are the first in their families to go to college must find information elsewhere. Bergerson (2009) reports that higher-income parents can provide financial support as well as help convey information about which institution may be a good fit for the student. By contrast, lower-socioeconomic parents may feel ill-equipped to guide their students through the process and may only be able to offer encouragement and moral support rather than more concrete forms of support (Bergerson, 2009; Walpole, 2007).

**Social Capital.** Social capital was also a significant influence on application submission. A one-unit increase in social capital increased a student’s probability of
applying by 2.56%. This measure reflected support for college from a student’s friend, school counselor, favorite teacher, and coach. These individuals represent influential others in a student’s social network and McDonough (1997) elaborated on how counselors can heavily influence, both positively or negatively, a student’s college options. Relatedly, Deil-Amen & Tevis (2010) report the unfortunate reality of how counselors and teachers at low-performing schools may unintentionally set a low level of expectations that can give average or underperforming students an overinflated sense of their academic ability. To effectively calibrate their sense of self-efficacy and interpret performance accurately (Pajares, 2008) in environments that are heavily skewed, students may need access to national averages or other objective data that may be obtained through social capital.

Parental Encouragement. A one-unit increase in parental encouragement increased the probability of applying by 1.34% in this study. The parental-encouragement scale in this study ranged from 6 to 18 and measured the variety and frequency of academic-related discussions with parents. Myers & Myers (2015) explored the predictors of student-parent discussions about college plans and advanced the idea that college-planning discussions are a distinct and important college-preparatory activity. They found that students and parents with higher aspirations were more likely to engage in academically focused discussions, and they also found advantages for two adult households, especially biologically married parents (Myers & Myers, 2015). Parental encouragement has been widely reported as a significant influence on a student’s college aspirations, enrollment, and success (Bergerson, 2009; Hossler et al., 1999; Plank &
Jordan, 2001; Tierney & Aurbach, 2005). In this study, parental encouragement was also influential on application submission.

School Context. School context was associated with a 0.90% increased probability of application submission for each unit increase in participation. The school-context scale ranged from 5 to 30, which reflected participation levels in college-preparatory activities at the school (i.e., attending a college fair or taking an SAT preparation course). Roderick (2008) and Cabrera and La Nasa (2001) also found evidence to support the importance of specific elements of school context. Receiving help with application materials increased the chances of applying by 11% (Cabrera & La Nasa, 2001). Schools that emphasize college-going activities may foster an environment in which students compare attendance of preparatory activities or even number of applications submitted.

Curriculum Track. Enrollment in an academic curriculum track increased the probability of application submission by 10.49% compared to general or vocation curriculum. The quality and rigor of high-school coursework is strongly associated with college attendance and application submission (Adelman, 2006; Arnold et al., 2012; Perna, 2005). Perna (2005) explicates from an economic perspective that students who are less academically prepared are less likely to enroll in college for fear that they may not succeed in the coursework required for the desired career. This is strikingly similar to the logic of self-efficacy theory and again reinforces its connection to encouraging students to complete the application process.
**Summary.** The significance of bachelor’s aspirations and math self-efficacy are well supported in the literature. The most surprising finding in this set of analyses was the lack of significance of English self-efficacy in explaining application submission. Again, this finding underlines the shifts in relevant factors as students progress through the college choice and application processes.

**Comparing the Exam-Status and Application-Status Models**

In general, the factors that were influential on college-entrance-exam completion were even more influential on application submission. Bachelor’s aspirations increased the probability of exam completion by 9.18% compared to students with lower aspirations, but it increased the probability of application submission by 21.91% compared to students with lower aspiration. All of the individual and microsystem variables that were significant in the first set of analyses were nearly twice as influential in the second set of models (and in many cases more than double). This increase in influence may be explained by a variety of factors. Since most students in the sample completed a college-entrance exam, one explanation could be that most schools are adequately equipped to support students in completing college-entrance exams (i.e., providing information about upcoming testing dates, registration deadlines, etc.). Thus, students may rely less on sources of familial, cultural, and social capital to gain relevant information for college-entrance exams compared to college applications. Additionally, test taking is a relatively low-risk endeavor in terms of cost and possible repercussions since it can be retaken if necessary. In contrast, enrolling in college, especially four-year institutions, is often associated with a significant financial burden and more risk,
especially if the student goes away to college, thereby accounting for the increase in influence of a variety of factors. This consideration of the cost of college may also be evident in the socioeconomic status measure, which increased the probability of exam completion by 2.84% for each unit increase, but jumps to an 11.33% increase in probability for each unit increase for application submission.

Two findings that were surprising in this study involved the academic self-efficacy measures. English self-efficacy increased the probability of college-entrance-exam completion by 1.40% for each unit increase, but was not significantly influential on application submission. Conversely, math self-efficacy was not significant in exam completion, but increased the probability of applying by 4.36% for each unit increase. This shift in significance suggests the need for additional research (see discussion in the next section) and it also begs the question of why this was the case. Perhaps students perceive language skills to be more important for college-entrance exams than for college enrollment. Or perhaps as the intensity of math courses increase later in high school students recognize the rigor of math required to prepare for college.

**Recommendations for Future Research**

This findings from this study exposed several areas that could be fruitful areas for additional research:

- There were some interesting findings related to math self-efficacy and exam completion and English self-efficacy and application submission. Math self-efficacy lost significance in the model predicting whether a
student took a college-entrance exam. This is at odds with other studies that have found math to be a particularly salient variable associated with attainment (Adelman, 1999). Additionally, English self-efficacy was not significant in the final model predicting application submission. Further exploration into these areas may help shed light on how and when it is critical to facilitate academic self-efficacy in specific domains to help students achieve their educational goals.

- Self-efficacy is thought to be a precursor of action because, if one does not believe an outcome is within his or her capability, he or she may not commence the task. However, once a student believes he or she can be successful at a task, (i.e., go to college) the concept of self-regulation comes into play. The constructs of aspirations and self-regulation share many characteristics. Self-regulation involves forethought, performance control, and self-reflection (Schunk, 2008). This construct may also offer useful insight into how to support students in the complex path to college.

- As described in Chapter One, the questions asked in a national dataset are not necessarily the exact questions a researcher may have in mind. Additional research to better understand key domains of academic self-efficacy that foster college attendance may be necessary. This study provides evidence of a significant connection between academic self-efficacy and taking actions toward college admission. It is important to further understand that relationship to determine how academic self-
efficacy can help trigger students to take the actions required to complete the college-admission requirements. This is currently a gap in the literature that this study aims to address, and more research is needed in this area.

- This study added to the literature that examines individual steps in the college-application process and demonstrated some interesting shifts in factors that influence key steps. Additional research is needed to help refine critical steps and identify important factors that influence those steps. This will help ensure strategies and interventions can be implemented effectively at appropriate times throughout the application process. A natural expansion on this study would be the inclusion of enrollment status to examine the influence of academic self-efficacy on this critical factor.

**Implications for Practice**

There are several implications for practice based on the findings from this study.

Implication 1: Consistent with the literature, this study found that bachelor’s aspirations are a key factor in completion of necessary application steps (Cabrera & La Nasa, 2001; Hurtado et al., 1997; Perna, 2006). This study also found that students’ families and social networks (made up of friends, favorite teacher, school counselor, and coaches) exert a significant influence on the likelihood of application submission. Social networks are also influential on college-entrance-exam completion. Based on these
findings, influential adults (both in the home and at school) should encourage young
students (even before high school) to pursue the highest level of education they desire.
Cultivating students’ aspirations to pursue college at an early age is important since it
instigates the process of college planning and prompts students to enroll in college-
preparatory courses, such as eighth-grade algebra. Encouragement from significant others
is an important aspect of social and cultural capital that can foster college-going efficacy
through sustained encouragement and support from childhood through adolescence.

Implication 2: Building academic self-efficacy has been a recommended strategy
for improving college-going rates among college-preparation programs (Corwin, Colyar & Tierney, 2005). Findings in this study support this notion that building academic self-
efficacy is an important strategy. English self-efficacy influenced exam completion while
math self-efficacy influenced applying to college. These fluctuations indicate that
students must rely on different sources of self-efficacy as they go through the college
choice process and, therefore, it is important to foster a well-rounded sense of academic
self-efficacy. The four primary sources of self-efficacy include mastery experiences,
verbal persuasion, vicarious experience, and physiological response (Bandura, 1997).
Mastery experiences of specific subjects exert the most influence on a student’s sense of
self-efficacy; thus, it seems that school may be the most important place to help develop
academic self-efficacy. That is not to say supplemental work and support at home may
not provide additional opportunities to build academic self-efficacy. Considering the
unequal access to college for many underprivileged students, schools and teachers may
be in the best position to help students to increase academic self-efficacy in core subjects.
By providing challenging assignments and facilitating the opportunity to master the assignment, in addition to verbal encouragement and high expectations for classroom performance, higher levels of academic self-efficacy can be cultivated.

Implication 3: Many students do not have access to accurate information about the college-application process and what is required (Deil-Amen & Tevis, 2010; Klasik, 2012; McDonough, 1997). Institutions of higher education can help address this need in several ways. First, institutions can educate college students who intend to teach or counsel at the elementary, middle, and high school levels on the importance of early college aspirations as well as the challenges students face in navigating the application process. Future teachers and counselors should be aware of their role in the process and how they can best support students for long-term success. Second, either through partnership with local schools or through distribution of information, institutions can provide the following information to students, their families, and schools to help prepare them to successfully participate in the college-application process:

- Guidelines for college-preparatory-curriculum requirements and recommended courses throughout high school.
- Detailed information, perhaps even year-by-year breakdown throughout high school that provides a clear picture of the overall college-application steps.
- Key deadlines for financial-aid applications, scholarships, and admission applications.
• Accurate information about average college-entrance-exam scores, GPAs and other benchmark data for students at that college.

Implication 4: Enrollment in an academic curriculum in high school was a significant factor in completion of the SAT/ACT and submission of an application in this study. Students and parents need accurate information about what a college-preparatory curriculum entails as early as seventh grade when many students are faced with the decision as to whether they want to take algebra in eighth grade (Tierney & Auerbach, 2005). School personnel, such as counselors and teachers, may be in the best position to intervene at this phase and encourage all students to register for a college-preparatory curriculum beginning in middle school. There are historic gaps in academic preparation between students in the lowest socioeconomic status and those in the highest (Walpole, 2007). A more radical intervention may be automatically enrolling all students that meet academic standards into a college-preparatory curriculum with the opportunity to opt-out if they choose to do so, rather than requiring them to opt-in. This would at least ensure that academically adept students would not be accidentally overlooked early-on, which would limit their ability to pursue college later.

Concluding Remarks

Overall, this study reinforced the importance of maintaining high levels of bachelor’s aspirations among young students. Early aspirations facilitate actions that help students make appropriate curriculum choices and maintain momentum toward college. Academic self-efficacy also helps facilitate steps in the college-application process.
English self-efficacy is a significant factor in college-entrance-exam completion. Math self-efficacy is a significant factor in college-application submission. All three of these factors are malleable and should be fostered before and throughout high school to help equip students for success in the college-application process, a critical precursor to success in college.


Education: Knowledge and skills for the jobs of the future—Higher Education (2015, October), Retrieved from https://www.whitehouse.gov/issues/education/higher-education


