EXAMINING ATTENDANCE PATTERNS OF STUDENTS ENROLLED IN

AMERICAN COMMUNITY COLLEGES

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This dissertation entitled
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Abstract

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EXAMINING ATTENDANCE PATTERNS OF STUDENTS ENROLLED IN
AMERICAN COMMUNITY COLLEGES (180 pp.)

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This study was designed to (a) describe selected characteristics of students who stop out of, drop out of, and enroll continuously in American community colleges, (b) test for differences relative to selected characteristics between students who stop out of and students who drop out of American community colleges, and (c) examine what associations there are between selected characteristics and whether students stop out of or drop out of American community colleges. The main purpose of this study was twofold: (a) to reduce the gap found in the literature relative to the attendance patterns of students who enroll in American community colleges and (b) to help community college personnel better understand and address their students’ needs through a review of recommendations and intervention programs related to the retention of students.

This study utilized nationally representative data gathered from the National Postsecondary Student Aid Study 1995-96 (NPSAS:96) and the Beginning Postsecondary Students Longitudinal Study 1996-2001 (BPS:1996/2001). The first research question was answered through the use of weighted estimates and standard errors. The second research question was answered through the use of t-tests, contingency tables, and Pearson’s chi-square. The third research question was answered through the use of forced entry binary logistic regression.
In addition to describing selected characteristics of students who stopped out of, dropped out of, and enrolled continuously in American community colleges between 1995-96 and 2000-2001, this study found that there are significant differences relative to the purpose for enrolling, parents’ combined highest level of education, and first attending a small institution between students who stop out and students who drop out of community college. Finally, this study found that there are two characteristics – academic integration and first attending a small institution – which had a significant association with whether students will stop out of or drop out of American community colleges.

Approved: 

Valerie Martin Conley

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Dr. Hunter! Who knew! In any case, I thank you, Joyce. You are my mentor, my role model, and my dear friend.

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# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>4</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>6</td>
</tr>
<tr>
<td>List of Tables</td>
<td>13</td>
</tr>
<tr>
<td><strong>CHAPTER ONE</strong></td>
<td>15</td>
</tr>
<tr>
<td>Introduction</td>
<td>15</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>20</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>22</td>
</tr>
<tr>
<td>Research Questions</td>
<td>23</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>25</td>
</tr>
<tr>
<td>Definitions of Terms</td>
<td>26</td>
</tr>
<tr>
<td>Delimitations of the Study</td>
<td>30</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>31</td>
</tr>
<tr>
<td>Organization of the Study</td>
<td>32</td>
</tr>
<tr>
<td><strong>CHAPTER TWO</strong></td>
<td>33</td>
</tr>
<tr>
<td>Review of the Literature</td>
<td>33</td>
</tr>
<tr>
<td>Demographic Characteristics of Students Who Leave College</td>
<td>35</td>
</tr>
<tr>
<td>Age</td>
<td>35</td>
</tr>
<tr>
<td>Employment Status</td>
<td>36</td>
</tr>
<tr>
<td>Familial Commitments</td>
<td>37</td>
</tr>
<tr>
<td>Gender</td>
<td>38</td>
</tr>
</tbody>
</table>
List of Tables

Table 1. Weighted Estimates and Standard Errors of Academic Integration Index 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled..............................107
Table 2. Weighted Estimates and Standard Errors of Purpose for Enrolling 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled...................................108
Table 3. Weighted Estimates and Standard Errors of Hours Worked per Week 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled...................................110
Table 4. Weighted Estimates and Standard Errors of Parents’ Combined Highest Level of Education by Stopouts, Dropouts, and Students Continuously Enrolled.............111
Table 5. Weighted Estimates and Standard Errors of Students’ Part-Time Enrollment 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled ...............113
Table 6. Weighted Estimates and Standard Errors of Students’ Disability Status 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled.........................114
Table 7. Weighted Estimates and Standard Errors of Size of Institution First Enrolled 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled .................116
Table 8. Contingency Table of All Five Categorical Variables Combined by Stopouts and Dropouts (DEPEND2) .........................................................................................117
Table 9. Contingency Table of Purpose for Enrolling (PURPOSE) by Stopouts and Dropouts (DEPEND2) .........................................................................................119
Table 10. Contingency Table of Parents’ Combined Highest Level of Education (PARENTS) by Stopouts and Dropouts (DEPEND2) ..........................................................121
Table 11. Contingency Table of Students’ Part-Time Enrollment (PARTTIME) by Stopouts and Dropouts (DEPEND2) .................................................................122

Table 12. Contingency Table of Students’ Disability Status (DISABLED) by Stopouts and Dropouts (DEPEND2) ...............................................................124

Table 13. Contingency Table of Those Who First Attended a Small Institution (SMALL) by Stopouts and Dropouts (DEPEND2) .................................................................125

Table 14. Contingency Table of Those Who First Attended a Medium Institution (MEDIUM) by Stopouts and Dropouts (DEPEND2) .................................................................128

Table 15. Summary of the Forced Entry Binary Logistic Regression Analysis for the Effect of Selected Characteristics on Whether Students Will Stop Out of or Drop Out of American Community Colleges .................................................................131
CHAPTER ONE

Introduction

In today’s world of higher education where resources are scarce and competition is fierce, the search for methods to recruit and retain students has risen to the top of many college administrators’ agendas. While research focusing on the retention and attrition of students in four-year colleges is somewhat prevalent throughout the literature, the same cannot be said for research on the attendance patterns of students attending two-year colleges (Grosset, 1993; McArthur, 2005; Metz, 2002; Napoli & Wortman, 1998; Tharp, 1998; Zhai & Monzon, 2001). Given the facts that American community colleges enroll 6.6 million undergraduate students (American Association of Community Colleges [AACC], 2006) and that nearly 50% of students entering community colleges leave before the end of their first year (Berger & Braxton, 1998), it would seem that there is a need for research studies that examine characteristics of community college students relative to their attendance patterns.

Why students leave college remains somewhat of an enigma to researchers and practitioners in higher education. Students may decide to leave due to their pre-enrollment characteristics, background variables, and commitment levels (Tinto, 1975). These factors can be strengthened or weakened by how successfully or unsuccessfully students are integrated into the academic spheres of the institution. The greater the integration, the more likely it is that students will remain at their school (Tinto, 1975).

Administrative (i.e., organizational) behaviors may have an influence on student retention and attrition. Organizational attributes such as college-wide communication and
fairness in the administration of policies and rules have been found to affect students’ decisions to stay or to go (Astin & Scherrei, 1980).

Students’ past communities exert influence on whether or not students are retained (Tinto, 1987, 1993). Students who are willing to reject the values of their past communities (e.g., the lack of support for college attendance) are more likely to remain in college. Likewise, if a college education is valued by people in those past communities, students are more likely to remain in school. Conversely, students who fail to receive support (emotional or otherwise) for attending college are more likely to leave college early (Tinto, 1987, 1993).

Sometimes, it is difficult to discern between the characteristics of those students who leave early with no intention of returning and those who leave early but who ultimately return. Grosset (1993) conducted a research study that focused on one institution – a large, urban community college that enrolled approximately 11,000 students. Grosset used discriminant function analysis to study the multivariate differences between students who stopped out of college and those students who enrolled continuously. The researcher found that the characteristics that best predicted retention and attrition patterns in community college students were predominantly demographic (e.g., gender, race, and age) and “lifestyle” (e.g., employment status and familial demands) in nature.

Summers (2003) reviewed several research studies that focused on attendance patterns of community college students. Summers’ findings mirrored those of Grosset
(1993) in that demographic and lifestyle characteristics seemed to be among the best predictors of attendance patterns of community college students.

Similar to Summers, Metz (2002) concurred with the characteristics suggested by Grosset (1993). Metz argued that studies focusing on enrollment patterns of students attending community colleges were being conducted using models that were better suited for students attending four-year colleges and universities; therefore, the results of these studies did not reflect the true situations at community colleges. He felt that most of these studies were flawed because they did not address variables that were unique to community college students and their enrollment patterns. In addition, Metz noted that leaving college, especially for community college students, should not always be perceived as a negative occurrence. That is to say, leaving college might be due to a variety of situational circumstances; it may not necessarily equate to staying out permanently.

Tinto (1993) agreed with this belief as well. He noted that the major difference between stopouts and dropouts is that students who stop out will return to college whenever the situation that was the reason for stopping out is resolved whereas students who drop out are likely never to return to college. Students who stop out may have more of a commitment to college than do students who drop out, and that is what pulls them back into school eventually. Therefore, stopping out should not necessarily be seen as a detriment, but possibly as a temporary detour that students face while trying to achieve their educational goals.
Brunsden, Davies, Shevlin, and Bracken (2000) concurred with Metz (2002) and Tinto (1993) when they suggested that the departure by individuals from college can be an entry for those individuals into another world that is full of new experiences. That is not to say that the people cannot return to college once they have satiated their desires to explore their new worlds. Brunsden et al. noted that stopping out of college should not always be viewed as a detriment, especially in the community college sector.

Adelman (2006) reported that it is somewhat of a falsehood to say that first-year students leave in large numbers before the end of their first year. Instead, he argued that 90% of students who leave their original institution appear “somewhere…and at some time…during the subsequent calendar academic year” (Adelman, 2006, p. 1). This statement corroborates the previously disclosed arguments of Metz (2002), Tinto (1993), and Brunsden et al. (2000) that it is not a detriment to students if they decide to stop out as long as they eventually return to school.

To show that stopping out of college is not a detriment to students, Horn (1998) produced a study using data from the National Center for Education Statistics (NCES) 1989-90 Beginning Postsecondary Students Longitudinal Study (BPS:90/94). Of the 42% of first-year community college students who left college before the end of their first year, Horn showed that 50% of them returned at some point before 1994 (the fifth year in the five-year study). Of those 50% who returned, 57% came back to their original institution while 43% transferred to another institution (13% to 4-year schools, 51% to 2-year schools, and 37% to less-than-2-year schools). By 1994, 20% of the stopouts had
attained an Associate’s degree compared to 27% of the students who persisted to their second year (1990-91).

In addition, Horn (1998) examined characteristics of students at both 4-year colleges and 2-year colleges who stopped out and who dropped out. Her purpose was to see what differences there were, if any, among students inside each institutional sector relative to staying out and stopping out by using national data.

Given the fact that it has been nearly a decade since Horn’s 1998 study, there is a need for more contemporary research relative to the attendance patterns of students who attend 2-year colleges using the most recent national data. In a footnote in her study, Horn suggested the need for a study which focuses on students attending 2-year colleges and which uses the most recent national data available.

In the near future, it will be possible to explore the intentions of students enrolled in subbaccalaureate institutions in more depth using data from the First Follow-up of a new BPS cohort, made up of students who first began their postsecondary education in the academic year 1995-96. This survey specifically asked students enrolled in 2-year or less-than-2-year institutions the primary reason they were enrolled. Possible responses included job skills (nondegree program); degree or certificate; transfer to a 4-year school; or personal enrichment. This survey will help better distinguish the various reasons students attend subbaccalaureate institutions, which will make it possible to identify more accurately students who are stopouts, dropouts, or those who have fulfilled their educational goals short of earning a credential. (Horn, 1998, p. 47)
This dissertation is one of those types of studies suggested by Horn (1998) since it used data from the BPS:1996/2001 – the most recently completed BPS study – and it focused solely on students attending community colleges.

Statement of the Problem

The lack of research relative to the attendance patterns of community college students is an issue that should be addressed (Grosset, 1993; McArthur, 2005; Metz, 2002; Napoli & Wortman, 1998; Tharp, 1998; Zhai & Monzon, 2001). It should be addressed so that people who work at community colleges will be more able to help their students achieve their stated goals. Without the availability of appropriate resources in the community college literature, practitioners would be unable to assist students when the students face a dilemma of whether or not to persist in attending college at a given time. Without the availability of appropriate resources in the community college literature, practitioners would be unable to advise students of potential interventions that could shorten the amount of time the students stop out, thus facilitating the realization of their goals that much sooner. Without the availability of appropriate resources in the community college literature, practitioners would be unable to identify students who are at risk of leaving college before they achieve their educational goals. As a result, these students could leave college, delaying indefinitely their opportunity of achieving their educational goals. Stopping out is not a detriment to the students’ goals as long as the students eventually return, and it is hoped that there are students who will return once there is a better understanding by practitioners of these students’ needs.
The gap in the literature relative to attendance patterns of students enrolled in community colleges is best viewed in the context of the raw numbers of students who attend community colleges in America. This is, perhaps, the most compelling argument for the creation of more studies that pertain to the attendance patterns of students who attend community colleges. For example, community colleges enroll 45% of all undergraduates nationwide (AACC, 2006). This equates to 6.6 million students enrolling in community colleges (AACC, 2006) for whom there is a small amount of information available in the higher education literature relative to their attendance patterns. As stated earlier in this chapter, retention has become a priority among all college administrators, including administrators from community colleges, and these administrators need a theoretical foundation upon which they are able to make decisions relating to retention.

Because of the apparent dearth in the literature vis-à-vis the overall community college student population, it stands to reason that there would be a lack of literature relative to the racial and ethnic minorities who attend America’s community colleges. For example, there is a lack of information on the 47% of the nation’s Black students who attend community colleges. There is a lack of information on the 55% of the nation’s Hispanic students who attend community colleges. There is a lack of information on the 47% of the nation’s Asian/Pacific Islander students who attend community colleges, and there is a lack of information on the 57% of the nation’s Native American students who attend America’s 1,157 community colleges (AACC, 2006).

Statistics from the U. S. Census Bureau (2005) demonstrate how the racial and ethnic demographics in America are changing. In fact, from 2000 to 2004, those who
identified themselves as being of Hispanic or Latino origin grew 17% as a population demographic in the U. S. At the same time, those who identified themselves as white, non-Hispanic grew 1% as a population demographic in that same four-year time period (U. S. Census, 2005). It becomes apparent from these statistics and from the aforementioned demographics of students who are attending the nation’s community colleges that more studies which address the retention and attrition of community college students should be conducted.

*Purpose of the Study*

This study was designed to (a) describe selected characteristics of students who stop out of, drop out of, and enroll continuously in American community colleges, (b) test for differences relative to selected characteristics between students who stop out of and students who drop out of American community colleges, and (c) examine what association there is between any of the selected characteristics and whether students stop out of or drop out of American community colleges. The main purpose of this study was twofold: (a) to reduce the gap found in the literature relative to the attendance patterns of students who enroll in American community colleges and (b) to help community college personnel better understand and address their students’ needs through a review of recommendations and intervention programs related to the retention of students.

This study utilized nationally representative data gathered from the National Postsecondary Student Aid Study 1995-96 (NPSAS:96) and the Beginning Postsecondary Students Longitudinal Study 1996-2001 (BPS:1996/2001). The primary reason for using these datasets was because they contain a wealth of information on variables from across
the higher education spectrum. There are more data contained in these datasets than one person would be able to collect without spending large amounts of time, effort, and money.

The secondary reason for using these datasets was because there has not been a study of attendance patterns of community college students using nationally representative data since Horn’s 1998 study. Given the facts that Horn’s study was published nearly a decade ago and that there has been a more recent BPS study (BPS:1996/2001) published since Horn’s study, it was time that more contemporary literature relative to the attendance patterns of community college students be added to the community college literature base.

Research Questions

Using data from the Beginning Postsecondary Students Longitudinal Study 1996/1998/2001 (BPS:1996/2001), three primary research questions were considered when completing this study.

1. What are the characteristics of students who stopped out of, dropped out of, and enrolled continuously in American community colleges between the 1995-96 academic year and the 2000-2001 academic year? Specifically, the students’ academic integration, purpose for enrolling (i.e., their educational goal), the hours per week the students worked while enrolled in 1995-96, their parents’ (combined) highest level of education, the students’ part-time enrollment in 1995-96, whether or not the students had any disabilities, and the size of the institution in which the students first enrolled in 1995-96 will be examined.
2. Are there significant differences in selected characteristics between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

a. Is there a significant difference in academic integration between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

b. Is there a significant difference in purpose for enrolling between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

c. Is there a significant difference in hours worked per week while enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

d. Is there a significant difference in parents’ (combined) highest level of education between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

e. Is there a significant difference in part-time enrollment in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

f. Is there a significant difference in disability status between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?
g. Is there a significant difference in the institutional size category (small) in which students first enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

h. Is there a significant difference in the institutional size category (medium) in which students first enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

3. What is the association between these eight selected characteristics and whether students will stop out of or drop out of American community colleges?

**Significance of the Study**

Utilizing nationally representative data, this study contained information that highlighted certain characteristics relative to the attendance patterns of students who attend America’s community colleges. In addition, this study reported any significant differences and relationships between students who stopped out of and students who dropped out of American community colleges relative to selected characteristics. This disclosure means that people such as enrollment management directors, counselors, advisors, deans, chairpersons, provosts, and presidents can use these potential differences and relationships to justify the implementation of retention recommendations and intervention programs geared toward improving retention on their campuses. These programs would be charged with reducing the amount of time that students stop out and increasing the chance that students will eventually return to college. This correlates to the
aforementioned concept that stopping out of college is not a negative occurrence as long as the students ultimately return to school.

In addition to the community college personnel listed above, college students who are studying attendance patterns of community college students may find this research to be helpful. Moreover, admissions officers could use this information in a proactive manner. For example, admissions officers should have a basic understanding of the literature relative to attendance patterns of community college students before they go to area high schools to recruit students. If the admissions officers are familiar with this literature, they could, in their presentations to prospective students, highlight intervention programs that their colleges have implemented that could help students to achieve their educational goals more efficiently. To address issues raised in this study, this dissertation utilized several key terms which are defined in the following section.

Definitions of Terms

The following terms are defined as used in this research.

National Center for Education Statistics

The National Center for Education Statistics (NCES) is housed within the United States Department of Education. The NCES is the “primary federal entity for collecting and analyzing data related to education” (NCES, 2006c).

Integrated Postsecondary Education Data System

The Integrated Postsecondary Education Data System (IPEDS) is the system through which NCES collects data related to higher (i.e., postsecondary) education. Data are collected in the areas of enrollments, program completions, graduation rates, faculty,
staff, finances, institutional prices, and student financial aid. All institutions of higher
education which receive and distribute to its students federal financial aid (in the form of
funds such as Pell grants and federal work study authorized by Title IV of the Higher
Education Act of 1965 as amended) are obligated to submit their data according to a pre-
determined time schedule.

*National Postsecondary Student Aid Study 1995-96*

The National Postsecondary Student Aid Study 1995-96 (NPSAS:96) is a
nationwide study that helps to determine how parents and students pay for postsecondary
education. The NPSAS is an all-encompassing study, including all sectors, types of
institutions, and levels of students across the United States. The NPSAS was first
conducted in the 1986-87 (NPSAS:87) academic year and has since been conducted in
(NPSAS:2000), and 2003-2004 (NPSAS:04) academic years. The NPSAS for the 2007-
2008 academic year (NPSAS:08) is currently being conducted (NCES, 2006d).

*Beginning Postsecondary Students Longitudinal Study*

Derived from the dataset compiled from the NPSAS, the Beginning
Postsecondary Students Longitudinal Study (BPS) follows undergraduate students as they
matriculate into, advance through, and graduate from postsecondary institutions across
the United States. The 1995-96 cohort was established and interviewed in the 1995-96
academic year. The cohort was re-interviewed in 1998 and in 2001, making it the most
recent cohort which has finished the interviewing process.
Community colleges

For this study, the definition offered for two-year institutions on the Web site for IPEDS was employed:

A postsecondary institution that offers programs of at least 2 but less than 4 years duration. Includes occupational and vocational schools with programs of at least 1800 hours and academic institutions with programs of less than 4 years. Does not include bachelor’s degree-granting institutions where the baccalaureate program can be completed in 3 years. (NCES, 2006b, p. 71)

Stopout

A stopout is defined as a student who attended his/her first term of college and returned to college but did not attend in consecutive terms (Horn, 1998). For example, a student could attend several terms consecutively, not attend for one or more terms, but then return to college for a later term. For this study, a student could have returned to his/her original institution, to another two-year institution, or to a four-year institution. It was not within the scope of this study whether or not the student completed a degree or certificate upon his/her return to school.

Dropout

A dropout is defined as a student who attended his/her first term of college but at some point left college and did not return (Horn, 1998). For this study, a student was considered a dropout if s/he did not return for any term during the five-year period under examination in this dissertation. It is possible that a dropout could become a stopout if
s/he returned after this five-year period; however, for the purposes of this research, that student was considered to be a dropout.

Retention

Retention is defined as “students graduating or persisting in their studies at an institution” (Wyman, 1997, p. 29). For this study, a student was not required to attend college in consecutive terms to meet the definition of a retained student. In other words, a student who stopped out could have been defined as a retained student for this study. However, if a student stopped out, s/he must have returned to his/her original institution to have been considered a retained student.

Transfer student

A transfer student is defined as a student who attended his/her first term of college and, at some point, transferred to a different college (Horn, 1998). Because s/he did not remain at his/her original institution, a transfer student was not considered a retained student for the purpose of this study. However, it is possible for a transfer student to have been considered a stopout student. For example, a student could have attend several terms consecutively, not attend for one or more terms, but then returned to college for a later term at a college different from the original college. This student would have been considered a stopout student and a transfer student.

Purpose for enrolling

The purpose for students enrolling in postsecondary education can vary, but generally, purpose is categorized as degree- or certificate-seeking, transferring to another institution (especially common throughout the community college sector), improving
occupational skills, or personal enrichment. For this dissertation, purpose was categorized into two groups: (a) degree-seeking, which included students whose stated purpose was to obtain a degree or certificate or to transfer to another institution, and (b) other, which included students who enrolled for the purpose of improving their job skills, enriching themselves, or some other purpose that was not explicitly stated.

_Employment_

Employment can take several forms, but for this study, employment (i.e., hours worked while enrolled) was defined as a job for which students received a monetary compensation. This included jobs wherein students worked inside their homes as long as the students received money in exchange for their work.

_Delimitations of the Study_

1. This study was restricted to data extracted from the Beginning Postsecondary Students (BPS) Longitudinal Study, which was driven by students’ participation in the survey and the variables used by the BPS.

2. This study was restricted to students who, in 1995-1996, were (a) attending college for their first time ever, (b) degree-seeking and non-degree seeking, and (c) enrolled full-time and part-time.

3. This study was restricted to (a) students who returned to college before the end of the 2000-2001 academic year (i.e., stopouts), and (b) students who could have returned to college but did not return before the end of the 2000-2001 academic year (i.e., dropouts). Students who enrolled continuously with no
breaks were included in this study only for descriptive purposes in Research Question One.

Limitations of the Study

There are limitations in every research study no matter if the data are collected from primary sources or, as in the case of this dissertation, from secondary sources. One limitation that this dissertation faced was the aspect of the data being self-reported by the students and/or their parents. Data for the NPSAS and BPS were collected through the use of telephone interviews (discussed in more detail in Chapter Three of this dissertation). Therefore, the reader is encouraged to keep this in mind when reading this study. However, NCES has implemented an intensive effort relative to quality control checks for the data to ensure the highest data integrity possible. These quality control checks will be discussed further in Chapter Three of this dissertation.

Despite the fact that the BPS:1996/2001 contains responses from more than 9,000 students attending more than 800 institutions, the reader is cautioned that not all of these students attended community colleges; likewise, not all of these institutions are community colleges. Therefore, it is important to note that a second limitation was potentially inadequate representation throughout the data of community college students. Whether or not this limitation was realized will be revealed in Chapter Four of this dissertation.

Finally, longitudinal studies, such as the NPSAS and the BPS, take time to conduct, prepare, and report. Because of this characteristic inherent in longitudinal studies, the NPSAS and BPS are released at specified intervals, typically three years.
Hence, the data used in this dissertation were from the BPS:1996/2001 which is the most recently released BPS. The current BPS cohort was created in 2004 and was first interviewed in 2006. It will be re-interviewed in 2009.

Organization of the Study

This dissertation is divided into five chapters. In addition, there are references and appendices included to support the study. Chapter One included an introduction and background to the research topic. Also, the statement of the problem, the purpose of the study, the research questions, the significance of the study, definitions of terms, delimitations of the study, and limitations of the study were included.

Chapter Two includes a description of relevant literature on attendance patterns of community college students. In addition, characteristics of student persistence and possible recommendations/interventions for improving retention found in the literature are described.

Chapter Three covers the research design and methodology for this study. In addition, the research questions will be re-stated, the null hypotheses will be introduced, and the data analysis procedures will be described. Also, an overview of the research methodology used by the NPSAS and the BPS will be presented.

Chapter Four includes the findings from the data analyses performed. Chapter Five covers a summary of the study, a summary of the findings from this study, conclusions from this study, and recommendations for future research.
CHAPTER TWO

Review of the Literature

Studies pertaining to attendance patterns of students attending four-year colleges are common throughout the literature of higher education. However, the same cannot be said for studies pertaining to attendance patterns of students attending community colleges, especially those studies that involved the use of nationally representative datasets such as the NPSAS and BPS. Given the fact that students at community colleges tend to leave college at rates higher than their counterparts at four-year schools (Berger & Braxton, 1998), this dearth of literature is something that should be remedied (Grosset, 1993; McArthur, 2005; Metz, 2002; Napoli & Wortman, 1998; Tharp, 1998; Zhai & Monzon, 2001).

Astin (1977) noted that 60% of community college students leave before the end of their first year with most of the departures coming in the first two weeks of their first term. This is despite the implementation of intervention programs such as those that deal with student/faculty integration, student/social integration, mentoring, peer counseling, orientation courses, and on-campus childcare facilities. These programs have been found throughout the literature to have a positive effect on retention (Astin, Korn, & Green, 1987).

Horn (1998) corroborated Astin’s (1977) findings when she stated that 42% of students enrolled in community colleges left before completing the first year. This could be an indictment on the effectiveness of the aforementioned programs. However, it is more likely an indication that further research into the attendance patterns of community
college students needs to be conducted with the ultimate goal being that of finding ways of reducing the amount of time students stop out. This, in turn, could increase the chances they will return and achieve their stated educational goals.

To aid in the research of attendance patterns of community college students, one must understand the characteristics of students who leave college early (i.e., before they have achieved their educational goals). Characteristics of students who leave college could be placed into three basic categories: (a) demographic characteristics, (b) psychosocial characteristics, and (c) institutional characteristics (Grosset, 1993; Lau, 2003). Examples of demographic characteristics include age, employment, dependency status and marital status, gender, and race/ethnicity. Included in the psychosocial realm are characteristics such as academic integration and educational intent. Institutional characteristics include the policies and procedures related to an institution’s bureaucracy and the physical accessibility of an institution.

Because the literature on stopouts in community colleges is scarce, the literature review conducted in this chapter incorporated characteristics of students who stop out, drop out, and transfer to other institutions. Combining these three groups of students allowed for a more thorough review of the literature, thus a deeper understanding of why students do not enroll continuously.

In addition to providing an overview of the characteristics of students who leave college, this literature review highlighted several recommendations and intervention programs related to retaining students. A review of retention literature was included in this chapter since it was noted in the definition for retention in Chapter One that a student
who stopped out also could have been defined as a retained student as long as that student
returned to his or her original institution.

Demographic Characteristics of Students Who Leave College

Demographic characteristics of students who leave college are found throughout
the literature on attendance patterns. Not all of the characteristics profiled in the literature
apply directly to community college students; however, there are some characteristics
pertaining to attendance patterns that are present across the higher education spectrum.
One such characteristic is age.

Age

Summers (2003) found that older students were more likely to leave college than
were younger students. Bradburn (2002), using data from the BPS:96/98, found that
students of non-traditional age (typically defined as 25 years of age or older) were more
at risk of leaving college before achieving their initially stated goals than were students of
the traditional college age (i.e., 18 to 24 year olds).

Tharp (1998) concurred with the findings of Summers (2003) and Bradburn
(2002) relative to age. Tharp’s research dealt primarily with urban commuter campuses,
but he noted that “four-year, urban, public institutions, with their diverse student
population, can provide meaningful retention research applicable to the community
college” (p. 279). Tharp stated that age is a factor in retention and attrition; indeed, he
stated that the older the student is, the more likely the student is to stop out.

Grosset (1993) compared 1982 and 1990 associate degree recipients at a large
urban community college to obtain a profile of students who stop out of community
colleges. Grosset found that among those who were studied, the group mean for the age of the stopouts was considerably higher (at 35.8 years) than was the group mean for the age of those who were enrolled continuously (at 29.3 years).

In Virginia, Sydow and Sandel (1996) conducted a two-pronged survey. Students who had completely withdrawn before the end of the fall semester in 1995 were randomly sampled and surveyed via telephone. In addition, every faculty member was surveyed to see what their perceptions were relative to the students’ reasons for withdrawal. Sydow & Sandel found that students between the ages of 20 and 25 were nearly two times more likely to withdraw than were students who were 19 years of age and younger.

Not all studies of age came to the same conclusions as the previously mentioned studies. Napoli and Wortman (1998) conducted a study of 1,011 first-year students attending Suffolk Community College. By using exploratory and confirmatory factor analyses, Napoli and Wortman found that older students were more likely to adapt to college and its pressures than were younger students. In other words, older students were more likely to persist in college than were their younger counterparts, in spite of (or because of) “real world” demands placed on them outside of school (e.g., occupational and familial demands).

Employment Status

It does not seem unreasonable to suggest there is a positive correlation between a person’s age and that person’s probability of being employed. That is, the older the person, the more likely it is said person is employed. Because of this correlation,
employment status is a characteristic potentially capable of predicting attendance patterns, especially in the community college sector. McArthur (2005) suggested that a major barrier toward “academic success” occurs when the students are being burdened with pressures from work. McArthur continued by saying that these pressures from work can easily discourage and frustrate the adult student, making that person much more likely to decide to leave college, at least temporarily until the work pressures have been alleviated either completely or partially. Summers (2003) concurred with McArthur’s research when he stated that community college students who were employed full-time were more likely to leave college because of job commitments than were community college students who were employed part-time.

Familial Commitments

With job commitments oftentimes come familial commitments. Carter (1982) noted that family responsibilities were among the five most cited reasons for the attrition of older and part-time students. Berkove (1976) found that students who were older, female, married, and had at least one child living at home were significantly more likely to leave college when compared to students with no family responsibilities. Moreover, Brainard (1973), Martin (1974), and Hunter and Sheldon (1980) listed family pressure and obligations as two of the major reasons for withdrawal among those students attending community colleges. In addition, Mulligan and Hennessy (1990) found that community college students who did not persist had greater external demands (e.g., jobs, familial obligations, and financial demands) on their time than did those students who did persist. Finally, Summers (2003) argued that those students who were single parents were
more likely to stop out because of familial demands than were those students who were in a two-parent household.

**Gender**

Familial demands appear to be correlated with gender, according to Summers (2003). He noted that women were more likely than men to cite familial demands as the primary reason for leaving school. The concept that women are the primary caregivers of the family unit still appears to be alive in American culture, despite recent trends to the contrary such as paternity leave and baby changing stations in men’s public restrooms. While Summers noted that women are more likely to stop out of school for familial reasons, he argued that men are more likely than women to leave school because of academic performance. The point being made by Summers is that women are more likely than men to return to school once the familial demands have been lessened.

Tharp (1998) also mentioned gender as a significant predictor of retention. He stated that females complete degrees in higher percentages than males. One possible explanation for this could be that females comprise a greater percentage of the enrollment (59%) at United States community colleges than do males (41%) (AACC, 2006). To support Tharp’s assertion relative to females persisting more than males, Napoli and Wortman (1998) found that females had a “greater initial institutional commitment” than did males. On the other hand, Sydow and Sandel (1996), in their study of a Virginia community college, found that more females than males withdrew before the end of their first semester in college.
Other Demographic Characteristics of Students Who Leave College

Mohammadi (1994) examined demographic data and retention/attrition data on first-time student cohorts from 1988 through 1992 at Patrick Henry Community College (PHCC). Mohammadi cited significant predictors of retention as being (in order of importance) student goals, credit hours enrolled, credit hours completed, term GPA, and overall GPA. In addition, Mohammadi noted that students who were unclassified (i.e., no academic major or goal was declared by the student) were far more likely (61%) to leave school than were those students who had classified an academic major and/or goal (e.g., graduation or transfer). He suggested that PHCC identify these unclassified first-year students and target them for retention programs and services. Finally, Mohammadi found that students who were female, black, part-time, and between the ages of 23 and 35 and between the ages of 45 and 50 were more likely to leave college than were students who did not fit this profile.

Psychosocial Characteristics of Students Who Leave College

Psychosocial characteristics and how they influence retention of college students are an intriguing piece of the attendance pattern puzzle. How students identify with their institutions, how connected they feel to the institutions, and how they perceive the institution identifies with them are but three aspects of this particular set of characteristics. Academic integration is one of the more significant topic areas in this set.

Academic Integration

One aspect of academic integration is the scholarly interaction between faculty and students, both inside and outside of the classroom. Studies done by people such as
Winston, Miller, Ender, and Grites (1984) and Pace (2001) have shown that the more students and faculty interact, the more students are satisfied with the college experience. Moreover, McArthur (2005) found that faculty tend to possess significant power and influence over their students since students oftentimes view their faculty members as authority figures, mentors, and role models.

Derby and Smith (2004) tested several characteristics that have been identified in the literature to be closely related to academic integration. One of these characteristics included faculty participation and/or involvement with students. The purpose of the study conducted by Derby and Smith was to see if an orientation course given to first-year students at a Midwestern community college would help to increase the retention rate for those students versus the retention rate for students who did not take the orientation course. As Derby and Smith noted, there was a positive correlation between taking the orientation course and increasing retention rates. Not only did the course deter students from leaving the institution, it also increased the chances of re-enrolling for those students who left despite taking the course. In addition, taking the course helped students to remain on course toward a degree. This study shows the significance of faculty-student interaction relative to students feeling more connected to their institutions, thus greatly increasing their chances of remaining in school and achieving their stated goals.

Napoli and Wortman (1998) conducted a study of psychosocial factors related to retention. Their study involved 1,011 first-time, first-year students enrolled in randomly selected “freshmen” seminar classes at Suffolk Community College in New York and its three campus sites. The design of the study was longitudinal in nature, and the data
collection period was during the 1994-95 academic year with three data collection points within that year.

Using exploratory and confirmatory factor analyses, Napoli and Wortman (1998) derived data relative to predictors of retention among community college students. Those predictors included academic integration and institutional size. In addition, Napoli & Wortman (1998) found that students who were more agreeable, more conscientious, and had higher self-esteem were more likely to adjust to college and all of its internal and external demands; in other words, these students were more likely to be academically integrated.

Moreover, Napoli and Wortman (1998) found that successful academic integration showed the strongest positive influence on goal commitment (educational intent). The more students are integrated into academic framework of the institution, and the more the students are interacting academically with faculty, the more likely it is that the students are committed to the institution and will persist there until they achieve their academic goals.

Institutional Commitment

Academic integration is strongly related to institutional commitment. It has been shown that students who are integrated academically are more likely to remain in school, thus signifying their commitment to the institution. Strauss and Volkwein (2004) developed a study that examined institutional commitment and included, among other variables, academic integration. For the purpose of their study, Strauss and Volkwein defined institutional commitment as “the student’s overall impression, satisfaction, sense
of belonging, and perception of quality, match with, and attraction to a particular institution” (p. 203). Strauss and Volkwein used institutional commitment to analyze retention at two-year and four-year institutions.

Strauss and Volkwein (2004) performed a multivariate analysis on the 8,217 responses from first-year students using Hierarchical Linear Modeling (HLM). For the data source, a database was created from the data of 51 public institutions (28 two-year schools and 23 four-year schools). Institutional data were garnered from the 1996-1997 Institutional Characteristics survey (from IPEDS) while student data were obtained through the use of an outcomes survey, printed and scored by the American College Testing (ACT) program. The grand mean for Institutional Commitment (the dependent variable) was 3.66 with a standard error of 0.04.

Among their results, Strauss and Volkwein asserted that academic integration and growth are the most significant influences of institutional commitment at both the two-year and four-year schools. Other variables that were shown to have a significant relationship with institutional commitment were social integration and growth, classrooms experiences, social activities, friendships, financial aid, age, ethnicity, and marital status. Academic integration was found to have a stronger influence on retention at two-year schools than at four-year schools while social integration had a more significant impact on retention at four-year schools than at two-year schools.

Levin and Levin (1991) reviewed and critically examined retention-related characteristics, focusing on the retention of at-risk minority students. The characteristics reviewed included components of academic integration (e.g., parents’ highest education
level, academic under-preparedness, educational goals, assistance-seeking, and motivation for college attendance) and components of social integration (e.g., adaptability and self-confidence).

Levin and Levin (1991) noted “it is student interactions with peers, advisers, and faculty go on to say that (a) increase satisfaction with the institution, (b) create a sense of belonging, and (c) strengthen commitment to the institution’s goals and standards” (p. 324). The researchers also noted that the best way to retain students, especially at-risk minority students, is to develop intervention programs that are proactive and geared toward students in their first year of college. Whether or not an institution can implement such programs depends a great deal on its institutional characteristics.

Institutional Characteristics Related to Students Who Leave College

How well students handle the academic and social integrations involved with college is closely related to their attendance patterns. Another aspect of attendance patterns to consider is how well the students handle the characteristics inherent to colleges that allow them to serve students and to remain in operation perpetually. One such characteristic is the policies relating to how students register for their classes.

College Policies Related to Registering for Courses

Smith, Street, and Olivarez (2002) performed research on the phenomenon of registration patterns and how they relate to retention. The researchers sampled students enrolled in on-campus credit courses at a community college located in west Texas. The target population of students enrolled in on-campus credit courses was 3,950. A stratified random sample was chosen to make certain that all of the school’s three registration
periods (early, regular, and late) were represented in the sample. A combination of analysis of covariance (ANCOVA) with multiple covariates and chi-square was conducted to test the researchers’ hypotheses.

The researchers found that students who registered during the late period were less likely to persist from the fall semester to the spring semester than were students who registered in the early and/or regular periods. Smith et al. (2002) suggested that early and regular registration periods be extended and late registration periods be eliminated entirely. Since the suggestion appears to contradict what many feel is the essential mission of the community college to be “all things to all people,” it is unclear from this author’s perspective whether or not this suggestion would be plausible to implement as part of an institution’s policies.

With a focus on institutional characteristics, Zhai and Monzon (2001) examined community college students who had dropped out of one of three community colleges in San Diego. The researchers defined their “drop outs” as students who enrolled in one of three community colleges in San Diego for the fall semester 2000 but did not return for the spring 2001 semester. There were three groups of students studied: (a) students who completed an application for admission for fall 2000 but did not enroll (n=5,459), (b) students who withdrew completely during fall 2000 (n=7,481), and (c) students who completed the fall 2000 semester but did not enroll in the spring 2001 semester (n=10,968). These students were sent a questionnaire asking them of their reasons for leaving.
Listed as the top three reasons the students gave for not persisting were (a) transferring to another institution (28%), (b) conflicts between work and school (19%), and (c) course scheduling issues (11%). These are all reasons that can be traced to the bureaucratic characteristics of the institution. The authors recommended that the community colleges in San Diego implement such policies as more flexibility in the scheduling of classes, implementing more online services, and strengthening the role and the presence of the academic advisors. It is important for community college personnel nationwide to remember that students look to the institution and its characteristics as a possible deciding factor of whether to stay or not.

College Policies Related to Other Services

To help improve its services and characteristics, Kent State University’s (KSU) Trumbull Campus performed a study in 1993 to research why their students were not returning after their first semester. KSU-Trumbull is one of Kent State University’s seven regional campuses, and it offers coursework at the undergraduate, graduate, and continuing education levels. Students may receive an associate’s degree from KSU-Trumbull, they may fulfill their first two years of a baccalaureate program, or they may complete their one-half of their graduate degree for a Master of Arts in Technology (Kent State University, Trumbull Campus, 2006).

The researchers at KSU-Trumbull broke the sample into two groups – students who attended in Fall 1992 but did not return in Spring 1993 (n=333) and students who attended Spring 1993 but did not return in Fall 1993 (n=434). The researchers achieved a 33% response rate. Responses to the questionnaire that was distributed were categorized
as follows: (a) transfers, (b) scheduling difficulties, (c) family responsibilities, and (d) financial reasons (Kent State University, Trumbull Campus, 1993).

Overall, the reasons the students gave for not returning to school were consistent with what has been presented throughout Chapter Two of this dissertation. For example, some did not return because they could not afford it. Some indicated they had familial demands and responsibilities; and, of particular interest relative to institutional characteristics, others said they did not return because they were unable to schedule classes (e.g., conflicts between work and school, inadequate class times, and inadequate course selections) (KSU, 1993).

KSU-Trumbull’s researchers found that approximately one-third of their students would return if the school were to establish child care services (familial demands), expand course offerings, and implement a “weekend college.” Given that this study was conducted 13 years ago, the reader is encouraged to view KSU-Trumbull’s Web site today to see that all of these programs listed have been implemented and are available. Perhaps further examination in the form of a follow-up study is necessary to see whether or not these services had their intended effect on retention at KSU-Trumbull.

Similar to KSU-Trumbull, researchers in Virginia studied students to investigate reasons why they (the students) were leaving before the end of their first semester. Sydow and Sandel (1996) found that nearly two-thirds of the students responding said they withdrew either because of work/class schedule conflicts (e.g., the inability of the institution to offer classes when working adults can take advantage of them) or personal and/or family illness. Few students dropped out because of the cost of the education.
Sydow and Sandel (1996) also interviewed every faculty member to see if they had any perceptions as to why students withdrew. The faculty responded that students were withdrawing because of obstacles created by personal circumstances of traits (e.g., poor health or low self-esteem), and because of academic-specific obstacles (e.g., poor preparation or study habits).

From this study there came about a campus-wide effort toward increasing retention. It was decided by the faculty that a comprehensive retention plan was needed; therefore, in the spring of 1996, a retention task force representative of all of the college’s interests was formed and charged with creating the retention plan. Retention goals were set by departments across campus, and it was agreed that faculty be strongly encouraged to take attendance so that attendance-related problems could be addressed. In addition, the orientation program and academic advisement process were to be strengthened. Finally, a retention retreat was held prior to the beginning of the fall semester in 1996, out of which was born the idea of a standing committee on retention (Sydow & Sandel, 1996).

This section introduced several ideas and concepts that resulted from various studies of retention on community college campuses. The following section presents more examples of intervention programs and retention recommendations that have occurred on both two-year and four-year college campuses.

**Recommendations and Intervention Programs for Retention**

Tinto (2002) stated that the best way to retain students is to “begin at the beginning.” Tinto’s statement was confirmed by Astin’s (1977) assertion that 60% of
community college students leave before the end of their first year and most of them leave within the first two weeks of their first term. In other words, the earlier that recommendations and interventions are pursued in students’ college careers, the better the chances are to retain those students. The recommendations and interventions presented here are grouped into two categories: (a) those that were studied at two-year institutions, and (b) those that were studied at four-year institutions.

**Recommendations and Intervention Programs from Two-Year Institutions**

Wild and Ebbers (2002) surveyed the landscape of retention in community colleges, and found there is a need to establish retention strategies in most community colleges. These strategies are: “(a) develop indicators, (b) create learning communities and cohort groups, (c) develop directed retention programs, and (d) develop tutoring programs” (Wild & Ebbers, 2002, p. 510). To assist with the strategies, the authors identified some key actions that should take place so students will be benefited, giving hope for an increase in retention rates. These actions include: (a) establishing a retention task force, (b) conducting data collection and assessment, (c) establishing retention goals, (d) implementing an ongoing evaluation of those goals, (e) directly involving faculty with identifying and assisting at-risk students, and (f) tutoring. Only through these methods can community colleges be able to stem the tide against high attrition rates and move toward more effectively fulfilling their missions (Wild & Ebbers, 2002).

Grimes (1997) found that there is a positive relationship between locus of control and academic preparation for those students who enter college as academically under prepared. Grimes defined locus of control as the center of control over one’s actions, and
one’s locus (or center) of control can be internal or external. For example, Grimes said that students who have an internal locus of control think they can take control of their environment. By doing this, these students are more likely to use resources more effectively, thus increasing their chances of attaining academic achievement.

However, Grimes (1997) said it is different for those students with an external locus of control. These students tend to give up too easily when faced with strong academic challenges, thinking they are not in control of the situation and they feel helpless. Grimes suggested that institutions help these students to reduce this feeling of helplessness by developing a greater sense of ownership and personal responsibility. This may be done through counseling or other such one-on-one activities.

Halpin (1990) decided to test Tinto’s 1975 model of persistence, formulated primarily for four-year institutions, to see if it would be a valid predictor of retention and attrition on community college campuses. Halpin was able to duplicate much of Tinto’s 1975 findings, including Tinto’s assertion that academic integration was the best predictor in this study of student persistence.

Halpin (1990) chose for his study a small, non-residential community college in rural New York State. This college, like most other community colleges, had an open-door policy. Halpin focused on first-time, full-time, degree-seeking students who were enrolled during a particular fall semester. There were 381 students included in the cohort; 289 (76%) of them persisted to the second semester. Fifteen percent were academically dismissed after the first semester, and 9% voluntarily did not return. Discriminant function analysis was used by Halpin to produce his results.
Based on the results of this study, Halpin (1990) suggested that colleges do as much as possible to increase interaction between students and faculty as this was the variable that explained the greater part of the variance in the dependent variable. Some ways to increase interaction include (a) having small classes that are more interactive between students and faculty, (b) having more office hours for faculty, (c) developing active academic advising systems, (d) establishing mentoring programs, and (e) implementing small group learning projects in classes (Halpin, 1990).

Zhai and Monzon (2001) surveyed potential students who applied to but did not enroll in community colleges in San Diego and students who withdrew from community colleges in San Diego. One of the questions asked by Zhai and Monzon was what could colleges do to encourage people to enroll and what could colleges do to retain their students at a higher rate. Most of the respondents said the colleges could offer (a) online registration, (b) more classes during the evening, (c) more short-term classes, and (d) more classes on the weekends. In addition, colleges could increase (a) the availability of financial aid information, (b) parking capacity, and (c) the number of career-oriented programs. These are all recommendations that, once implemented, could result in an increase in retention rates.

Finkelstein (2002) studied students who were enrolled in Bronx Community College (BCC) in New York City, and he found that more than 90% of BCC’s students required some sort of developmental coursework. It has been shown throughout the literature that students with lower academic performances are more at risk for leaving

In 2002, Finkelstein, Director of the Coordinated Freshman Program at BCC, noted that BCC instituted a summer program called University Skills Immersion Program (USIP) to address the issue of low retention rates vis-à-vis developmental education students. In this program, students are invited to participate in free developmental education courses, free tutoring, and free computer workshops. As a result of participating in the USIP program, first-year students were retained at a rate of 84%. This compares to a 60% retention rate for those students who did not participate in the USIP program. This program, among others at the school, has helped to make a difference in the lives of many in New York City (Finkelstein, 2002).

Burley, Cejda, and Butner (2001) performed a retention study that involved community college students in Texas who had enrolled in developmental education courses. The researchers recommended that community colleges learn more about their developmental education students than just their placement scores. In addition, Burley, Cejda, and Butner suggested that colleges move their developmental education students into for-credit coursework as quickly as possible so those students feel they are making progress toward a degree. Furthermore, the authors recommended that community colleges learn more about their students through the use of “rigorous and accurate advising” (p. 780). In addition, positive reinforcement of the progress made by students (even if the progress is slow) should be written into the policies of developmental education departments.
Jarrell (2004) documented retention-related intervention practices at South Louisiana Community College (SLCC). Jarrell examined retention efforts geared toward at-risk students since that seemed to be a large percentage of the population at SLCC. Many of the interventions and programs used by SLCC have been reflected throughout Chapter Two of this dissertation. For example, SLCC has implemented such programs as a College Survival Skills course, mentoring, tutoring, advising, orientation sessions, disability services, and personal and career assessments.

After performing an extensive review of retention and attrition literature, Jarrell (2004) and the Office of Student Services at SLCC enhanced the aforementioned programs. Included in these enhancements were (a) the implementation of a system that would “improve academic achievement, classroom attendance, and overall retention of at-risk students, students with disabilities, and students on academic probation” (p. 520); (b) the implementation of a computerized system that would track the progress of specially identified (i.e., at-risk) students; (c) the inclusion of personal assessments and technological resources relative to the College Survival Skills course; (d) the training of staff to deal more effectively with academic advising and counseling services; (e) the improvement of counseling services aimed specifically at the at-risk student population; and (f) improvement of the College’s orientation sessions so that the needs of at-risk students would be better met.

In Indiana, Tharp (1998) performed a longitudinal study of retention at Indiana University-Kokomo (IU-K) using variables in the IU-K database. At IU-K, one of eight campuses that comprise the Indiana University system, students may complete an
associate’s degree or the first two years of a baccalaureate degree. In addition, students may complete coursework applicable to master’s degrees in business administration, liberal studies, and science (Indiana University-Kokomo, 2006).

One of Tharp’s (1998) recommendations was that institutions should conduct cohort survival studies which identify the characteristics of students who persist and students who do not persist since it had been shown that student background characteristics are significant predictors of retention. Another of Tharp’s recommendations was to have an early warning system for identifying students who were struggling in courses (e.g., evaluation of mid-term grades) since academic performance is a predictor of retention.

Tharp (1998) asserted that more attention should be given to entering transfer students. He argued that his research had shown that students with good GPAs who transferred into an institution at a level higher than freshman were more likely to persist. The key was to provide the entering transfer students with speedy and accurate evaluations of their transcripts.

A fourth recommendation from Tharp (1998) was that colleges should structure their student support services around the needs of at-risk students. Tharp argued that research has shown that retention strategies should be developed around the predictors that have the potential to have a strong influence on attrition, and being an at-risk student has the potential to have a strong influence on attrition.
Recommendations and Intervention Programs from Four-Year Institutions

Retention research focused on and performed at four-year schools can sometimes be beneficial to practitioners at two-year schools. For that matter, retention research focused on and performed at two-year schools can sometimes be beneficial to practitioners at four-year schools. This sub-section focuses on retention research at four-year schools.

Elkins, Braxton, and James (2000) conducted retention research that was based on Tinto’s 1988 and 1993 models which focus on separation stage research. While the research was conducted at a public, four-year institution, some of the recommendations coming out of the research could be applied to two-year institutions. For example, Elkins, Braxton, & James recommended that parents and friends should be involved at the beginning of and throughout the remainder of the first semester as a way of providing a smooth transition from home to college for the student. This may not be applicable to the “non-traditional” students attending community colleges, but for those “traditional” students who are coming to community colleges directly from high school, this recommendation could be a helpful piece of advice for retaining those students.

It has been documented that orientation programs play a critical role in new student development (Derby & Smith, 2004). However, Elkins, Braxton, and James (2000) felt the orientation programs should go a step further and continue throughout the freshman year. In addition, systematic communications to parents is a way to keep the parents involved and connected to their children so the parents are better equipped to be supportive of their children’s educational endeavors.
Finally, Elkins, Braxton, and James (2000) said that administrators, faculty, staff, and all other interested parties on campus should validate the new students as much as possible so that the new students will have an increased sense of self-esteem and feel a connection with the college. This connection should allow for a smoother transition from home to college, thus increasing the chances that the students will be retained. Even those students who are attending community colleges solely for career advancement or for personal enrichment should feel some sort of connection to the institution. That connection could be to a faculty member or to a study group. It could also take the form of a liking for the bookstore, food services, or anything related to the institution.

At Longwood University, Lau (2003) studied Tinto’s 1987 *Model of Institutional Departure* which states, basically, that the student retention process is based on the student’s institutional experiences. Longwood, which is the home university for Lau, is a public, four-year university located in Farmville, Virginia. Using Longwood University as a reference, Lau listed several institutional factors that are likely to have an increasing effect on student retention. Lau categorized these factors into three main groups: (a) institutional administrators, (b) faculty, and (c) students.

Included in the institutional administrators category were such factors as funding, academic support, managing multiculturalism and diversity, and physical facilities. Lau (2003) indicated that scholarship funding needs to be increased so that students become more motivated to do well academically. Academic support needs to be strong, especially in the areas of learning centers, freshman year programs, and honors programs.
Managing multiculturalism and diversity means that administrators need to harbor an environment that is friendly and harmonizing (Lau, 2003). The institution should be full of enriching cultural programs and provide an accepting and supporting environment for all cultural and diverse points of view. This will allow for a free exchange of ideas and thoughts among the students and between students and faculty. This will result in a feeling of integration on the part of the students which results, typically, into increase retention rates (Lau, 2003).

Physical facilities play a larger part in retention than most people realize (Lau, 2003). Many colleges have established multi-cultural residence halls and study rooms around their campuses to make life easier, more convenient, and more comforting for their students. Certainly, the Americans with Disabilities Act of 1990 has played a significant role in the renovation of campus buildings to expand access for the physically challenged. Nearly every college now has an office for disability student services or at least has a person on its campus who handles matters pertaining to disabled students of all sorts. For students to feel integrated, physical facilities must not be overlooked. Residence halls, study rooms, career centers, and social and professional organizations need to be considered in addition to rooms and buildings that are accessible to students with disabilities when decisions are made vis-à-vis physical facilities (Lau, 2003).

While it may not be not widely known that facilities play a role in retention, it is widely known that faculty play a critical role in the retention of students (Lau, 2003). Faculty are interacting with students, in some form or another, nearly every day, and this constant exposure is vital in colleges’ battles against attrition. Lau suggested some ways
through which faculty can improve their chances of retaining their students. One way is to have computer technology that is as modern as it is fiscally possible to have. Wireless networks, LCD overhead projectors, and the latest in other types of multimedia technology are important considerations for many students. Lau recommended that colleges establish instructional technology development centers to assist faculty with incorporating the latest technologies into their course curricula.

Faculty can positively affect retention rates by emphasizing teaching and learning. Faculty must be more practical than theoretical when preparing their students for their future careers (Lau, 2003). The development of critical thinking skills, communication skills, problem solving skills, and creativity skills should be stressed in class whenever possible.

In addition, faculty need to become competent academic advisors for their students (Lau, 2003). It has been documented that faculty-student interaction outside of class is a significant predictor of retention (Derby & Smith, 2004; Napoli & Wortman, 1998; Strauss & Volkwein, 2004; Tinto, 1975). Therefore, it stands to reason that if faculty are interacting with their advisees, giving them accurate and dependable advice and positive reinforcement, retention rates should increase. Students will be more satisfied and feel a connection to the school.

However, the students have a responsibility unto themselves relative to retention interventions and recommendations. Students need to be active in their own learning processes and be accountable for their own actions. Peer teaching and tutoring can be
ways that students can increase their involvement, motivation, and accountability while, at the same time, helping other students do the same (Lau, 2003).

Finally, students should be encouraged and inspired to seek out role models such as certain administrators, faculty, fellow students, parents, and/or siblings. Students who have continual contact with their chosen role models are more likely to persist in their education and ultimately achieve their stated goals (Lau, 2003).

Several of the recommendations discussed by Lau (2003) could apply both to two-year schools and to four-year schools. For example, having the involvement of faculty with the students, having accessible and appropriate physical facilities, having modern technology, and having the students become more responsible for their own retention are recommendations that could be applied to any sector of higher education. How effective these and other recommendations would be is dependent upon how they are implemented and how they are utilized by the campus population.

**Summary**

For those people involved in retention efforts on college campuses, understanding the attendance patterns of students is challenging. However, for those involved in retention efforts on community college campuses, it is particularly challenging. Some research has been conducted on attendance patterns and retention in community colleges, but more research needs to be done. There are retention models designed for use in four-year colleges that two-year colleges continue to use. Until more research is conducted, this will continue to take place. Follow-up studies to research projects such as ones presented in this chapter (e.g., KSU-Trumbull, 1993; Sydow & Sandel, 1996; Zhai &
Monson, 2001) may be effective ways to increase the volume of literature and research related to retention models and programs geared specifically toward students attending community colleges.

Whatever the method used to increase the amount of research on this topic, there needs to be a link between research and action. Effective communication between students and faculty, between students and role models, and between fellow students is a key ingredient in making retention recommendations and intervention programs work (Berger & Braxton, 1998). Expectations of students and faculty need to be communicated clearly, rules need to be enforced fairly, and students need to be encouraged to become involved in decision making across campus. Students are more likely to remain in school when they perceive these practices are being maintained (Berger & Braxton, 1998). The best way to do this is through “well-written and readily available codebooks, informative orientation sessions, and student participation on campus-wide committees” (Berger & Braxton, 1998, p. 117).

Understanding the underlying characteristics of students who leave college before achieving their goals is important as well. Knowing the demographics and psychosocial characteristics of students that are more likely to stop out or drop out will allow those involved in higher education to identify the students before they leave. This will allow for the possibility of shortening the amount of time students are stopping out. It would also allow for the possibility of changing potential dropouts to stopouts and then to students who have achieved their academic goals.
Student attrition is an inescapable fact of college life, no matter how many preventative measures are employed. However, having a better understanding of the students who leave, why they leave, and how they can be motivated to return will benefit all aspects of higher education. In Chapter Three, this dissertation will begin the process of shedding light on selected characteristics and how they relate to students who stop out of and drop out of American community colleges with the ultimate goal being an increase in the understanding of these students and their attendance patterns.
CHAPTER THREE

Methodology

This chapter includes the research methodology that was used in this study of characteristics of American community college students. Students who first enrolled in 1995-96 and how selected characteristics related to those students’ attendance patterns were the focus of the study. This study utilized secondary data from the National Center for Education Statistics (NCES). The Beginning Postsecondary Students Longitudinal Study 1996 (BPS:1996/2001), derived from the National Postsecondary Student Aid Study 1995-96 (NPSAS:96), was the specific NCES product that was used for this dissertation. By tracking a cohort of more than 3,000 community college students who began their postsecondary education in the 1995-96 academic year and who were reinterviewed in 1998 and in 2001 (regardless of whether or not they were enrolled at the time of the second and third interviews), researchers at NCES and at the Research Triangle Institute (RTI) were able to collect data on myriad variables.

This chapter contains the research questions, previously stated in Chapter One, that guided the study. In addition, the methodology used in the creation of the NPSAS:96 and the BPS:1996/2001 is found in this chapter. The methodology includes a description of (a) the population, (b) the sample process, (c) the variables used in data collection, (d) the data collection procedures used by NCES and RTI, and (e) the integrity of the data collected. Finally, the data analysis procedures that were used to answer this study’s research questions are located in this chapter.
The purpose of this study was two-fold. The first purpose was to reduce the gap found in the higher education literature relative to the attendance patterns of students who enroll in American community colleges. The second purpose of the study was to help administrators better understand and address their students’ needs through a review of recommendations and intervention programs related to the retention of students.

Using data from the Beginning Postsecondary Students Longitudinal Study 1996/1998/2001 (BPS:1996/2001), three primary research questions were considered when completing this study.

1. What are the characteristics of students who stopped out of, dropped out of, and enrolled continuously in American community colleges between the 1995-96 academic year and the 2000-2001 academic year? Specifically, the students’ academic integration, purpose for enrolling (i.e., their educational goal), the hours per week the students worked while enrolled in 1995-96, their parents’ (combined) highest level of education, the students’ part-time enrollment in 1995-96, whether or not the students had any disabilities, and the size of the institution in which the students first enrolled in 1995-96 will be examined.

2. Are there significant differences in selected characteristics between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?
   a. Is there a significant difference in academic integration between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?
b. Is there a significant difference in purpose for enrolling between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

c. Is there a significant difference in hours worked per week while enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

d. Is there a significant difference in parents’ (combined) highest level of education between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

e. Is there a significant difference in part-time enrollment in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

f. Is there a significant difference in disability status between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

g. Is there a significant difference in the institutional size category (small) in which students first enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001?

h. Is there a significant difference in the institutional size category (medium) in which students first enrolled in 1995-96 between students who stopped out of
and students who dropped out of American community colleges between 1995-96 and 2000-2001?

3. What is the association between these eight selected characteristics and whether students will stop out of or drop out of American community colleges?

Overview of the Datasets

In this chapter, an overview is presented relative to how the NPSAS:96 and BPS:1996/2001 datasets were created and how they are used. This overview includes a discussion of the (a) population, (b) sample, (c) weighting, (d) data collection questionnaire, (e) data collection procedures, and (f) data integrity associated with the datasets. Readers who wish to learn more about one or more of the aforementioned topics associated with these datasets should refer to the NPSAS:96 Methodology Report and/or the BPS:1996/2001 Methodology Report.

Population

The National Postsecondary Student Aid Study (NPSAS) began in the 1986-87 academic year (NPSAS:87). The purpose of the NPSAS was to determine how students and their families paid for the students’ college (postsecondary) education. The study was based on a sample that is nationally representative of students (undergraduate, graduate, and first professional) enrolled in all sectors of higher education (public, private, not-for-profit, for-profit, less-than-2-year, 2-year, and 4-year institutions). Since 1986-87, the study has been conducted in the 1989-90, 1992-93, 1995-96, 1999-2000, and 2003-2004 academic years (NPSAS:90, NPSAS:93, NPSAS:96, NPSAS:2000, NPSAS:04).
Currently, the NPSAS for the 2007-2008 (NPSAS:08) academic year is being conducted (NCES, 2006d).

The Beginning Postsecondary Students (BPS) Longitudinal Study 1995-96 was created to follow a cohort of students who began their postsecondary education in the 1995-1996 academic year. The students were first interviewed for the BPS in 1996 as part of their participation in the NPSAS:96. There were two follow-up interviews conducted; the first one was in 1998 (BPS:96/98), and the second one was in 2001 (BPS:1996/2001). In 1998, researchers collected data from students enrolled in 2-year colleges that pertained to attainment. In addition, non-traditional students were asked questions about (a) the reasons they delayed their enrollment, (b) their prior employment experience, and (c) their purpose for enrolling. Finally, terms such as “transfer,” “stopouts,” and “dropouts” and the reasons for these enrollment behaviors first appeared in the 1998 interviews (Wine et al., 2002).

In 2001, researchers followed up with the students who enrolled at 2-year colleges in relation to their persistence and attainment. In addition, researchers asked questions that pertained to the students’ relationship between working and attending school and how postsecondary education affects the lives of these students (Wine et al., 2002).

In creating the NPSAS:96 dataset, NCES and RTI wished to utilize an “ideal” target population of “all students who were enrolled in postsecondary institutions in the United States and Puerto Rico between July 1, 1995 and June 30, 1996” (Riccobono, Whitmore, Gabel, Traccarella, & Pratt, 1997, p. 2-2). This population, however, was to
exclude students who were enrolled solely in General Educational Development (GED) programs or who were enrolled in high school and college concurrently.

To draw this ideal target population from institutions, NCES and RTI needed to create an institutional sample that would provide for the number of students needed for the NPSAS:96. For an institution to be included in the NPSAS:96 sample, it must have, at some point during the 1995-96 academic year, (a) offered “college level” courses and programs; (b) offered academic, occupational, or vocational programs that are three months or more (or 300 clock hours) in duration; (c) offered access to the general public; (d) offered more than correspondence courses; (e) been located in the 50 United States, the District of Columbia, or Puerto Rico; and, (f) been an institution other than a U. S. Service Academy (Riccobono et al., 1997). Using these criteria, NCES and RTI compiled a population of more than 9,400 institutions.

Sample

With a pre-determined sampling rate of 10% and two-stage sampling design, the population was reduced to nearly 1,000 institutions that would potentially be the institutional sample from which students would be selected. Utilizing the Integrated Postsecondary Education Data System’s (IPEDS) 1993-1994 Institutional Characteristics (IC) Survey as the second stage (in the two-stage sampling design, the first stage being the criteria listed above and offered by NCES) to classify the institutions by control and highest level of offering, the nearly 1,000 institutions were separated into nine categories: (a) public, less-than-2-year (4% of the sampled institutions); (b) public, 2-year (17%); (c) public, 4-year, non-doctorate-granting (13%); (d) public, 4-year, doctorate-granting
(13%); (e) private, not-for-profit, less-than-4-year (6%); (f) private, not-for-profit, 4-year, non-doctorate-granting (12%); (g) private, not-for-profit, 4-year, doctorate-granting (15%); (h) private, for-profit, less-than-2-year (12%); and (i) private, for-profit, 2-year or more (8%) (Riccobono et al., 1997).

Each institution that was deemed eligible to participate in NPSAS:96, which was determined to be 92% of the nearly 1,000 eligible institutions, was asked to provide a list of eligible students to NCES. Students would be considered eligible if they were:

enrolled in either (a) an academic program; (b) at least one course for credit that could be applied toward fulfilling the requirements for an academic degree; or (c) an occupational or vocational program that required at least 3 months or 300 clock hours of instruction to receive a degree, certificate, or other formal award; not currently enrolled in high school; and not enrolled solely in a GED or other high school completion program. (Riccobono et al., 1997, pp. 2-10)

Of the nearly 900 institutions that were asked for lists of eligible students, 836 (93%) institutions responded.

Once the lists of students were received at NCES, they were stratified into the nine aforementioned classifications and sampled using stratified systematic sampling. Precautions were taken to assure that no student was selected more than once. After the stratified systematic sampling techniques were conducted, a yield of more than 63,600 students was realized from the 836 institutions that provided the lists. Of those 63,600-plus students, approximately 15,000 (23% of the total realized student sample) were classified as being from public, 2-year institutions (Riccobono et al., 1997).
Of particular interest to this dissertation was the selection of a sufficient number of students who were “first-time beginning (FTB) students,” as classified by NCES. The FTB students are what comprise the BPS study, the foundation of this dissertation’s research. The 836 participating institutions submitted fewer numbers of students who could potentially be classified as FTB than were expected; because of this, sampling rates for FTB were increased so that there would be a sufficient yield of these students for study (Riccobono et al., 1997). The final yield of potential FTB students from all institutional sectors was slightly more than 23,600 (approximately 37% of the overall student sample of 63,600); for the 2-year sector, the number of potential FTB students was slightly more than 4,400 (approximately 19% of the total potential FTB sample of 23,600) (Riccobono et al., 1997). The increasing of the sampling rates proved to be an effective measure given that the final overall yield of 63,600 students was greater than the expected final overall yield of 59,500, and the final 2-year college yield of 4,400 was greater than the expected final 2-year college yield of 4,300 (Riccobono et al., 1997).

For students to be considered as “pure FTB” (and thus, eligible for participation in the BPS:96), they were to have never completed a postsecondary education course prior to the 1995-96 academic year (Wine et al., 2002). However, students who were NPSAS-eligible and “who had enrolled for at least one course after completing high school but had never completed a postsecondary course before the 1995-96 academic year” were classified as “effective FTB” and were eligible for inclusion in the BPS:96 (Wine et al., 2002, p. 8).
Because of the fact that the sample students’ FTB status could not be determined until after the students had completed their telephone interview, the potential FTB students were over-sampled in the creation of the NPSAS. The NPSAS dataset incorporated the use of weights (both cross-sectional and longitudinal) to account for the over-sampling. Weights are discussed in the next section of this chapter. After the over-sampling and the criteria for being an FTB student were applied, 12,400 students were identified as being either a pure FTB or an effective FTB; thus, they were eligible for inclusion in the BPS:96 cohort. Of the 12,400 eligible BPS:96 students, 10,300 completed the interview for the BPS:96/98 and were confirmed as FTB students (Wine et al., 2002).

The BPS:1996/2001 sample included those 10,300 students from the BPS:96/98 in addition to nearly 1,800 NPSAS:96 respondents (BPS:96/98 non-respondents) who were later determined to be FTB. After deleting the cases where the respondents had died since their last interview, nearly 12,100 sample students were eligible for the BPS:1996/2001 sample (Wine et al., 2002).

As the foundation for the research conducted in this dissertation, a sample from the 12,100 students who were eligible to participate in the BPS:1996/2001 study was created. This was done through the use of a filter variable in the BPS named ITNPSAS which was coded to select only those students who began their postsecondary education in a two-year institution (including both not-for-profit and for-profit) and NPSAS/BPS variables in the Data Analysis System (DAS) On-Line Version 4.0. The dissertation sample consisted of those FTB students (from the BPS:1996/2001 sample) who began
their postsecondary education in community colleges, and it contained approximately 1,000 to 2,500 students.

**Weighting**

For the BPS:1996/2001 dataset, NCES utilized cross-sectional weights to ensure that the final sample was representative of the population being studied. In addition, two longitudinal weights were created. One of these weights was for students who responded to all three interviews (NPSAS:96, BPS:96/98, and BPS:1996/2001) while the other weight was for analyzing students who responded only to the NPSAS:96 and the BPS:1996/2001 (Wine et al., 2002).

As noted previously in this chapter, the final sample for the BPS:1996/2001 was comprised of the eligible respondents from the BPS:96/98 and those non-respondents from the BPS:96/98 who were NPSAS:96 respondents, after accounting for those students who had died since their last interview. For the BPS:96/98 respondents, four adjustments for sub-sampling and non-response relative to the 2001 follow-up of the BPS:96 cohort were made. Those adjustments were: (a) to account for sub-sampling of the BPS:96/98 non-respondents, (b) to account for those who were unable to be located, (c) to account for those who were located but who refused to participate, and (d) to account for non-responses other than refusals among those who were located but did not refuse (Wine et al., 2002).

Cross-sectional weights were constructed for participants in the BPS:1996/2001 dataset. Adjustments were made for non-respondents in three steps: (a) inability to locate the student, (b) refusal to be interviewed, and (c) any other reason for not responding
(Wine et al., 2002). Certain predictor variables were chosen for adjustment because of their propensity to predict non-responses. In other words, these variables tended, more often than not, to be ones for which responses were not received. These variables included age, race/ethnicity, gender, citizenship status in the base year, and parents’ highest educational attainment (Wine et al., 2002). Once again, any readers who wish to learn more about the weighting procedures used in the BPS:1996/2001 dataset should refer to the *BPS:1996/2001 Methodology Report*.

The weight used in this dissertation was the longitudinal weight named B01LWT2. This weight accounted for over-sampling from those who responded to the NPSAS:96 and the BPS:1996/2001 interviews (Wine et al., 2002). This researcher decided to use this weight because the research questions in this study were focused on the situation of stopouts, dropouts, and continuously enrolled students in 1995-96 and of stopouts and dropouts in 2000-2001.

In addition to B01LWT2, this study incorporated the use of the Balance Repeated Replication (BRR) technique. BRR is “one of two replication techniques commonly used to estimate the variances of survey statistics computed from complex sample surveys” (Wine et al., 2002, p. 75). BRR weights came into being for the BPS:1996/2001 after concerns were voiced by NCES and RTI that “variances for medians and other quartiles may not appropriate when computed using either Taylor series or jackknife methods” (Wine et al., 2002, p. 76). For this reason, this researcher used BRR weights for this dissertation, specifically the BRR weights named B2LBRR01 through B2LBRR51. To reiterate, any readers who wish to learn more about the BRR variance
estimation/weighting procedures used in the BPS:1996/2001 dataset should refer to the

Data Collection Questionnaire

The BPS:1996/2001 dataset was created through the use of computer-assisted
telephone interviewing (CATI) and computer-assisted personal interviewing (CAPI). To
facilitate the interviewing processes, two questionnaires were developed using a
comprehensive set of data elements. The data elements were derived from ones used with
the BPS:90 cohort, the relationship of the BPS:90 data elements to the NPSAS:96 and
BPS:96/98 data elements, the reliability of the BPS:90 data elements, and how relevant
they are in regard to current research and policy issues (Wine et al., 2002).

The questionnaire was developed through a series of iterations, field tests, and
feedback from NCES, a Technical Review Panel (TRP), and other staff from the
Department of Education. After all of the testing and feedback had been gathered and
evaluated, the questionnaire was organized by topic areas that were meant to “flow”
logically.

The items on the questionnaire were designed with specific goals in mind: (a) use
existing (i.e., pre-tested) items when possible; (b) be consistent with NPSAS:96,
BPS:96/98, and BPS:90/94 items, if not identical to those items; and (c) identify and
prepare wording for the verification of responses and possible probing questions if
necessary. Using the Computer-Assisted Survey Execution System (CASES) software,
version 4.3, detailed questionnaire specifications were programmed for each item so that
variable names and definitions would appear to assist the interviewer. In addition, the
software would skip to the next appropriate section if a student’s response rendered the current section irrelevant (i.e., a skip pattern), and the software would have in it pre-programmed out-of-range limits so that if a response was thought to be out of the expected range, it could be questioned at the point of entry (Wine et al., 2002).

There were two questionnaires developed for the BPS:1996/2001 interviewing sessions. One was the main questionnaire which consisted of five separate sections: (a) enrollment history, (b) undergraduate enrollment, (c) post-baccalaureate enrollment, (d) post-enrollment employment, and (e) background information. The second questionnaire was an abbreviated version which consisted of four separate sections: (a) postsecondary enrollment history, (b) undergraduate experiences, (c) employment, and (d) family formation. The abbreviated version was developed for the purpose of interviewing “special” groups of respondents such as those for which Spanish is their primary language (Wine et al., 2002). Because the main questionnaire contained all of the information that was covered in the abbreviated version, the abbreviated version was not discussed in this dissertation; however, interested readers are encouraged to view it in the BPS:1996/2001 Methodology Report.

Since all of the respondents in the BPS:1996/2001 cohort were, by definition, involved in either the NPSAS:96 or the BPS:96/98 interviews, the questions asked in the BPS:1996/2001 interview pertain to activities that have happened since the respondents’ last interview. Relative to the main questionnaire, the first section, Section A, no questions were asked of the respondents. Instead, this section contained demographic data pertaining to the students and pre-loaded by CASES from the BPS:96/98 study.
Examples of these data include age/date of birth, gender, race/ethnicity, parental education, students’ ACT/SAT scores, and the institution’s size, level, and control.

Section B was the first of the five sections that contained questions asked of the students by the interviewers. This section was entitled Enrollment History, and it contained questions pertaining to postsecondary enrollment and degree attainment. Topic areas for the questions included schools attended (since the last interview), dates of enrollment, the students’ reason for enrolling, degrees sought and earned, and whether the students were enrolled on a full-time basis or on a part-time basis.

Section C was entitled Undergraduate Enrollment, and it contained questions pertaining to undergraduate education experiences. Topic areas for these questions included the students’ major, GPA, employment, obstacles faced in pursuit of their education, and the extent to which the students felt they were integrated academically into the institution.

Section D was entitled Post-baccalaureate Enrollment, and it was intended for those sample students who had completed a baccalaureate degree since the last interview. Question areas included graduate/first professional school degree programs, post-baccalaureate undergraduate degree programs, employment, and licensure.

Post-enrollment Employment was the title of Section E. This section contained extensive employment information for the students’ current job if no degree had been earned since their last interview. Topics include current job, first job, occupation/industry, salary, benefits, training, relocation, job search activities, and unemployment.
Finally, Section F was entitled Background Information. This section contained questions related to marital status, family composition, income, assets, debts, civic participation, disabilities, and goals (Wine et al., 2002).

Operational Definitions of Independent Variables and Dependent Variables

Chapter One of this dissertation included conceptual definitions of terms used in this study. The following are operational definitions of the independent variables and dependent variable that were used in this study. Table A1 in Appendix A lists information for all of the variables used in this study, including the BPS variable name, the BPS variable label, and the section in the BPS from where the variable originated.

Academic integration

Classified as an independent variable for this dissertation, academic integration is a continuous, interval-level variable defined in the DAS as indexing the overall level of academic integration the students experienced during the 1995-96 academic year. Identified in the DAS by its variable name of ACADINT, academic integration is based on the average of the responses indicating how frequently the respondents: (a) participated in study groups, (b) had social contact with faculty, (c) met with an academic advisor, and (d) talked with faculty about academic matters outside of class. Non-missing data for the responses were averaged and the average was then multiplied by 100 to obtain the index score. The minimum score was 100, and the maximum score was 300. The overall mean score for the BPS:1996/2001 was 172.43 with a standard deviation of 50.14 (NCES, 2006a).


Purpose for enrolling

Classified as an independent variable for this dissertation, purpose for enrolling is a categorical, nominal-level variable defined in the DAS as the response to the question, “What is your primary reason for enrolling in this school?” Responses to the question included: (a) job skills; (b) degree or certificate; (c) transfer to a 2-year school; (d) transfer to a 4-year school; (e) transfer, but not sure where; or (f) personal enrichment/other. Unlike the other independent variables used in this dissertation research, this question was asked only of respondents who began their education at less-than-4-year institutions.

This variable is identified in the DAS by its variable name of PGM6Y1 (NCES, 2006a). For the purpose of this dissertation, the responses available for PGM6Y1 were “dummy-coded” into a new variable called PURPOSE. The new value labels and values for PURPOSE are as follows: 1 = Degree Seeking (consisting of “degree or certificate,” “transfer to a 2-year school,” “transfer to 4-year school,” and “transfer, not sure where”) and 2 = Other (consisting of “job skills,” “personal enrichment/other,” and “missing value”).

Hours per week worked by the students while enrolled in 1995-96

Classified as an independent variable for this dissertation, hours worked per week while enrolled is a continuous, interval-level variable defined in the DAS as the average hours the students worked per week while enrolled in 1995-96. If the students held no jobs during 1995-96, the values were imputed to zero. If the average hours worked per week were greater than 60, the values were recoded to 60 (NCES, 2006a). The
imputation and recoding were performed by the staff at NCES during the creation of the
NPSAS dataset. The minimum value was 1 hour worked per week while enrolled, and the
maximum value was 60 hours worked per week while enrolled. The overall mean for the
BPS:1996/2001 was calculated to be 27.19 hours worked per week with a standard
deviation of 12.8. This variable is identified in the DAS by its variable name of
J1HOURY1 (NCES, 2006a). All of the values in J1HOURY1, including 0, were included
in this study.

Parents’ (combined) highest level of education

Classified as an independent variable for this dissertation, parent’s highest level of
education is a categorical, ordinal-level variable defined in the DAS as the “aggregated
educational level of the parent with the greater educational attainment” (NCES, 2006a).
The respondents were given a choice between the following options: (a) high school
diploma or less, (b) some postsecondary education, (c) bachelor’s degree, or (d)
postbaccalaureate degree.

This variable is identified in the DAS by its variable name of PBEDHI3 (NCES, 2006a). For the purpose of this dissertation, the responses available for PBEDHI3 were
“dummy-coded” into a new variable called PARENTS. The new value labels and values
for PARENTS are as follows: 1 = College Educated (consisting of “some postsecondary
education,” “bachelor’s degree,” and “postbaccalaureate degree”) and 2 = Other
(consisting of “high school diploma or less,” and “missing value”).
Part-time enrollment in 1995-96

Classified as an independent variable for this dissertation, part-time enrollment originates in the variable named “Attendance intensity – first institution 1995-96,” identified in the DAS by its variable name of ATTNPT1 (NCES, 2006a). Attendance intensity – first institution 1995-96 is a categorical, ordinal-level variable in the DAS which indicates students’ attendance patterns relative to full-time, part-time, or mixed status (NCES, 2006a).

For the purpose of this dissertation, the responses available for ATTNPT1 were “dummy-coded” into a new variable called PARTTIME. The new value labels and values for PARTTIME are as follows: 1 = Attended Part Time (consisting of “exclusively half-time,” “exclusively less-than-half-time,” and “mixed half-time/less-than-half-time”) and 2 = Other (consisting of “exclusively full-time,” “mixed full-time/part-time,” “other,” and “missing value”).

Any disabilities 1995-96

Classified as an independent variable for this dissertation, the presence or absence of any disabilities is a categorical, nominal-level variable defined in the DAS as a response from a respondent to the question “Do you have any disabilities, such as a hearing, speech, or mobility impairment, a learning disability or visual problems that can’t be corrected with glasses?” Respondents were to answer “yes” or “no” this question.

This variable is identified in the DAS by its variable name of DSANY (NCES, 2006a). For the purpose of this dissertation, the responses available for DSANY were
“dummy-coded” into a new variable called DISABLED. The new value labels and values for DISABLED are as follows: 1 = Has a Disability (consisting of “yes”) and 2 = Other (consisting of “no,” and “missing value”).

Size of the institution in which the students first enrolled in 1995-96

Classified as an independent variable for this dissertation, size of the institution is a categorical, ordinal-level variable defined in the DAS as the control and size of the institution the students first attended in 1995-96. Categories for control include public, private not-for-profit, and private for-profit. The figures for the size of the institution are headcount-based, derived from IPEDS data, and are categorized by ranges (e.g., under 1,000 enrolled; 1,000-2,499 enrolled; 2,500-4,999 enrolled, etc.).

This variable is identified in the DAS by its variable name of ITNPCTSZ (NCES, 2006a). For the purpose of this dissertation, the responses available for ITNPCTSZ were recoded into three new variables called SMALL, MEDIUM, and OTHER. All types of institutions (public, private, not-for-profit, and for-profit) were included when defining the new variables. SMALL was defined as being institutions with enrollments between 1 and 2,499 students. MEDIUM was defined as being institutions with enrollments between 2,500 and 9,999 students. OTHER was defined as being institutions with enrollments of 10,000 or more students. After re-coding ITNPCTSZ into three new variables, the researcher then “dummy-coded” SMALL and MEDIUM. SMALL was “dummy-coded” as 1 = institutions with enrollments between 1 and 2,499, and 2 = all other institutions. MEDIUM was “dummy-coded” as 1 = institutions with enrollments between 2,500 and 9,999 students, and 2 = all other institutions.
After an analysis conducted through the use of IPEDS’ College Opportunities Online Locator, or COOL, (NCES, 2007), it was determined by this researcher that the number of private, for-profit schools that enroll 2,500 or more students was negligible when compared to the number of private, for-profit schools in 1995-96 and when compared to the number of students who could potentially be sampled from these institutions. Therefore, this researcher made the decision to include “private, for-profit, 1000 or more enrolled” in the SMALL category.

Stopout

As one level of the dichotomous dependent variable used in this dissertation, a stopout is defined as a student who attended his/her first term of college during the 1995-96 academic year, but did not attend continuously yet returned to college before the end of the 2000-2001 academic year (NCES, 2006d). For this study, a student could have returned to his/her original institution, to another two-year institution, or to a four-year institution. In addition, for this study, it is not relevant whether or not the student completed a degree or a certificate upon his/her return.

The variable from the DAS that was used to track stopouts is identified as PROUSE2B (NCES, 2006a). PROUSE2B is a categorical, nominal-level variable with one of the response categories being “Did not attain, stopped out.” This is the category that tracked students who stopped out between their first term of enrollment in 1995-96 and the end of the study in June 2001.

To obtain the stopouts from PROUSE2B, two steps were conducted. First, PROUSE2B, as it originates in the DAS with its six response categories, was recoded
into a new variable named DEPEND1 that contains three codes. These three codes are as follows: 1 = Stopout (consisting of “did not attain, stopped out”), 0 = Dropout (consisting of “did not attain, left without return”), and 2 = Continuously Enrolled (consisting of “attained bachelor’s degree,” “attained associate’s degree,” “attained certificate,” and “did not attain, still enrolled”). This variable, DEPEND1, was used to answer Research Question One that asked about selected characteristics of students who stopped out of, dropped out of, and enrolled continuously in American community colleges.

To answer Research Questions Two and Three, which dealt only with stopouts and dropouts, the second step, which was referenced in the previous paragraph, was conducted. This step entailed the creation of a second new variable from the original PROUSE2B. This second variable was named DEPEND2, and it was “dummy-coded” to contain only stopouts and dropouts, as follows: 1 = Stopouts (consisting of “did not attain, stopped out”) and 0 = Dropouts (consisting of “did not attain, left without return”).

**Dropout**

As the other level of the dichotomous dependent variable used in this dissertation, a dropout is defined as a student who attended his/her first term of college during the 1995-96 academic year but did not attend continuously and did not return to college before the end of the 2000-2001 academic year (NCES, 2006d).

The variable from the DAS that was used to track dropouts is identified as PROUSE2B (NCES, 2006a). PROUSE2B is a categorical, nominal-level variable with one of the response categories being “Did not attain, left without return.” This is the category that tracked students who dropped out sometime after their first term of
enrollment in 1995-96 and who did not return to college anywhere before the end of the

To obtain the dropouts from PROUSE2B, two steps were conducted. First,
PROUSE2B, as it originates in the DAS with its six response categories, was recoded
into a new variable named DEPEND1 that contains three codes. These three codes are as
follows: 1 = Stopout (consisting of “did not attain, stopped out”), 0 = Dropout (consisting
of “did not attain, left without return”), and 2 = Continuously Enrolled (consisting of
“attained bachelor’s degree,” “attained associate’s degree,” “attained certificate,” and
“did not attain, still enrolled”). This variable, DEPEND1, was used to answer Research
Question One that asked about selected characteristics of students who stopped out of,
dropped out of, and enrolled continuously in American community colleges.

To answer Research Questions Two and Three, which dealt only with stopouts
and dropouts, the second step, which was referenced in the previous paragraph, was
conducted. This step entailed the creation of a second new variable from the original
PROUSE2B. This second variable was named DEPEND2, and it was “dummy-coded” to
contain only stopouts and dropouts, as follows: 1 = Stopouts (consisting of “did not
attain, stopped out”) and 0 = Dropouts (consisting of “did not attain, left without return”).

**Data Collection Procedures**

The data that eventually became the BPS:1996/2001 were collected through
multiple sources including institutional records, government databases, and student
telephone interviews. Data relative to a student’s participation in financial aid programs
were collected through institutional records and government databases while data
pertaining to family circumstances, demographics, and educational and work experiences and expectations were collected directly from students through the use of computer-assisted telephone interviews and computer-assisted personal interviews (Wine et al., 2002).

Computer-assisted telephone interviews (CATI) began in February 2001 after interviewers completed their telephone interviewing training program. Interviewees were assigned to the interviewers through the use of an automated call scheduler which was embedded in the CATI software. These assignments were done to maximize the likelihood of contacting a potential respondent. Certain interviewers were trained in how to deal with persons who initially refused to participate, and certain other interviewers were trained in how to deal with a person who spoke only Spanish, especially important when dealing with students from institutions in Puerto Rico (Wine et al., 2002).

Computer-assisted personal interviews (CAPI) were used when potential respondents could not or would not be reached by telephone. These interviews began 12 weeks after the beginning of the CATI interviews. Field interviewers were charged with the task of obtaining information from reluctant respondents, either by telephone or by in-person contact (Wine et al., 2002).

In regard to the final tally, 92% of the BPS:1996/2001 sample was contacted. Ninety-five percent (95%) of those in the BPS:1996/2001 sample who were contacted responded to the interviewers’ questions. Ninety-seven percent (97%) of the respondents completed a full interview; the remaining 3% completed the abbreviated interview or a partial interview (i.e., they answered a few of the questions but not every question in the
full interview or in the abbreviated interview). NCES and RTI calculated these response percentages into a weighted response rate of 84%. Of particular interest to this dissertation, the weighted response rate for students in 2-year institutions was 79% (Wine et al., 2002).

Data Integrity

Data that were obtained through the CATI and CAPI interview processes for the BPS:1996/2001 study underwent extensive evaluations to ensure their integrity. NCES developed five methods to evaluate the data: (a) analyses of indeterminate responses, (b) help text accesses, (c) online coding, (d) quality circle meetings, and (e) quality control monitoring of interviews (Wine et al., 2002).

Indeterminate responses were discouraged, yet researchers at NCES and RTI knew they would happen no matter how many “precautions” were taken to avoid them. An indeterminate response is one in which respondents answer “don’t know” or when they refuse to answer a question (Wine et al., 2002). While there may have been legitimate reasons why respondents answered in these ways, it is a fact that indeterminate responses cause unknowns (i.e., missing data) in the dataset. Because of this, indeterminate responses had to be resolved either by imputation (after data collection has taken place) or by data conversion (while data collection is taking place) (Wine et al., 2002).

In regard to the BPS:1996/2001 study, only nine of the 445 items in the interview contained more than 10% missing data. The two items that had the highest percentage of
missing data were both related to salary – gross annual salary for first post-enrollment job (24% missing) and spouse’s gross salary for 2000 (21% missing) (Wine et al., 2002).

The CATI/CAPI interview questionnaire was designed so it could convert “don’t know” responses for questions regarding GPA, gross salary for 2000, and gross annual salary for first post-enrollment job. For GPA, respondents who did not know their GPA were asked to provide a letter grade range as opposed to a grade point average. This conversion from a grade point average to a letter grade range resulted in 94% of the missing GPA data being converted into valid responses. Consequently, the response rate for this question became 99%.

For the two salary-related questions listed above (gross salary for 2000 and gross annual salary for their first post-enrollment job), respondents who initially answered “don’t know” were given the opportunity during the interviews to provide their salary in terms of an hourly, weekly, twice monthly, or monthly amount. Missing data for these two questions were converted at rates of 91% and 92%, respectively, into valid responses. These conversions resulted in response rates of 93% and 94%, respectively, for the two (oftentimes sensitive) salary-related questions (Wine et al., 2002).

Interviewers were able to assist respondents when they had difficulty understanding the questions through the use of online help text. The help text was available for every screen in the CATI/CAPI questionnaire, and it offered definitions of terms used in the questions and what sort of information is being requested (Wine et al., 2002). This tool could be used as clarification of questions and responses while
respondents were still on the telephone with the interviewer; and, a well-placed helpful word could mean the difference between an indeterminate response and a valid response.

To help further, the software had programmed into it counters that would tally the number of times an interviewer accessed a help screen. That way, a question that might be particularly troublesome to the interviewer and/or the respondent could be identified. There was only one question which had a help text access rate of higher than 4%: “Do you (or your spouse) currently receive any of the following forms of untaxed income? TANF (AFDC), Social Security benefits, workers compensation, disability payments, child support, food stamps.” The rationale for this phenomenon is the respondents were unfamiliar with the types of aid being listed (Wine et al., 2002).

Online coding was another method through which the data received from respondents could have been validated. Online coding was “designed to improve data quality by capitalizing on the availability of the respondent to clarify coding choices at the time the coding was performed” (Wine et al., 2002, p. 40). While the interview was in progress, interviewers would have been able to use this tool to clarify text string responses and request additional information if the response could not be coded successfully the first time (Wine et al., 2002).

Online coding was used to capture responses for the postsecondary institution, major field of study, occupation, and industry of the respondents. Moreover, online coding was made an even more effective quality control mechanism by the fact that both the literal string for the response and the system-generated code for the response were captured. This meant that if a code was incorrect or the literal string was entered
incorrectly by the interviewer, there would be a back-up for data verification purposes (Wine et al., 2002).

To ensure even further the quality of the questionnaire used and the data collected, those involved with the BPS study held regularly scheduled CATI quality circle meetings. These meetings consisted of interviewers, supervisors, and BPS staff, and they discussed matters related to conducting CATI interviews in the most effective and efficient manner possible (Wine et al., 2002).

The CATI quality circle meetings were a “prompt and precise” method of solving problems experienced by the interviewers. Examples of the issues discussed at the CATI quality circle meetings include (a) revising help text, (b) reviewing/entering case-level comments, (c) problem sheets, (d) coding, and (e) changes to the questionnaire (Wine et al., 2002).

Finally, quality control monitoring was used in the creation of the BPS:1996/2001 dataset to ensure the integrity of the data being collected. The monitoring of the telephone interview sessions “helped to meet three important quality objectives: (a) reduction in the number of interviewer errors, (b) improvement in interviewer performance by reinforcement of good interviewing practices, and (c) assessment of the quality of the data being collected” (Wine et al., 2002, p. 43).

CATI interviewers were monitored silently by their supervisors. Supervisors would listen to as many as 20 questions in one monitoring session to verify, primarily, that the interviewer asked the question correctly and that the interviewer entered the data from the respondent correctly. Through the first 31 weeks of data collection, a total of
19,962 items were monitored. During the first two weeks of data collection, when the learning curve is at its steepest level, error rates reached 2.4%; after the first two weeks of data collection, error rates never exceeded 0.6% (Wine et al., 2002).

**Data Analysis Procedures**

The data analyses that were involved in this dissertation were conducted through the use of the Data Analysis System (DAS) On-Line Version 4.0, Statistical Analysis Software (SAS), and Survey Data Analysis – Software for the Statistical Analysis of Correlated Data (SUDAAN). SUDAAN was developed by RTI in the mid-1980s as a response to the growing number of practitioners who were analyzing data collected from surveys incorporating complex sampling design (RTI, 2006). SAS, as is the case with most statistical software packages, treats all data as if they were collected from simple random samples (Thomas & Heck, 2001). Given that large-scale datasets, such as the NPSAS and BPS studies, involve complex sampling designs, and given that SAS does not account for complex sampling designs, it was imperative that this researcher used SUDAAN in this dissertation. If SUDAAN had not been used in this study to compensate for the complex sampling design, the likelihood was increased that this researcher, when testing his null hypotheses, would have committed Type I errors (i.e., reject the null hypotheses when they should not be rejected) (Thomas & Heck, 2001).

Guiding these analyses was the three research questions that were mentioned previously in this chapter. Specifically, these analyses examined (a) eight selected characteristics of students who stopped out of, dropped out of, and enrolled continuously in American community colleges between the 1995-96 academic year and the 2000-2001
academic year, (b) any significant differences in each of the eight selected characteristics between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001, and (c) if there is any association between any of the eight selected characteristics and whether students will stop out of or drop out of American community colleges.

The DAS On-Line Version 4.0 was created by NCES for the purpose of pulling and analyzing data from the various NCES datasets. Weighted estimates and standard errors for each independent variable were produced in the DAS. In addition to the weighted estimates and standard errors, means and standard errors for stopouts and for dropouts were produced in the DAS and used in conducting t-tests. These t-tests were used to examine differences between stopouts and dropouts in Research Question Two relative to the continuous variables. For the variables in Research Question Two that were categorical, data were imported from the DAS into SAS and SUDAAN so that contingency table analyses (Pearson’s chi-square) could be produced. The same data were also used in SAS and SUDAAN to produce logistic regression which answered Research Question Three. It is important to note that the alpha level for the research conducted in this dissertation was $\alpha = .05$.

**Research Question One**

The first research question examined characteristics of students who stopped out of, dropped out of, and enrolled continuously in American community colleges between the 1995-96 academic year and the 2000-2001 academic year. Using the DAS, weighted estimates and standard errors for the eight characteristics were produced from the
BPS:1996/2001 dataset. The students’ (a) academic integration, (b) purpose for enrolling (i.e., their educational goal), (c) hours per week the students worked while enrolled in 1995-96, (d) parents’ (combined) highest level of education, and (e) part-time enrollment in 1995-96 were examined. In addition, the students’ disability status and the institutional size category (small and medium) in which the students first enrolled in 1995-96 were studied.

These characteristics were selected based on (a) their presence or conspicuous absence in the literature and (b) the interests of the researcher in what might make a compelling model for attendance patterns of community college students. There was no null hypothesis for this research question since only weighted estimates and standard errors were involved.

*Research Question Two*

The second research question asked if there were any significant differences in selected characteristics between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001. The eight sub-questions asked if there was a significant difference in each individual characteristic between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001. Mean differences between the stopouts and the dropouts were tested for significance through the use of t-tests and contingency table analyses (Pearson’s chi-square).

T-tests are used to test “whether the differences between two means are significantly different from zero” (Field, 2005, p. 747). Typically, t-tests are used when
the variable under examination is interval or ratio in nature. In this study, that included variables measuring academic integration and hours worked per week while enrolled in 1995-96. For all other variables (nominal or ordinal level), contingency table analyses and Pearson’s chi-square were used to test for significant differences between the stopouts and the dropouts.

The null hypotheses for the Research Question Two’s eight accompanying research sub-questions were as follows:

Ho<sub>1</sub>: There is no significant difference in academic integration between students who stopped out and students who dropped out of American community colleges between 1995-96 and 2000-2001.

Ho<sub>2</sub>: There is no significant difference in purpose for enrolling between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001.

Ho<sub>3</sub>: There is no significant difference in hours worked per week while enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001.

Ho<sub>4</sub>: There is no significant difference in parents’ (combined) highest level of education between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001.

Ho<sub>5</sub>: There is no significant difference in part-time enrollment in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001.
Ho₆: There is no significant difference in disability status between students who
stopped out of and students who dropped out of American community

Ho₇: There is no significant difference in the institutional size category (small) in
which the students first enrolled in 1995-96 between students who stopped
out of and students who dropped out of American community colleges

Ho₈: There is no significant difference in the institutional size category (medium)
in which the students first enrolled in 1995-96 between students who
stopped out of and students who dropped out of American community

Assumptions of T-tests

T-tests, like all parametric tests, are guided by certain assumptions that must be
met for the results to be accurate. Two of the assumptions are the data should be normally
distributed and interval. Because t-tests belong to the family of parametric tests, and
because parametric tests are based on normal distributions of data, it is natural that the
first assumption of t-tests is the data are normally distributed. If the data are not normally
distributed and t-tests are used to test for mean differences, the results are likely to be
inaccurate (Field, 2005). To test for normality, a histogram of the independent (or test)
variable can be produced. Once the normal curve has been imposed upon the histogram,
one can see if the data are, basically, normally distributed or not; thus, one can determine
if this assumption is met or not.
Data should also be measured at the same intervals at all parts of the scale. For example, if the data are measured on a scale from 1 to 10, the difference measured between 5 and 6 should be the same as the difference measured from 1 to 2 (Field, 2005). In other words, the data must be at either the interval level or the ratio level for t-tests to be effective. Of the variables used in this dissertation research, only academic integration and the hours per week worked by the student were interval level variables. The remaining variables were nominal or ordinal level variables; therefore, they were tested for mean differences using contingency table analyses and Pearson’s chi-square.

Statistical Procedure for T-tests

After the establishment of the assumptions, means and standard errors were computed, through the DAS, for stopouts and for dropouts relative to the two interval-level variables – academic integration and the hours per week worked by the students. The means and standard errors for stopouts and dropouts relative to academic integration and the hours per week worked by the student were entered into a Microsoft® Excel spreadsheet. Through an array of formulae, this spreadsheet calculated the $t$-statistic based on the means and standard errors provided from the DAS. The spreadsheet compared the value of the $t$-statistic with the $z$-statistic (based on the number of comparisons made) to decide whether or not the mean difference between stopouts and dropouts was significantly different from zero. The results from this spreadsheet were compiled into a table and are presented in Table B1 in Appendix B.
To test the differences between stopouts and dropouts relative to the categorical variables, a statistical test that is capable of effectively handling categorical data was used. In this case, the test was the Pearson’s chi-square, a non-parametric test. Non-parametric tests are sometimes referred to by statisticians as “assumption-free” tests because they require fewer assumptions than do parametric tests (Field, 2005). In fact, there is only one main assumption that must be met for non-parametric tests and that is “the variable is normally distributed in the population from which the sample is drawn” (Connor-Linton, 2003, p. 4). This assumption does not mean, however, that the sample data must be normally distributed.

Obviously, given that the Pearson’s chi-square is an “assumption-free” test, it stands to reason that there would be fewer assumptions than there are for parametric data. Still there are two assumptions that must be met when conducting Pearson’s chi-square tests (Field, 2005). The first assumption is “each person, item, or entity contributes to only one cell of the contingency table” (Field, 2005, p. 686). In other words, Pearson’s chi-square cannot be used for studies using a repeated measures design. Additionally, this test cannot be used in studies where the same subjects are exposed to different phenomena to see if they achieve the same results.

The second assumption of Pearson’s chi-square is that the expected frequencies in the contingency tables need to be greater than five (Field, 2005). If the expected frequencies drop below five, there will be a loss of statistical power, rendering the results of the analysis unreliable. There are some who would argue that non-parametric tests,
such as Pearson’s chi-square, are inherently unreliable even if these assumptions are met. While it is true that the lack of assumptions related to non-parametric tests, when compared to parametric tests, may be seen by some as a weakness, it is also a strength of non-parametric tests as they are able to handle a wider range of data than are parametric tests, making them more useful across a wider spectrum of research activities (Connor-Linton, 2003).

Statistical Procedures for Pearson’s Chi-Square

Once the assumptions were met, a contingency table was produced in SUDAAN. This table showed the relationships between the categories within the variable. It is possible in this table to see the percentages that comprise each category in relation to the whole variable. However, this table does not show the significance of the relationships happening within the variable. One of the options in SUDAAN when creating a contingency table is the selection of Pearson’s chi-square. Selecting this test indicated whether or not there was a significant difference between the two variables in question. The output for the Pearson’s chi-square showed the value of the chi-square, the degrees of freedom, and the significance (p-value) of the chi-square. If \( p \) was less than or equal to .05, then the composition of the categorical variable was significant, meaning there was a difference between the two categories (stopouts and dropouts) relative to the variable that was being tested.

Research Question Three

The third research question asked what is the association between any of this study’s eight selected characteristics and whether students will stop out of or drop out of
American community colleges. The null hypothesis for the third research question was as follows.

\( H_0: \) There is no association between any of this study’s eight selected characteristics and whether students will stop out of or drop out of American community colleges.

Because the dependent variable in this study was dichotomous and because certain independent variables in this study were categorical, logistic regression was performed to determine what the association is between any of the eight selected characteristics used in this study and whether students will stop out of or drop out of American community colleges. Not unlike most statistical procedures, logistic regression must be mindful of assumptions; however, as illustrated in the following section, the list of assumptions for logistic regression is quite short.

**Assumptions of Logistic Regression**

Logistic regression rose to prominence in the 1960s and 1970s when the focus of research was becoming less toward a linear approach and more toward a dichotomous approach. Logistic regression provided a viable tool for those researchers who wished to study phenomenon that were reflective of this shift in focus (Cabrera, 1994).

As stated earlier, logistic regression is not without its assumptions to which it must adhere. However, the assumptions for logistic regression are not as numerous or as constraining as those assumptions relative to linear regression. In fact, logistic regression has only one assumption: “the binomial distribution is the assumed distribution for the conditional mean of the dichotomous outcome” (Peng, Lee, & Ingersoll, 2002, p. 11). In
other words, the observations must be independent of each other, the sample must be random, and the relationship produced must be non-linear.

With the exception of the non-linear relationship, the assumption for logistic regression relates to the assumptions of independent errors, normally distributed errors, and linearity in multiple regression. In both procedures, the residuals need to be independent of each other (uncorrelated) and random (Field, 2005). The difference between the two is that logistic regression produces a non-linear relationship; therefore, if multiple regression had been used in this study, the results would have been nonsensical (DesJardins, 2001). The assumption for logistic regression can be tested through the use of the normal $z$ test; however, the assumption is considered safe from violation as long as the sample is random, the observations are uncorrelated, and the residuals, when graphed, produce a non-linear relationship (i.e., not a straight line) (Peng, Lee, & Ingersoll, 2002).

Statistical Procedures for Logistic Regression

Once it was clear that the assumption had been met, the researcher performed the logistic regression procedure. Forced entry binary logistic regression, which was used for this dissertation, enters all independent variables into the model simultaneously. The influence of each independent variable upon the dependent variable is assessed as if each independent variable was entered last (i.e., after all other independent variables had been entered into the model). This method of regression, as opposed to the stepwise methods of regression, is more favored by researchers when one is testing theories. Stepwise methods tend not to give replicable results because of their propensity to be influenced by random variation in the data (Field, 2005).
Logistic regression examines the probability of an event or phenomenon (i.e., the dependent variable) occurring. Probability is defined as the likelihood of an outcome (Porter, 2007). Meanwhile, odds in relation to logistic regression is defined as the probability of an outcome occurring divided by the probability of the same outcome not occurring (Porter, 2007).

Preparing a logistic regression program to run in a software package such as SUDAAN is not so much of a problem for most people as is the interpretation of the output of said logistic regression program. There are two approaches that are most frequently used when interpreting logistic regression output: (a) interpreting the odds ratio, and (b) interpreting the discrete changes in probability (i.e., delta p). The odds ratio is the ratio of odds for the two groups under study (Porter, 2007), in this instance stopouts and dropouts. For example, if the odds of a student stopping out were 0.33 and the odds of a student dropping out were 2.00, the odds ratio would be 2 divided by 0.33 which equals 6. Thus, the odds of a student dropping out of community college are 6 times greater than the odds of a student stopping out of community college. Generally speaking, when an odds ratio is greater than 1, there is a positive effect on the dependent variable. Conversely, when the odds ratio is less than 1, there is a negative effect on the dependent variable (Porter, 2007).

Discrete changes in probability (delta p) takes into account the probability of an outcome for one group minus the probability of an outcome for a second group (Porter, 2007). For example, if the probability of a student stopping out is .25 and the probability of a student dropping out is .67, it can be said that the effect of dropping out is .42, or .67
minus .25. In other words, given this hypothetical model, the probability that a student will drop out is 42 percentage points higher than the probability that the student will stop out. It is important to note that it is percentage points being discussed here, not a percent increase or decrease. In other words, it is not a 42% increase but rather an increase of 42 percentage points.

Many people find using delta p to interpret the results of logistic regression to be more intuitive and easier to understand than the odds ratio method; however, some people tend to favor the odds ratio method of interpretation. Consequently, the results presented in Chapter Four were interpreted using both the odds ratio method and the delta p method. However, because SUDAAN only produces odds ratios, this researcher needed to conduct an intermediate step involving the calculations of the delta p in a Microsoft® Excel spreadsheet. The results from the spreadsheet are presented in Chapter Four.

There are several forms of logistic regression. The form used in this dissertation was binary logistic regression, which is used when the dependent variable is dichotomous (Porter, 2007). Produced in SUDAAN, the logistic regression included DEPEND2 as the dependent variable and had all eight independent variables entered at one time. Included in the SUDAAN output were tables that listed the constant and the independent variables in the model, their beta coefficients, standard errors, degrees of freedom, Wald $F$-statistic, statistical significance (i.e., $p$-value), and the odds ratios. The information in this table was then used to create the discrete changes in probability for those variables that were statistically significant. These discrete changes in probability, reported in Chapter Four, show the effect the independent variables had on the dependent variable.
Before determining the significance of the model and the effect of the independent variables on the dependent variable, the researcher conducted a diagnostic test for multicollinearity of the independent variables. It was important to test for any correlation among independent variables as too much correlation would have caused the correlated predictor variables to become interchangeable. In other words, it would have been impossible to determine which independent variable (versus any other independent variable) was having more of an effect on the dependent variable.

Using SUDAAN, a correlation matrix was produced that would test for multicollinearity. In this matrix, the independent variables were cross-referenced against each other and marked with any significance (p-value) so one could see immediately if any one variable was too closely related, either positively or negatively, to any other variable. If any correlations were found that were significantly high in either direction, one would have been faced with the decision of whether or not to eliminate one of the highly correlated variables (Field, 2005).

Summary

This chapter provided a description of the (a) population, (b) sample, (c) weighting, (d) data collection questionnaire, (e) data collection procedures, (f) data integrity associated with the datasets, and (g) data analysis procedures that were used to produce this quantitative study. There were three primary research questions outlined in the chapter. The first research question was answered through the use of weighted estimates and standard errors. The second research question was answered through the use of t-tests, contingency tables, and Pearson’s chi-square. The third research question
was answered through the use of forced entry binary logistic regression due to the

dichotomous nature of the dependent variable used in this study. In addition to the testing

of the null hypotheses for Research Question Two and Research Question Three, a test

for multicollinearity of the independent variables was conducted.

All of the research questions were answered using data from the Beginning Postsecondary Students Longitudinal Study (BPS:1996/2001), retrieved from the BPS:1996/2001 study through the use of the Data Analysis System (DAS) On-Line Version 4.0. Research Question One and a portion of Research Question Two were answered in the DAS while the data were imported from the DAS into SAS and SUDAAN to answer the remaining portion of Research Question Two and all of Research Question Three. SUDAAN was used so that the complex sampling design of the NPSAS and BPS datasets could be taken into account. The use of SUDAAN decreased the likelihood that the researcher of this dissertation would commit Type I errors (i.e., rejecting the null hypotheses when they should not be rejected) that were attributable solely to the complex sampling design of the datasets when he tested his null hypotheses.
CHAPTER FOUR

Results

The purpose of this study was two-fold. The first purpose was to reduce the gap found in the higher education literature relative to the attendance patterns of students who enroll in American community colleges. The second purpose of the study was to help administrators better understand and address their students’ needs through a review of recommendations and intervention programs related to the retention of students.

This study was designed to (a) describe selected characteristics of students who stop out of, drop out of, and enroll continuously in American community colleges, (b) test for differences relative to selected characteristics between students who stop out of and students who drop out of American community colleges, and (c) examine what associations there might be between any of the selected characteristics and whether students will stop out of or drop out of American community colleges. This chapter includes the findings of this study, which are presented in three sections corresponding to each of the three research questions, and concludes with a summary.

This study utilized nationally representative data gathered from the National Postsecondary Student Aid Study 1995-96 (NPSAS:96) and the Beginning Postsecondary Students Longitudinal Study 1996-2001 (BPS:1996/2001). The reason these datasets were used was because they contain a wealth of information on variables from across the higher education spectrum. There are more data contained in these datasets than one person would be able to collect without spending large amounts of time, effort, and money.
In creating the NPSAS:96 dataset, NCES and RTI wished to create an “ideal” target population of “all students who were enrolled in postsecondary institutions in the United States and Puerto Rico between July 1, 1995 and June 30, 1996” (Riccobono et al., 1997, p. 2-2). This population, however, was to exclude students who were enrolled solely in General Educational Development (GED) programs or who were enrolled in high school and college concurrently. Each institution that was deemed eligible to participate in NPSAS:96, which was determined to be 92% of the nearly 1,000 eligible institutions, was asked to provide a list of eligible students to NCES. Of the nearly 900 institutions that were asked for lists of eligible students, 836 (93%) institutions responded.

Derived from the NPSAS:96 dataset, the BPS:1996/2001 sample included 10,300 students from the BPS:96/98 who completed their interviews and nearly 1,800 NPSAS:96 respondents (BPS:96/98 non-respondents) who were later determined to be full-time beginning (FTB) students (Wine et al., 2002) – the core of the BPS sample and of this dissertation. From the 12,100 students who were eligible to participate in the BPS:1996/2001 study, another sample was created by this researcher for the purpose of this dissertation. This was done through the use of a filter variable named ITNPSAS which was coded to select only those students who began their postsecondary education at two-year institutions (including both not-for-profit and for-profit) and BPS variables from the Data Analysis System (DAS) On-Line Version 4.0. The dissertation sample consisted of those FTB students from the BPS:1996/2001 sample who began their
postsecondary education in community colleges, and it contained approximately 1,000 to 2,500 students.

Three research questions and eight null hypotheses were identified for this study. Research Question One entailed the use of weighted estimates and standard errors, all created in the DAS, to describe the students who stopped out of, dropped out of, and enrolled continuously in American community colleges from 1995 through 2001. Standard error is defined as “the standard deviation of the sampling distribution of a statistic” (Field, 2005, p. 745). Research Question Two incorporated the use of t-tests for the interval-type variables and contingency tables and Pearson’s chi-square for the categorical-type variables to tests for differences between the students who stopped out of and the students who dropped out of American community colleges between 1995-96 and 2000-2001. Finally, Research Question Three incorporated the use of binary logistic regression to see if there is an association between any of the independent variables and whether students will stop out of or drop out of American community colleges. For all statistical testing in this dissertation, an alpha level of .05 was used.

Research Question One

The first research question in this study addressed students who stopped out of, dropped out of, and enrolled continuously in American community colleges between 1995 and 2001 vis-à-vis the characteristics chosen for this study. Even though this study focuses mainly on students who stopped out and students who dropped out, data relative to students who enrolled continuously are provided for a more complete description of the situation. The results of this question are provided in this section and in Appendix B.
In Tables 1-7, the weighted estimates by row percentages and the corresponding standard errors (SE) are provided for the three categories under examination and are grouped by each independent variable in the study. In Tables B1-B7 (Appendix B), the weighted estimates by column percentages and the corresponding standard errors (SE) are provided for the three categories under examination and are grouped by each independent variable in the study.

The extent to which students felt they were integrated academically was measured in the BPS:1996/2001 with the Academic Integration Index. In the Academic Integration Index, the students’ responses to several interview questions related to academic integration were averaged and a scale was created wherein 100 was the minimum score (i.e., not well-integrated academically) and 300 was the maximum score (i.e., very well-integrated academically). The mean Academic Integration Index score for community college students who stopped out was 154.50, for community college students who dropped out was 148.20, and for community college students who enrolled continuously was 170.70.

When examining those students who obtained a low score (i.e., between 100 and 124) on the index, one can see (from Table 1) that 44.00% were students who dropped out of school sometime after their first term of enrollment in 1995-96. Students who stopped out of school comprised 36.80% of those obtaining a score between 100 and 124, and students who enrolled continuously until they achieved their stated educational goal comprised 19.20% of those obtaining a score between 100 and 124. Meanwhile, when examining those students who obtained a high score (i.e., between 250 and 300), one can
see (from Table 1) that 49.80% were students who enrolled continuously while 32.70% were students who stopped out. Students who dropped out comprised 17.60% of those who achieved a score between 250 and 300. Table B1 in Appendix B shows the distributions based on column percentages.

In addition to examining students’ scores on the Academic Integration Index, one can observe the distribution of students in the BPS:1996/2001 study relative to their purpose for enrolling in higher education. For example, of those students from the BPS:1996/2001 study whose stated purpose was to obtain a degree or certificate from either their original institution or another institution, 37.00% ultimately stopped out, 36.80% enrolled continuously until they achieved their purpose, and 26.20% ultimately dropped out of college. Of those students who were enrolled in higher education for reasons other than obtaining a degree or certificate, 38.70% dropped out, 31.20% stopped out, and 30.10% enrolled continuously until they achieved their stated goal or purpose (Table 2). Table B2 in Appendix B shows the distributions based on column percentages.

Trying to balance the pursuit of an education with the responsibilities of a job is a situation many community college students know all too well (McArthur, 2005; Summers, 2003). The BPS:1996/2001 asked students how many hours per week they worked while they were enrolled in 1995-96. The mean value for hours worked per week while enrolled for community college students who stopped out was 26.40, for community college students who dropped out was 25.40, and for community college students who enrolled continuously was 20.50.
Table 1

*Weighted Estimates and Standard Errors of Academic Integration Index 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled*

<table>
<thead>
<tr>
<th>Academic Integration Index</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>34.20</td>
<td>1.04</td>
<td>32.40</td>
<td>1.84</td>
<td>33.50</td>
<td>1.88</td>
</tr>
<tr>
<td>100 – 124</td>
<td>36.80</td>
<td>4.86</td>
<td>44.00</td>
<td>4.03</td>
<td>19.20</td>
<td>3.61</td>
</tr>
<tr>
<td>125 – 149</td>
<td>41.90</td>
<td>3.08</td>
<td>34.60</td>
<td>4.34</td>
<td>23.60</td>
<td>2.87</td>
</tr>
<tr>
<td>150 – 174</td>
<td>38.00</td>
<td>3.80</td>
<td>26.60</td>
<td>3.06</td>
<td>35.40</td>
<td>4.70</td>
</tr>
<tr>
<td>175 – 199</td>
<td>27.10</td>
<td>4.36</td>
<td>31.20</td>
<td>3.21</td>
<td>41.70</td>
<td>4.05</td>
</tr>
<tr>
<td>200 – 224</td>
<td>38.10</td>
<td>5.30</td>
<td>24.30</td>
<td>3.85</td>
<td>37.60</td>
<td>4.68</td>
</tr>
<tr>
<td>225 – 249</td>
<td>22.90</td>
<td>3.54</td>
<td>26.00</td>
<td>4.41</td>
<td>51.10</td>
<td>4.55</td>
</tr>
<tr>
<td>250 – 300</td>
<td>32.70</td>
<td>7.14</td>
<td>17.60</td>
<td>5.17</td>
<td>49.80</td>
<td>7.96</td>
</tr>
</tbody>
</table>

Table 2

Weighted Estimates and Standard Errors of Purpose for Enrolling 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Enrolling</td>
<td>%</td>
<td></td>
<td>%</td>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34.20</td>
<td>1.04</td>
<td>32.40</td>
<td>1.84</td>
<td>33.50</td>
<td>1.88</td>
</tr>
<tr>
<td>Degree-seeking</td>
<td>37.00</td>
<td>1.93</td>
<td>26.20</td>
<td>2.47</td>
<td>36.80</td>
<td>2.69</td>
</tr>
<tr>
<td>Other</td>
<td>31.20</td>
<td>1.75</td>
<td>38.70</td>
<td>3.00</td>
<td>30.10</td>
<td>3.10</td>
</tr>
</tbody>
</table>

Of those students who did not work while they went to school, as indicated by a “0” value in Table 3, 39.20% were enrolled continuously while 34.90% were drop outs. Students who stopped out comprised 26.00% of those who did not work while they were enrolled in school. Students who worked 20 hours per week (i.e., part-time) were distributed as follows: (a) 37.30% stopouts, (b) 35.70% enrolled continuously, and (c) 27.00% dropouts. Finally, of the students who worked 40 hours per week (i.e., full-time), 39.90% were eventual dropouts, 37.90% were eventual stopouts, and 22.20% were enrolled continuously (Table 3). Table B3 in Appendix B shows the distributions based on column percentages.

Oftentimes, parents play a large role in their children’s educational endeavors (Summers, 2003). It has been shown that students who are the first in their families to attend college are more at risk of leaving early than are students who have at least one parent who attended at least some college (Horn, 1998). For this reason, the BPS:1996/2001 interviewers asked students about their parents’ combined highest level of education. Of those students who had at least one parent who was college educated, 37.20% were stopouts, 35.70% were enrolled continuously, and 27.20% were dropouts. Of students with neither parent having any college education, 37.10% were dropouts, 31.50% were stopouts, and another 31.50% were enrolled continuously (Table 4). Table B4 in Appendix B shows the distributions based on column percentages.

Due to reasons such as work and familial commitments, many community college students enroll on a part-time basis (McArthur, 2005; Summers, 2003). In the BPS:1996/2001 study, students were asked if they attended school on a full-time basis,
Table 3

Weighted Estimates and Standard Errors of Hours Worked per Week 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled

<table>
<thead>
<tr>
<th>Hours Worked per Week</th>
<th>Stopouts %</th>
<th>SE</th>
<th>Dropouts %</th>
<th>SE</th>
<th>Continuously Enrolled %</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>34.20</td>
<td>1.04</td>
<td>32.40</td>
<td>1.84</td>
<td>33.50</td>
<td>1.88</td>
</tr>
<tr>
<td>0</td>
<td>26.00</td>
<td>4.13</td>
<td>34.90</td>
<td>2.99</td>
<td>39.20</td>
<td>4.04</td>
</tr>
<tr>
<td>10</td>
<td>25.30</td>
<td>13.58</td>
<td>40.00</td>
<td>14.94</td>
<td>34.70</td>
<td>12.51</td>
</tr>
<tr>
<td>15</td>
<td>34.20</td>
<td>9.25</td>
<td>29.00</td>
<td>10.69</td>
<td>36.80</td>
<td>9.23</td>
</tr>
<tr>
<td>20</td>
<td>37.30</td>
<td>3.90</td>
<td>27.00</td>
<td>4.38</td>
<td>35.70</td>
<td>4.54</td>
</tr>
<tr>
<td>25</td>
<td>33.80</td>
<td>3.38</td>
<td>21.90</td>
<td>4.12</td>
<td>44.30</td>
<td>5.67</td>
</tr>
<tr>
<td>30</td>
<td>45.00</td>
<td>8.27</td>
<td>26.00</td>
<td>6.53</td>
<td>29.10</td>
<td>4.60</td>
</tr>
<tr>
<td>35</td>
<td>44.50</td>
<td>13.72</td>
<td>32.30</td>
<td>10.75</td>
<td>23.10</td>
<td>5.80</td>
</tr>
<tr>
<td>40</td>
<td>37.90</td>
<td>3.53</td>
<td>39.90</td>
<td>3.83</td>
<td>22.20</td>
<td>3.21</td>
</tr>
<tr>
<td>45</td>
<td>47.30</td>
<td>12.63</td>
<td>33.40</td>
<td>13.43</td>
<td>19.30</td>
<td>8.96</td>
</tr>
</tbody>
</table>

Table 4

*Weighted Estimates and Standard Errors of Parents’ Combined Highest Level of Education by Stopouts, Dropouts, and Students Continuously Enrolled*

<table>
<thead>
<tr>
<th>Parents’ Level of Education</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>34.20</td>
<td>1.04</td>
<td>32.40</td>
<td>1.84</td>
<td>33.50</td>
<td>1.88</td>
</tr>
<tr>
<td>At least</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>some college</td>
<td>37.20</td>
<td>2.29</td>
<td>27.20</td>
<td>2.10</td>
<td>35.70</td>
<td>1.98</td>
</tr>
<tr>
<td>Other</td>
<td>31.50</td>
<td>1.66</td>
<td>37.10</td>
<td>1.85</td>
<td>31.50</td>
<td>2.50</td>
</tr>
</tbody>
</table>

a part-time basis, or some mix of full- and part-time. Table 5 shows the results to this question. Of those students who attended on a part-time basis in 1995-96, 40.10% became dropouts, 39.20% became stopouts, and 20.70% enrolled continuously. Of those students who attended as something other than part-time students (e.g., full-time or a full-time/part-time mix), 40.50% were continuous enrollees, 31.40% became stopouts, and 28.10% became dropouts. Table B5 in Appendix B shows the distributions based on column percentages.

Lau (2003) argued that students who identified with having some sort of disability may be more likely to leave school than students who do not identify with having any sort of disability. The BPS:1996/2001 asked students if they identified with having any disabilities or not. Their responses are shown in Table 6. Of those respondents who identified themselves as having at least one disability, 40.70% became stopouts, 31.20% became dropouts, and 28.10% enrolled continuously. Of those who did not identify themselves with having a disability, 33.90% enrolled continuously, 33.70% stopped out, and 32.40% dropped out. Table B6 in Appendix B shows the distributions based on column percentages.

Lau (2003) also argued that the size of the institution can play a role in whether or not students are retained. Because of this, the variable from the BPS:1996/2001 that asked students what was the size, enrollment-wise, of the institution in which they first enrolled in 1995-96 was included in this dissertation. For the purpose of this study, this variable was recoded into three categories – small, medium, and other. The specific breakdowns under each category were described in Chapter Three.
Table 5

*Weighted Estimates and Standard Errors of Students’ Part-Time Enrollment*

1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled

<table>
<thead>
<tr>
<th>Students</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-Time</td>
<td>%</td>
<td></td>
<td>%</td>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34.20</td>
<td>1.04</td>
<td>32.40</td>
<td>1.84</td>
<td>33.50</td>
<td>1.88</td>
</tr>
<tr>
<td>Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>part-time</td>
<td>39.20</td>
<td>1.74</td>
<td>40.10</td>
<td>2.75</td>
<td>20.70</td>
<td>2.99</td>
</tr>
<tr>
<td>Other</td>
<td>31.40</td>
<td>1.82</td>
<td>28.10</td>
<td>1.88</td>
<td>40.50</td>
<td>1.88</td>
</tr>
</tbody>
</table>

Table 6

**Weighted Estimates and Standard Errors of Students’ Disability Status 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled**

<table>
<thead>
<tr>
<th>Students’ Disability Status</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>34.20</td>
<td>1.04</td>
<td>32.40</td>
<td>1.84</td>
<td>33.50</td>
<td>1.88</td>
</tr>
<tr>
<td>Has a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disability</td>
<td>40.70</td>
<td>7.56</td>
<td>31.20</td>
<td>6.77</td>
<td>28.10</td>
<td>4.21</td>
</tr>
<tr>
<td>Other</td>
<td>33.70</td>
<td>1.22</td>
<td>32.40</td>
<td>2.19</td>
<td>33.90</td>
<td>1.94</td>
</tr>
</tbody>
</table>

Of those students who began their postsecondary studies at an institution categorized as small, 45.40% enrolled continuously while 33.80% eventually dropped out and 20.80% eventually stopped out. Of those who began their postsecondary studies at an institution categorized as medium, 37.70% became stopouts, 35.70% became dropouts, and 26.60% enrolled continuously. Finally, of those who began their postsecondary studies at an institution categorized as something other than small or medium, 36.50% stopped out, 33.50% enrolled continuously, and 29.90% dropped out (Table 7). Table B7 in Appendix B shows the distributions based on column percentages.

Research Question Two

The second research question in this study asked if there were any statistically significant differences in selected characteristics between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001. Each of the eight selected characteristics was tested for differences in individual null hypotheses. The two variables that were interval in nature (academic integration index and hours worked per week) were tested using t-tests. The other five variables, all of which were nominal or ordinal in nature, were tested through the use of contingency tables and Pearson’s chi-square analyses. Table 8 shows the combined values for the five categorical variables used in this study. The total percentages shown in Tables 9-14 are based on the totals for weighted size that are shown in Table 8.

The first null hypothesis (H₀₁) stated that there was no significant difference in academic integration between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001. After conducting a t-
Table 7

*Weighted Estimates and Standard Errors of Size of Institution*¹ First Enrolled

*1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled*

<table>
<thead>
<tr>
<th>Size of Institution¹</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34.20</td>
<td>1.04</td>
<td>32.40</td>
<td>1.84</td>
<td>33.50</td>
<td>1.88</td>
</tr>
<tr>
<td>Small</td>
<td>20.80</td>
<td>2.79</td>
<td>33.80</td>
<td>1.52</td>
<td>45.40</td>
<td>3.15</td>
</tr>
<tr>
<td>Medium</td>
<td>37.70</td>
<td>3.64</td>
<td>35.70</td>
<td>5.28</td>
<td>26.60</td>
<td>3.25</td>
</tr>
<tr>
<td>Other</td>
<td>36.50</td>
<td>1.57</td>
<td>29.90</td>
<td>2.11</td>
<td>33.50</td>
<td>2.16</td>
</tr>
</tbody>
</table>

*Note.* ¹All public and private, not-for-profit and for-profit, two-year degree-granting, Title IV-participating institutions in the 50 states and the District of Columbia.

Table 8

Contingency Table of All Five Categorical Variables Combined by Stopouts and Dropouts (DEPEND2)

<table>
<thead>
<tr>
<th>CAT. VARIABLES</th>
<th>Stopouts</th>
<th>Dropouts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighted size</td>
<td>565397</td>
<td>535164</td>
<td>1100561</td>
</tr>
<tr>
<td>% of total</td>
<td>51.37%</td>
<td>48.63%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

test, it was discovered that students who stopped out scored a mean of 154.50 ($SE = 2.57$) on the Academic Integration Index while students who dropped out scored a mean of 148.20 ($SE = 2.00$). The difference between these two means was not significant at $t = 1.93, p > .05$. (The $z$-value used in the t-test was 1.96; all of the t-test information is presented in Table C1 in Appendix C.) According to this test, there is no significant difference in academic integration between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001. The researcher failed to reject null hypothesis $H_0$.

The second null hypothesis ($H_0^2$) stated that there was no significant difference in purpose for enrolling between students who stopped out of and students who dropped out of American community colleges between 1995-95 and 2000-2001. After constructing a contingency table (Table 9) and conducting a Pearson’s chi-square ($\chi^2$) test in SUDAAN, it was discovered that there was a significant difference between stopouts and dropouts relative to the purpose of enrolling to obtain a degree or some other purpose for enrolling $\chi^2(1) = 10.92, p < .01$. According to this test, students who stopped out were more likely to be pursuing a degree than were students who dropped out. The researcher was able to reject null hypothesis $H_0^2$.

The third null hypothesis ($H_0^3$) stated that there was no significant difference in hours worked per week while enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001. After conducting a t-test, it was discovered that students who stopped out worked an average of 26.40 hours per week ($SE = 1.13$) while students who dropped out
Table 9

Contingency Table of Purpose for Enrolling (PURPOSE) by Stopouts and Dropouts (DEPEND2)

<table>
<thead>
<tr>
<th>PURPOSE</th>
<th>Stopouts</th>
<th>Dropouts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree-seeking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted size</td>
<td>310839</td>
<td>219917</td>
<td>530756</td>
</tr>
<tr>
<td>% within row</td>
<td>58.57%</td>
<td>41.43%</td>
<td>100.00%</td>
</tr>
<tr>
<td>% within column</td>
<td>54.98%</td>
<td>41.09%</td>
<td>48.23%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>28.24%</td>
<td>19.98%</td>
<td>48.23%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted size</td>
<td>254558</td>
<td>315247</td>
<td>569805</td>
</tr>
<tr>
<td>% within row</td>
<td>44.67%</td>
<td>55.33%</td>
<td>100.00%</td>
</tr>
<tr>
<td>% within column</td>
<td>45.02%</td>
<td>58.91%</td>
<td>51.77%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>23.13%</td>
<td>28.64%</td>
<td>51.77%</td>
</tr>
</tbody>
</table>

worked an average of 25.40 hours per week (SE = 1.57). The difference between these two means was not significant at \( t = 0.52, p > .05 \). (The z-value used in the t-test was 1.96; all of the t-test information is presented in Table C1 in Appendix C.) According to this test, there is no significant difference in hours worked per week while enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001. The researcher failed to reject null hypothesis Ho\(_3\).

The fourth null hypothesis (Ho\(_4\)) stated that there was no significant difference in parents’ level of college education between students who stopped out of and students who dropped out of American community colleges between 1995-95 and 2000-2001. After constructing a contingency table (Table 10) and conducting a Pearson’s chi-square test in SUDAAN, it was discovered that there was a significant difference between stopouts and dropouts relative to their parents’ level of college education \( \chi^2(1) = 8.58, p < .01 \). According to this test, students who stopped out were more likely to have parents who had at least some college education than were students who dropped out. The researcher was able to reject null hypothesis Ho\(_4\).

The fifth null hypothesis (Ho\(_5\)) stated that there was no significant difference in part-time enrollment in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-95 and 2000-2001. After constructing a contingency table (Table 11) and conducting a Pearson’s chi-square test in SUDAAN, it was discovered that there was no significant difference between stopouts and dropouts relative to part-time enrollment in 1995-96 \( \chi^2(1) = 0.86, p > .05 \). The
Table 10

Contingency Table of Parents’ Combined Highest Level of Education

(PARENTS) by Stopouts and Dropouts (DEPEND2)

<table>
<thead>
<tr>
<th></th>
<th>DEPEND2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stopouts</td>
<td>Dropouts</td>
</tr>
<tr>
<td>At least some college</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted size</td>
<td>291836</td>
<td>213135</td>
</tr>
<tr>
<td>% within row</td>
<td>57.79%</td>
<td>42.21%</td>
</tr>
<tr>
<td>% within column</td>
<td>51.62%</td>
<td>39.83%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>26.52%</td>
<td>19.37%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted size</td>
<td>273561</td>
<td>322029</td>
</tr>
<tr>
<td>% within row</td>
<td>45.93%</td>
<td>54.07%</td>
</tr>
<tr>
<td>% within column</td>
<td>48.38%</td>
<td>60.17%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>24.86%</td>
<td>29.26%</td>
</tr>
</tbody>
</table>

Table 11

Contingency Table of Students’ Part-Time Enrollment (PARTTIME) by Stopouts and Dropouts (DEPEND2)

<table>
<thead>
<tr>
<th>PARTTIME</th>
<th>Stopouts</th>
<th>Dropouts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled part-time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted size</td>
<td>230952</td>
<td>236294</td>
<td>467246</td>
</tr>
<tr>
<td>% within row</td>
<td>49.43%</td>
<td>50.57%</td>
<td>100.00%</td>
</tr>
<tr>
<td>% within column</td>
<td>40.85%</td>
<td>44.15%</td>
<td>42.46%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>20.98%</td>
<td>21.47%</td>
<td>42.46%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted size</td>
<td>334445</td>
<td>298870</td>
<td>633315</td>
</tr>
<tr>
<td>% within row</td>
<td>52.81%</td>
<td>47.19%</td>
<td>100.00%</td>
</tr>
<tr>
<td>% within column</td>
<td>59.15%</td>
<td>55.85%</td>
<td>57.54%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>30.39%</td>
<td>27.16%</td>
<td>57.54%</td>
</tr>
</tbody>
</table>

researcher failed to reject null hypothesis $H_5$.

The sixth null hypothesis ($H_6$) stated that there was no significant difference in disability status between students who stopped out of and students who dropped out of American community colleges between 1995-95 and 2000-2001. After constructing a contingency table (Table 12) and conducting a Pearson’s chi-square test in SUDAAN, it was discovered that there was no significant difference between stopouts and dropouts relative to their disability status $\chi^2(1) = 0.28$, $p > .05$. The researcher failed to reject null hypothesis $H_6$.

The seventh null hypothesis ($H_7$) stated that there was no significant difference in the institutional size category (small) in which the students first enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-95 and 2000-2001. After constructing a contingency table (Table 13) and conducting a Pearson’s chi-square test in SUDAAN, it was discovered that there was a significant difference between stopouts and dropouts relative to them first attending a small institution in 1995-96 $\chi^2(1) = 10.03$, $p < .01$. According to this test, students who stopped out were more likely to have first attended something other than a small institution than were students who dropped out. The researcher was able to reject null hypothesis $H_7$.

The eighth null hypothesis ($H_8$) stated that there was no significant difference in the institutional size category (medium) in which the students first enrolled in 1995-96 between students who stopped out of and students who dropped out of American community colleges between 1995-95 and 2000-2001. After constructing a contingency
Table 12

*Contingency Table of Students’ Disability Status (DISABLED) by Stopouts and Dropouts (DEPEND2)*

<table>
<thead>
<tr>
<th></th>
<th>DEPEND2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stopouts</td>
</tr>
<tr>
<td><strong>DISABLED</strong></td>
<td>46908</td>
</tr>
<tr>
<td>% within row</td>
<td>56.59%</td>
</tr>
<tr>
<td>% within column</td>
<td>8.30%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>4.26%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>518489</td>
</tr>
<tr>
<td>% within row</td>
<td>50.95%</td>
</tr>
<tr>
<td>% within column</td>
<td>91.70%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>47.11%</td>
</tr>
</tbody>
</table>

Table 13

Contingency Table of Those Who First Attended a Small Institution\(^1\) (SMALL) by Stopouts and Dropouts (DEPEND2)

<table>
<thead>
<tr>
<th></th>
<th>STOPOUTS</th>
<th>DROPOUTS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL</td>
<td>59586</td>
<td>96663</td>
<td>156249</td>
</tr>
<tr>
<td>Other</td>
<td>505811</td>
<td>438501</td>
<td>944312</td>
</tr>
</tbody>
</table>

Note. \(^1\)All public and private, not-for-profit and for-profit, two-year degree-granting, Title IV-participating institutions in the 50 states and the District of Columbia. From U. S. Department of Education, National Center for Education
Table 13 (Continued)

*Contingency Table of Those Who First Attended a Small Institution*\(^1\) (SMALL) by

*Stopouts and Dropouts (DEPEND2)*

Statistics, 1996-2001 Beginning Postsecondary Students Longitudinal Study

table (Table 14) and conducting a Pearson’s chi-square test in SUDAAN, it was discovered that there was no significant difference between stopouts and dropouts relative to them first attending a medium institution in 1995-96 \( \chi^2(1) = 0.00, p > .05 \). The researcher failed to reject null hypothesis Ho8.

**Research Question Three**

The third research question in this study asked what the association is between the eight selected characteristics and whether students will stop out of or drop out of American community colleges. Because of the dichotomous nature of the dependent variable used in this study, binary logistic regression was utilized to test the underlying null hypothesis. As was the case with all of the tests of the previous null hypotheses in this study, an alpha level of .05 was used.

Logistic regression estimates the probability or the odds of a phenomenon occurring versus the probability or the odds of a phenomenon not occurring. In the case of this dissertation, the phenomenon was attendance patterns – specifically, whether students stopped out or whether students dropped out. To answer Research Question Three, the researcher used SAS and SUDAAN to produce a forced-entry binary logistic regression model; in other words, all of the eight independent variables were entered into the model simultaneously. However, before the logistic regression model was created, the researcher performed a diagnostic test of the independent variables to check for any multicollinearity among the independent variables. As shown in Table D1 (Appendix D), there was no evidence of any multicollinearity among the independent variables.
Table 14

*Contingency Table of Those Who First Attended a Medium Institution*¹

*(MEDIUM) by Stopouts and Dropouts (DEPEND2)*

<table>
<thead>
<tr>
<th>MEDIUM</th>
<th>Stopouts</th>
<th>Dropouts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium institution</td>
<td>190905</td>
<td>180615</td>
<td>371520</td>
</tr>
<tr>
<td>% within row</td>
<td>51.38%</td>
<td>48.62%</td>
<td>100.00%</td>
</tr>
<tr>
<td>% within column</td>
<td>33.76%</td>
<td>33.75%</td>
<td>33.76%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>17.35%</td>
<td>16.41%</td>
<td>33.76%</td>
</tr>
<tr>
<td>Other</td>
<td>374492</td>
<td>354549</td>
<td>729041</td>
</tr>
<tr>
<td>% within row</td>
<td>51.37%</td>
<td>48.63%</td>
<td>100.00%</td>
</tr>
<tr>
<td>% within column</td>
<td>66.24%</td>
<td>66.25%</td>
<td>66.24%</td>
</tr>
<tr>
<td>% of total (Table 8)</td>
<td>34.03%</td>
<td>32.22%</td>
<td>66.24%</td>
</tr>
</tbody>
</table>

*Note.* ¹All public and private, not-for-profit and for-profit, two-year degree-granting, Title IV-participating institutions in the 50 states and the District of Columbia. From U. S. Department of Education, National Center for Education
Table 14 (Continued)

*Contingency Table of Those Who First Attended a Medium Institution*¹

((MEDIUM) by Stopouts and Dropouts (DEPEND2))


<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stopouts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dropouts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Note: The table continues with detailed data on the distribution of those who first attended a medium institution by stopouts and dropouts.
The results from the forced-entry binary logistic regression model are presented in Table 15 including the regression coefficient \( B \), the standard error \( SE \), the odds ratio, and the Wald \( F \)-statistic. The model was significant at \( F(8) = 13.448, p < .001 \) with a pseudo R-square (Cox & Snell) of .043. Pseudo R-square is a measure of association used in logistic regression. It is meant to mimic the R-square found in linear regression, but it is not an actual measure of the variance explained in the dependent variable (Porter, 2007).

In addition to the model being significant, there were two independent variables that were significant, thus allowing the researcher to reject null hypothesis \( H_0 \).

Academic integration \( (B = 0.002, SE = 0.001, p < .01) \) is one of the significant predictors of the effect on whether students will stop out of or drop out of American community colleges. The odds ratio for academic integration is 1.002. This indicates that the odds of students who are more integrated academically are 1.002 times higher that they will become stopouts rather than dropouts, which indicates a positive effect.

To quantify this change in probability using delta \( p \), the researcher used the following formula twice, once for \( P(Y) = 0 \) and once for \( P(Y) = 1 \):

\[
P(Y) = \frac{e^{B_0 + B_1 X_1 + B_2 X_2 + \ldots + B_k X_k}}{1 + e^{B_0 + B_1 X_1 + B_2 X_2 + \ldots + B_k X_k}}
\]

In the formula, \( P(Y) \) is the probability of \( Y \) (i.e., the dependent variable) occurring, \( e \) is the mathematical constant, specifically the base of the natural logarithm, that is
Table 15

*Summary of the Forced Entry Binary Logistic Regression Analysis for the Effect of Selected Characteristics on Whether Students Will Stop Out of or Drop Out of American Community Colleges*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Ratio</th>
<th>F-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.534</td>
<td>0.250</td>
<td>0.586</td>
<td>---</td>
</tr>
<tr>
<td>Academic Integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>0.002</td>
<td>0.001</td>
<td>1.002</td>
<td>8.842**</td>
</tr>
<tr>
<td>Purpose for Enrolling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours Worked per Week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ Level of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.337</td>
<td>0.184</td>
<td>1.400</td>
<td>3.368</td>
</tr>
<tr>
<td>Students Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-Time</td>
<td>-0.060</td>
<td>0.179</td>
<td>0.942</td>
<td>0.112</td>
</tr>
</tbody>
</table>
Table 15 (Continued)

Summary of the Forced Entry Binary Logistic Regression Analysis for the Effect of Selected Characteristics on Whether Students Will Stop Out of or Drop Out of American Community Colleges

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Ratio</th>
<th>F-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students’ Disability Status</td>
<td>0.179</td>
<td>0.489</td>
<td>1.196</td>
<td>0.133</td>
</tr>
<tr>
<td>Small institution(^1)</td>
<td>-0.611</td>
<td>0.171</td>
<td>0.543</td>
<td>12.831**</td>
</tr>
<tr>
<td>Medium institution(^1)</td>
<td>-0.094</td>
<td>0.251</td>
<td>0.911</td>
<td>0.139</td>
</tr>
</tbody>
</table>

Note. Pseudo \(R^2 = .043\) (Cox & Snell). Model \(\chi^2(8) = 43.42, p < .001\).

\(*p < .05. \**p < .01. \***p < .001. \(^1\)All public and private, not-for-profit and for-profit, two-year degree-granting, Title IV-participating institutions in the 50 states and in the District of Columbia. From U. S. Department of Education, National Center for Education Statistics, 1996-2001 Beginning Postsecondary Students Longitudinal Study (BPS:1996/2001).
equivalent to the numerical value of 2.718281828 (truncated to nine decimal places), and B is equal to the beta coefficient. The subscript of 0 on the B indicates that this is the beta coefficient for the intercept (i.e., the constant). X is equal to the value given to the variables for testing (e.g., the mean value of the variable or test values of the variable such as 0 and 1), and the numerical subscripts on the X are indicative of how many independent variables are included in the model, from 1 to the infinite k (Porter, 2007).

This formula is calculated twice, once using a value of 0 for dropouts that is substituted into the variable under examination (e.g., academic integration) and once using a value of 1 for stopouts that is substituted into the variable under examination. A difference between the two results is calculated which is interpreted as the discrete change in probability, or delta p, on the dependent variable for this model relative to the independent variable under examination.

For example, in the case of academic integration, a value of 0, which represented dropouts, was substituted for the mean of academic integration in the first iteration of the formula. For all other independent variables, the means were used in the formula. The betas for each variable and the constant were multiplied by either their mean or their test value and then summed to give -0.4426. Then, \( e \) was raised to the -0.4426 power, giving 0.6424. Finally, to find \( P(Y) = 0 \), the value of the numerator (0.6424) was divided into the value of the denominator (1 + 0.6424) to give 0.3911, or 39.11%. This is the probability that the average student will drop out when controlling for all variables except for academic integration.
In the second iteration of the formula, a value of 1, which represented stopouts, was substituted for the mean of academic integration. Again, mean values were used for all other independent variables in the formula. The betas for each variable and the constant were multiplied by either their mean or their test value and then summed to give -0.4406. Then, $e$ was raised to the -0.4406 power, giving 0.6436. Finally, to find $P(Y) = 1$, the value of the numerator (0.6436) was divided into the value of the denominator (1 + 0.6436) to give 0.3916, or 39.16%. This is the probability that the average student will stop out when controlling for all variables except for academic integration.

Once both iterations of the formula were run, a difference between the value for dropouts and the value for stopouts was calculated. In the case of this dissertation, it was calculated that for every one unit increase in the Academic Integration Index for the average student, the probability that he or she will become a stopout rather than a dropout increased by .05 (i.e., 39.16% - 39.11%) percentage points. Table E1 in Appendix E shows the results from each step of the formulae and the resulting delta $p$.

The other variable in this study that was shown to have a significant effect on whether students will stop out of or drop out of American community colleges was that of first attending a small institution. This variable was significant at $B = -0.611$, $SE = 0.171$, $p < .01$ with an odds ratio of 0.543. Because this odds ratio was less than 1.000, it indicated a negative effect on the dependent variable. Negative effects can be difficult to interpret and understand, so DesJardins (2001) suggested the use of an inverse odds ratio (IOR).
The IOR is calculated by dividing the value of the original odds ratio, in this case 0.543, into 1. For this study, the IOR for first attending a small-size institution was 1 divided by 0.543, or 1.842. This odds ratio can now be interpreted to mean that the odds of students who first attend a small-size institution are 1.842 times higher that they will become dropouts rather than stopouts, thus incorporating the negative effect from the original odds ratio of less than 1.000.

To quantify this change in probability using delta p, the researcher, again, used the delta p formula twice, once for \( P(Y) = 0 \) and once for \( P(Y) = 1 \). In the case of the institutional size category (small), a value of 0, which represented dropouts, was substituted for the mean of institutional size category (small) in the first iteration of the formula. For all other independent variables, the means were used in the formula. The betas for each variable and the constant were multiplied by either their mean or their test value and then summed to give 0.96. Then, \( e \) was raised to the 0.96 power, giving 2.61. Finally, to find \( P(Y) = 0 \), the value of the numerator (2.61) was divided into the value of the denominator (1 + 2.61) to give 0.72, or 72%. This is the probability that the average student will drop out when controlling for all variables except for institutional size category (small).

In the second iteration of the formula, a value of 1, which represented stopouts, was substituted for the mean of institutional size category (small). Again, mean values were used for all other independent variables in the formula. The betas for each variable and the constant were multiplied by either their mean or their test value and then summed to give 0.35. Then, \( e \) was raised to the 0.35 power, giving 1.42. Finally, to find \( P(Y) = 1 \),
the value of the numerator (1.42) was divided into the value of the denominator (1 + 1.42) to give 0.59, or 59%. This is the probability that the average student will stop out when controlling for all variables except for institutional size category (small).

Once both iterations of the formula were run, a difference between the value for dropouts and the value for stopouts was calculated. In the case of this dissertation, it was calculated that for every one unit increase in the size of a small institution, the probability that the average student will become a stopout rather than a dropout decreased by 14 (i.e., 59% - 72%) percentage points. Table E2 in Appendix E shows the results from each step of the formulae and the resulting delta p.

Summary

This chapter provided a description of the data analysis procedures that were used to produce this quantitative study. In addition, this chapter provided a description of the findings that resulted from the aforementioned data analysis procedures.

There were three primary research questions answered in this chapter. The first research question asked for a description of eight selected characteristics of students who stopped out of, dropped out of, and enrolled continuously in American community colleges from 1995-96 through 2000-2001. It was answered through the use of weighted estimates and standard errors obtained from the Data Analysis System (DAS) On-Line Version 4.0 from the National Center for Education Statistics (NCES). The second research question asked if there were any significant differences between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001 relative to the eight characteristics selected for inclusion in this
study. Through the use of t-tests, contingency tables, and Pearson’s chi-square, it was
determined that there were significant differences between these two groups, specifically
with regard to purpose for enrolling, parents’ combined highest level of education, and
first attending a small institution. The third research question asked what association
there is between the eight selected characteristics and whether students will stop out of or
drop out of American community colleges. Binary logistic regression was performed and
the results showed that academic integration has a positive effect on the dependent
variable (i.e., the more integrated academically, the higher the probability that students
will be stopouts rather than dropouts). In addition, the results showed that first attending a
small institution has a negative effect on the dependent variable (i.e., the smaller the
institution attended, the higher the probability that the students will drop out as opposed
to stop out).

All of the research questions were answered using data from the Beginning
Postsecondary Students Longitudinal Study (BPS:1996/2001), retrieved from the
BPS:1996/2001 study through the use of the DAS, SAS, and SUDAAN. SUDAAN was
used so that the complex sampling design of the NPSAS and BPS datasets could be taken
into account when it was time for this researcher to reject (or fail to reject) the null
hypotheses. The use of SUDAAN decreased the likelihood that the researcher would
commit Type I errors (i.e., rejecting the null hypotheses when they should not be
rejected) that were attributable solely to the complex sampling design of the datasets.

In Chapter Five, the researcher will present a summary of the study. In addition,
the researcher will present conclusions and recommendations for future research.
CHAPTER FIVE

Summary, Conclusions, and Recommendations

This study was designed to (a) describe selected characteristics of students who stop out of, drop out of, and enroll continuously in American community colleges, (b) test for differences relative to selected characteristics between students who stop out of and students who drop out of American community colleges, and (c) examine what association there is between any of the selected characteristics and whether students will stop out of or drop out of American community colleges. This study utilized nationally representative data gathered from the National Postsecondary Student Aid Study 1995-96 (NPSAS:96) and the Beginning Postsecondary Students Longitudinal Study 1996-2001 (BPS:1996/2001). The research questions were answered through the use of (a) weighted estimates and standard errors obtained from the DAS On-Line Version 4.0, (b) t-tests, contingency tables, and Pearson’s chi-square, and (c) a forced-entry binary logistic regression model. The t-tests, contingency tables, Pearson’s chi-square, and forced-entry binary logistic regression model were created with the DAS, SAS and SUDAAN. SUDAAN was used so that the complex sampling design of the datasets could be taken into account.

This chapter includes a summary of the study. In addition, a summary of the findings within the context of the literature, conclusions, and implications for practice are provided. Recommendations for future research are provided at the end.
Summary of the Study

Studies pertaining to attendance patterns of students attending four-year colleges are common throughout the literature of higher education. However, the same cannot be said for studies pertaining to attendance patterns of students attending community colleges, especially those studies that involve the use of nationally representative datasets such as the NPSAS and BPS.

In addition to the apparent lack of literature relative to attendance patterns of community college students, there seems to be a misconception among some people, mainly those from outside of the community college sector, that there is basically no difference between students who stop out of community colleges and students who drop out of community colleges. Despite arguments to the contrary from Brunsden, Davies, Shevlin, and Bracken (2000), Metz (2002), and Adelman (2006), some persist in saying that there is no real difference between these two groups of students. Stemming from the lack of literature and the misconception of community college stopouts, this dissertation was created with the hope of (a) reducing the gap in the literature and (b) helping to erase the stigma of failure associated with the community college stopout.

Understanding the underlying characteristics of students who leave college before achieving their goals is important as well. Knowing the demographics and psychosocial characteristics of students that are more likely to stop out or drop out will allow those involved in higher education to identify the students before they leave. This will allow for the possibility of shortening the amount of time students are stopping out. It would also allow for the possibility of changing potential dropouts to stopouts and then to students
who have achieved their academic goals. It is for this reason that a section was presented in this dissertation that illustrated certain characteristics of students who are likely to stop out and/or drop out of American community colleges.

Astin (1977) noted that 60% of community college students leave before the end of their first year with most of the departures coming in the first two weeks of their first term. This is despite the implementation of intervention programs such as those that deal with student/faculty integration, student/social integration, mentoring, peer counseling, orientation courses, and on-campus childcare facilities. Besides reducing the literature gap, erasing the stigma of failure from the community college stopout, and illustrating certain characteristics of potential stopouts and dropouts, this dissertation highlighted certain intervention programs and practices that have been shown in the literature to be successful in the fight against attrition. While it is true that stopping out is not a negative occurrence, it is only true as long as the students who stop out return to college. Effective intervention programs and practices can help to reduce the amount of time students stop out, and some may even eliminate the need for the stopping out altogether. Student attrition is an inescapable fact of college life, no matter how many preventative measures are employed. However, having a better understanding of the students who leave, why they leave, and how they can be motivated to return will benefit all aspects of higher education.

Building upon this concept and the desire to view a broader (i.e., national) picture, this dissertation was created and the research was produced through the use of nationally representative data. Using data from the National Postsecondary Student Aid Study 1995-
96 (NPSAS:96) and the Beginning Postsecondary Students Longitudinal Study (BPS:1996/2001), this researcher developed three research questions and nine null hypotheses. The research questions asked (a) what were the descriptive statistics behind the eight characteristics selected for inclusion in this study relative to stopouts, dropouts, and continuous enrollees, (b) were there any significant differences between stopouts and dropouts, and (c) what is the association between any of the eight characteristics and whether students will stop out or drop out of American community colleges. To answer these questions, data were extracted from the DAS On-Line Version 4.0 that provided weighted estimates and standard errors for the descriptive statistics. (The reader is reminded that the weighted estimates discussed in the following section are based on row percentages. Appendix B provides weighted estimates (and standard errors) based on column percentages.) In addition, data were run through SAS and SUDAAN that provided chi-square tests for significant differences between stopouts and dropouts. Finally, data were run through SAS and SUDAAN that provided a binary logistic regression model which measured the association between the eight independent variables and whether students will stop out of or drop out of American community colleges.

**Summary of the Findings**

**Research Question One**

The Academic Integration Index 1995-96 provided an average score of the extent students felt they were integrated academically into their institutions. The index was based on a scale of 100 being the minimum integration level and 300 being the maximum
integration level. When looking at those who scored between 100 and 124 on the index, dropouts constituted 44.00%, stopouts 36.80%, and continuous enrollees 19.20%. Of the students who scored between 150 and 174 on the index, 38.00% were stopouts, 35.40% were continuously enrolled, and 26.60% were dropouts. Of the students who scored between 250 and 300, 49.80% were continuous enrollees, 32.70% were stopouts, and 17.60% were dropouts. Tinto (1975) said that the more integrated academically students were, the more likely they are to persist. These data appear to corroborate his statement.

There was a higher percentage of stopouts (37.00%) and continuous enrollees (36.80%) who enrolled in school in 1995-96 for the purpose of obtaining a degree or certificate than there were dropouts (26.20%) who enrolled for the same purpose. Again, these data appear to corroborate Tinto’s 1975 statement on academic integration and persistence.

Working students are frequently found in community colleges (McArthur, 2005; Summers, 2003). For students who worked 20 hours per week while enrolled in 1995-96, the breakdown between stopouts, dropouts, and continuously enrolled students is not distinguishable at 37.30%, 27.00%, and 35.70%, respectively. However, for students who worked 40 hours per week while enrolled in 1995-96, the breakdown is more compelling as 39.90% of those students ultimately became dropouts and 37.90% became stopouts while only 22.20% enrolled continuously.

Parental support can play a role in students’ educational endeavors (Horn, 1998; Summers, 2003; Tinto, 1987, 1993). Parents who have at least some college education tend to be more supportive of their children’s attendance in college (Horn, 1998;
Summers, 2003). This is seen in the BPS:1996/2001 data as well. Of the students whose parents were college educated, 37.20% were stopouts and 35.70% were continuous enrollees. Only 27.20% were dropouts which could indicate that once they stopped attending college, they were given no real parental support to return.

Attending college on a part-time basis is common among community college students, especially the older, non-traditional students who are oftentimes presented with demands on their time from jobs and families. However, according to the data from the BPS:1996/2001, it may not always be in the students’ best interest to attend college on a part-time basis as 40.10% of the students who enrolled on a part-time basis in 1995-96 eventually became dropouts compared to 20.70% enrolling continuously. Meanwhile, of the students who attended on a basis other than part-time, 40.50% were continuous enrollees and only 28.10% were dropouts.

Community college students face barriers of all sorts, including barriers (or perceived barriers) caused from students’ disabilities (Lau, 2003). Data from the BPS:1996/2001 indicate that of the students who identified themselves as having at least one disability, 40.70% were stopouts while 31.20% were dropouts. One might argue that having a higher percentage of stopouts with a disability than dropouts with a disability may be indicative of these students’ resiliency relative to the attainment of their educational goals.

The size of an institution can factor into students’ decisions to stay or to leave (Lau, 2003). Of those students who began their postsecondary studies at a small institution, 45.40% enrolled continuously while 33.80% eventually dropped out and
20.80% eventually stopped out. Of those who began their postsecondary studies at a medium institution, 37.70% became stopouts, 35.70% became dropouts, and 26.60% enrolled continuously. Since these data show that a higher percentage of students enrolled continuously at small institutions and a higher percentage of students stopped out at medium institutions, it appears that Lau’s statement relative to the size of an institution possibly being a determining factor of student attendance patterns may have been corroborated by the BPS:1996/2001 study.

Research Question Two

Are there significant differences between students who stopped out of and students who dropped out of American community colleges between 1995-96 and 2000-2001? This is the question posed by Research Question Two, and the answer is yes; there are significant differences between students who stop out and students who drop out of community college.

Relative to this dissertation, there were three variables for which significant differences between stopouts and dropouts were found. The first variable with a significant difference between stopouts and dropouts was purpose for enrolling. Students who stopped out were more likely to be pursuing a degree than were students who dropped out. This difference was tested through the use of a contingency table and a Pearson’s chi-square test in SUDAAN.

The second variable with a significant difference between stopouts and dropouts was parents’ combined highest level of education. According to the data from the BPS:1996/2001, students who stopped out were more likely to have at least one parent
who had at least some college education than were students who dropped out. This
difference was tested through the use of a contingency table and a Pearson’s chi-square
test in SUDAAN.

Finally, the third variable with a significant difference between stopouts and
dropouts was attending a small institution. Students who stopped out were more likely to
have begun their postsecondary careers in 1995-96 in an institution other than a small
institution in 1995-96. This difference was tested through the use of a contingency table
and a Pearson’s chi-square test in SUDAAN. The other five independent variables used
in this dissertation – academic integration, number of hours worked per week, part-time
enrollment, students’ disability status, and attending a medium institution – were found
not to have a statistically significant difference between stopouts and dropouts.

Research Question Three

What is the association between the eight selected characteristics and whether
students will stop out of or drop out of American community colleges? This is the
question posed by Research Question Three, and this researcher found that two of the
eight characteristics had a significant association with (or an effect on) whether students
will stop out of or drop out of American community colleges.

The first characteristic to have an effect is academic integration. Through the use
of forced entry binary logistic regression performed in SUDAAN and after controlling for
all other variables in the model, academic integration was found to be a statistically
significant indicator of the effect on whether students will stop out of or drop out of
American community colleges. With an odds ratio of 1.002 produced from the binary
logistic regression model, the effect is admittedly a “weak positive.” Accordingly, the reader is advised to use caution when drawing any definitive conclusions from this research vis-à-vis the effect of academic integration on stopping out versus dropping out.

The other characteristic to have an effect is first attending a small institution. Through the use of forced entry binary logistic regression performed in SUDAAN and after controlling for all other variables in the model, first attending a small institution was found to be a significant indicator of the effect on whether students will stop out of or drop out of American community colleges. The inverse odds ratio (1.842) for this variable was calculated since the original odds ratio produced a negative effect on the dependent variable. Negative effects have been found to be difficult for some to interpret (DesJardins, 2001). From this research, one could conclude that students who first attend a small institution face a higher probability of becoming dropouts as opposed to becoming stopouts.

Conclusions

This study was designed to (a) describe selected characteristics of students who stop out of, drop out of, and enroll continuously in American community colleges, (b) test for differences relative to selected characteristics between students who stop out of and students who drop out of American community colleges, and (c) examine what association there is between selected characteristics and whether students will stop out of or drop out of American community colleges. As a result of this research, conclusions regarding students who stop out of and drop out of American community colleges were drawn.
1. There is a higher percentage of stopouts (versus dropouts) who are more academically integrated.

2. There is a higher percentage of stopouts (versus dropouts) who enroll for the purpose of obtaining a degree.

3. There is a higher percentage of stopouts (versus dropouts) who work 20 hours per week while enrolled.

4. There is a higher percentage of dropouts (versus stopouts) who work 40 hours per week while enrolled.

5. There is a higher percentage of dropouts (versus stopouts) who do not work while enrolled.

6. There is a higher percentage of stopouts (versus dropouts) who have at least one parent with at least some college education.

7. There is a higher percentage of dropouts (versus stopouts) who are enrolled on a part-time basis.

8. There is a higher percentage of stopouts (versus dropouts) who identify themselves as having at least one disability.

9. There is a higher percentage of dropouts (versus stopouts) who began their postsecondary education in a small institution.

10. There is a higher percentage of stopouts (versus dropouts) who began their postsecondary education in a medium institution.

11. There is a significant overall difference between students who stop out of community colleges and students who drop out of community colleges.
12. There is a significant difference between stopouts and dropouts relative to their purpose for enrolling.

13. There is a significant difference between stopouts and dropouts relative to their parents’ combined highest level of education.

14. There is a significant difference between stopouts and dropouts relative to beginning their postsecondary education in a small institution.

15. The evidence does not support any significant difference between stopouts and dropouts relative to academic integration, the hours worked per week while enrolled, part-time enrollment, disability status, or beginning a postsecondary education in a medium institution.

16. There is a higher probability that students who are more integrated academically will become stopouts rather than dropouts from American community colleges.

17. There is a higher probability that students who begin their postsecondary education in a small institution will become dropouts rather than stopouts.

18. Based on the size of the $F$-statistic for academic integration and first attending a small institution (8.842 versus 12.831, respectively), attending a small institution had a stronger association with whether students will stop out or drop out than did academic integration.

19. The evidence does not support (a) purpose for enrolling, (b) hours worked per week, (c) parents’ combined highest level of education, (d) part-time enrollment, (e) disability status, or (f) beginning a postsecondary education in
a medium institution as having any association with whether students will stop out of or drop out of American community colleges.

**Implications for Practice**

Practitioners in the community college sector may wish to take note of this study, especially those practitioners who interact directly with students. People in such positions as enrollment management directors, counselors, advisors, deans, chairpersons, and provosts should be aware of factors that affect their students. These practitioners need to know that their students should become more academically integrated, if they are not already aware of this fact. Administrators in small institutions should know that students could be more at risk of dropping out (as opposed to stopping out) of their institutions so they may wish to concentrate resources that would strengthen retention efforts in their schools. Again, readers are advised to use caution when interpreting the results of this study as the overall association produced in the binary logistic regression model (i.e., Cox & Snell’s pseudo R-square) was relatively weak. This is being mentioned here due to the potential contradiction with much of the retention literature that states small institutions offer environments that support strong retention efforts. In addition, the fact that this study was limited to a view of five years could have an impact on stopouts and dropouts. In other words, some students who were classified as dropouts in this study may, in fact, have returned to school after 2001, making them, in reality, stopouts. That, of course, is beyond the scope of this dissertation, but it should be kept in mind when interpreting results and when considering taking action based on these results.
In addition to using the results of this study, another way to increase retention may be to investigate further some of the intervention programs and recommendations put forth in Chapter Two. These programs and recommendations have been tested in community colleges as well as in four-year colleges, and they have been proven to be effective in combating attrition and in reducing the amount of time students stop out. One example of this is the recommendation that families should support, in any way they can, their students’ efforts. Naturally, where community college students are concerned, family has a broad definition from parents to children to extended families. This familial support has been implemented recently at a two-year college in New Mexico that had its first “Family Night” where family members could come to the campus and talk with college leaders and other college personnel about their students’ experiences (Ashburn, 2007). In addition, federal grants have been used in Dallas’ community college district that would bring family members into the classrooms. This would allow for family members to become directly engaged in what their students are learning. (Currently, two of the district’s seven colleges have implemented a program such as this.) The goal of programs like the two highlighted here is to engage the family members into whatever the students are experiencing in all aspects of their college lives. It is hoped that these programs, and others like them, will be helpful in increasing retention and reducing the amount of time students stop out, especially relative to first generation college students (Ashburn, 2007).

A third implication for practice could be students taking an interest in this study. They may see some of this study’s selected characteristics in themselves which may
prompt them to become more proactive in their own attendance patterns. They may read about some of the intervention programs highlighted in this dissertation, such as peer tutoring and seeking out role models on campus as suggested by Lau (2003), and they may find that the programs could help them when they are facing a dilemma about attending college.

Recommendations for Future Research

This study utilized a quantitative methodology and a nationally representative dataset. Future researchers may take a decidedly more focused approach by identifying certain students with characteristics found to be at risk for leaving school and then conducting one-on-one personal interviews with the students to discuss their reasons for wanting or needing to leave school before they meet their goals. Naturally, the results from this type of study would not be generalizable, but the depth of the data garnered would be much richer than the depth of the data garnered from this dissertation.

A second recommendation would be to use a three-pronged dependent variable rather than a two-pronged dependent variable. In that instance, the dependent variable might be students who stopped out, dropped out, and continuously enrolled. This would entail the use of multinomial logistic regression instead of binary logistic regression. This researcher decided not to pursue the three-pronged approach because his interests were geared more toward building a case that would help to remove the stigma of community college stopouts when they are grouped unfavorably with community college dropouts. This researcher included students who enrolled continuously as part of Research
Question One as a way to present a more complete descriptive picture of the BPS:1996/2001 students who attended two-year colleges.

A third recommendation would be to duplicate this study when the next BPS dataset is released. Given that the members of the new BPS:2004/2009 cohort will not undergo their second interview until 2009, the new dataset will not be available for release until sometime in 2010. This eight-year difference between the release of the BPS:1996/2001 and the BPS:2004/2009 may allow for some significant changes in students’ views, opinions, and situations. It may provide some rather compelling comparisons – or it may provide a corroboration of the findings from this study.

A fourth recommendation for future research would be to re-construct this study using the BPS:1996/2001 dataset but using other variables besides or in addition to the variables that were used in this dissertation. For example, given that community colleges tend to enroll a higher percentage of older students who may or may not be influenced by their parents’ level of education, a study that tested for any differences between the age of community college students and their parents’ combined highest level of education might provide some compelling results. A second study could test for any associations between those two variables and students’ attendance patterns, utilizing either a two-pronged or a three-pronged dependent variable as mentioned previously.

Perhaps a more concentrated study in the topic of students’ purpose for enrolling could be an area for future research. Community college students enroll for a variety of reasons (e.g., to obtain a degree or certificate, to transfer, to improve job skills, or for personal enrichment). This study found a difference between stopouts and dropouts
relative to their purpose for enrolling in terms of degree/transfer versus other reasons. It could be that a study that examines attendance patterns as a function of degree versus transfer could provide some compelling results, given that many community college students transfer before completing or feeling the need to complete an Associate of Arts degree (Hoachlander, Sikora, & Horn, 2003).

A further examination of academic integration could be a recommendation for future research, given that academic integration has been shown to have a positive effect on students’ pursuit of their educational goals. In this instance, however, it is not so much a re-running of this study with the focus on academic integration as it is finding ways to improve academic integration practices already in place on American community college campuses. For example, activities such as receiving prompt feedback from instructors relative to assignments, discussing grades or assignments with instructors, and corresponding, via e-mail for example, with instructors have been shown to be major components of academic integration for community college students (Community College Survey of Student Engagement [CSSEE], 2006). These have held true both for full-time students and for part-time students; as a result, it is important for practitioners to keep in mind the limited amount of time that part-time students spend on campus when establishing any academic integration practices. Suggestions for improving academic integration between faculty and students include (a) revising academic advising roles for both full-time and part-time faculty, (b) holding faculty office hours at times and in places that are more accessible to more students, and (c) encouraging student
participation in out-of-class activities that might give students and faculty more opportunities to interact (CCSSE, 2006).

Finally, due to the fact that this study suggested that attending a small institution is a significant predictor of dropping out versus stopping out, an investigation into why this occurred could be a recommendation for future research. Why is it that this study suggested that students are more likely to drop out than to stop out from a small institution when much of the literature suggests the opposite may be true? It may be due partially to the fact that this study only encompassed five years which means that some of the students who were identified in this study as drop outs may eventually have become stopouts after the five-year window had closed. Had this study been conducted with a window of larger than five years, the numbers of stopouts in small colleges may have been equal to or greater than the number of dropouts, thus changing the results of this study.

It may be that this phenomenon might not have occurred if the dependent variable had been three-pronged. In other words, if this researcher had decided to examine stopouts, dropouts, and students who had enrolled continuously, the results may have shown something entirely different – or they may not have shown anything different. It may have something to do with the physical location of the institution (e.g., rural versus urban) or the size of the institution (e.g., small, medium, and large versus small and medium as tested in this dissertation). This researcher was interested only in the interaction between stopouts and dropouts attending small institutions and medium
institutions; however, location and size are variables that could be researched in conjunction with how they relate to each other.

It may be that there are several other explanations for why this result occurred. The idea of studying all of these recommendations supports the theme that was established in Chapter One of this dissertation – there is still a substantial amount of research that needs to be conducted relative to the attendance patterns of community college students. This dissertation has merely touched the surface of this vitally important issue.
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Appendix A

Table A1

Variables Used in This Study

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Variable Label</th>
<th>BPS Section of Origination</th>
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<tr>
<td>ACADINT</td>
<td>Climate-academic integration 1995-96</td>
<td>Student_Education_Experiences</td>
</tr>
<tr>
<td>ATTNPT1</td>
<td>Attendance intensity-1st inst 1995-96</td>
<td>Student_Education_Enrollment</td>
</tr>
<tr>
<td>B01LWT2</td>
<td>Weight BPS:1996/2001 longitudinal</td>
<td>Survey_Weights</td>
</tr>
<tr>
<td>B2LBRRxx 1</td>
<td>BRR replicate:xx 1 for 96,01 resp</td>
<td>F01WGT.DAT</td>
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<tr>
<td>DSANY</td>
<td>Any disabilities 1995-96</td>
<td>Student_Disabilities</td>
</tr>
<tr>
<td>ITNPCTSZ</td>
<td>1st institution size &amp; control 1995-96</td>
<td>Institution_Characteristics</td>
</tr>
<tr>
<td>ITNPSAS</td>
<td>First institution type 1995-96</td>
<td>Institution_Characteristics</td>
</tr>
<tr>
<td>J1HOURY1</td>
<td>First yr-hours/week enrolled 1995-96</td>
<td>Student_Employment_Work&amp;Education</td>
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<tr>
<td>PBEDHI3</td>
<td>Parents highest education</td>
<td>Parent_Education</td>
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<tr>
<td>PGM6Y1</td>
<td>Enrolling-primary purpose (details) 1995-96</td>
<td>Student_Education_Reasons</td>
</tr>
<tr>
<td>PROUSE2B</td>
<td>Enrollment spell (1st) outcome 2001</td>
<td>Student_Education_Persistence</td>
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Note. 1There are 51 separate BRR replicate weights, and all of them are located in the file named F01WGT.DAT. Their labels are identical with the exception of the numbers.
Table A1 (Continued)

Variables Used in This Study

identifying each weight (e.g., B2LBRR01, B2LBRR02, B2LBRR03…B2LBRR51).
From U. S. Department of Education, National Center for Education Statistics, 1996-
Appendix B

Table B1

*Weighted Estimates and Standard Errors of Academic Integration Index 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled (Column Percentages)*

<table>
<thead>
<tr>
<th>Academic Integration Index</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
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<td>100 – 124</td>
<td>27.20</td>
<td>4.90</td>
<td>24.40</td>
<td>3.30</td>
<td>7.00</td>
<td>2.60</td>
</tr>
<tr>
<td>125 – 149</td>
<td>22.00</td>
<td>4.80</td>
<td>22.40</td>
<td>4.90</td>
<td>13.30</td>
<td>3.00</td>
</tr>
<tr>
<td>150 – 174</td>
<td>17.90</td>
<td>4.90</td>
<td>15.60</td>
<td>3.20</td>
<td>20.50</td>
<td>3.90</td>
</tr>
<tr>
<td>175 – 199</td>
<td>17.20</td>
<td>5.00</td>
<td>21.80</td>
<td>4.60</td>
<td>30.40</td>
<td>3.40</td>
</tr>
<tr>
<td>200 – 224</td>
<td>5.70</td>
<td>2.80</td>
<td>7.80</td>
<td>2.50</td>
<td>10.70</td>
<td>3.30</td>
</tr>
<tr>
<td>225 – 249</td>
<td>2.30</td>
<td>1.70</td>
<td>3.00</td>
<td>2.20</td>
<td>10.70</td>
<td>3.10</td>
</tr>
<tr>
<td>250 – 300</td>
<td>7.80</td>
<td>3.00</td>
<td>5.00</td>
<td>1.80</td>
<td>7.50</td>
<td>2.40</td>
</tr>
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</table>

Appendix B (Continued)

Table B2

*Weighted Estimates and Standard Errors of Purpose for Enrolling 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled (Column Percentages)*

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Enrolling</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Degree-seeking</td>
<td>47.20</td>
<td>10.50</td>
<td>39.70</td>
<td>7.40</td>
<td>43.40</td>
<td>10.00</td>
</tr>
<tr>
<td>Other</td>
<td>52.80</td>
<td>10.50</td>
<td>60.30</td>
<td>7.40</td>
<td>56.60</td>
<td>10.00</td>
</tr>
</tbody>
</table>

### Table B3

*Weighted Estimates and Standard Errors of Hours Worked per Week 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled (Column Percentages)*

<table>
<thead>
<tr>
<th>Hours Worked per Week</th>
<th>Stopouts %</th>
<th>SE</th>
<th>Dropouts %</th>
<th>SE</th>
<th>Continuously Enrolled %</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>14.70</td>
<td>2.90</td>
<td>21.30</td>
<td>6.40</td>
<td>28.30</td>
<td>4.30</td>
</tr>
<tr>
<td>10</td>
<td>5.10</td>
<td>2.20</td>
<td>8.10</td>
<td>2.40</td>
<td>2.90</td>
<td>1.20</td>
</tr>
<tr>
<td>15</td>
<td>4.10</td>
<td>2.10</td>
<td>3.30</td>
<td>1.90</td>
<td>7.20</td>
<td>1.90</td>
</tr>
<tr>
<td>20</td>
<td>15.30</td>
<td>5.60</td>
<td>15.70</td>
<td>4.60</td>
<td>15.40</td>
<td>3.30</td>
</tr>
<tr>
<td>25</td>
<td>7.80</td>
<td>3.30</td>
<td>7.20</td>
<td>1.90</td>
<td>19.20</td>
<td>4.50</td>
</tr>
<tr>
<td>30</td>
<td>9.10</td>
<td>3.60</td>
<td>9.60</td>
<td>2.00</td>
<td>7.10</td>
<td>2.60</td>
</tr>
<tr>
<td>35</td>
<td>7.50</td>
<td>2.90</td>
<td>4.10</td>
<td>1.60</td>
<td>5.60</td>
<td>2.20</td>
</tr>
<tr>
<td>40</td>
<td>29.70</td>
<td>7.30</td>
<td>28.70</td>
<td>8.00</td>
<td>12.10</td>
<td>3.40</td>
</tr>
<tr>
<td>45</td>
<td>6.70</td>
<td>3.10</td>
<td>2.10</td>
<td>1.70</td>
<td>2.20</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Table B4

Weighted Estimates and Standard Errors of Parents’ Highest Level of Education by Stopouts, Dropouts, and Students Continuously Enrolled (Column Percentages)

<table>
<thead>
<tr>
<th>Parents’ Level of Education</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least some college</td>
<td>47.40</td>
<td>6.50</td>
<td>48.20</td>
<td>6.00</td>
<td>43.80</td>
<td>8.70</td>
</tr>
<tr>
<td>Other</td>
<td>52.60</td>
<td>6.50</td>
<td>51.80</td>
<td>6.00</td>
<td>56.20</td>
<td>8.70</td>
</tr>
</tbody>
</table>

Appendix B (Continued)

Table B5

*Weighted Estimates and Standard Errors of Students’ Part-Time Enrollment by Stopouts, Dropouts, and Students Continuously Enrolled (Column Percentages)*

<table>
<thead>
<tr>
<th>Students</th>
<th>Stopouts</th>
<th>SE</th>
<th>Dropouts</th>
<th>SE</th>
<th>Continuously Enrolled</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-Time</td>
<td>%</td>
<td></td>
<td>%</td>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>part-time</td>
<td>36.50</td>
<td>9.50</td>
<td>43.40</td>
<td>6.30</td>
<td>24.90</td>
<td>7.00</td>
</tr>
<tr>
<td>Other</td>
<td>63.50</td>
<td>9.50</td>
<td>56.60</td>
<td>6.30</td>
<td>75.20</td>
<td>7.00</td>
</tr>
</tbody>
</table>

Table B6

*Weighted Estimates and Standard Errors of Students’ Disability Status 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled (Column Percentages)*

<table>
<thead>
<tr>
<th>Students’ Disability Status</th>
<th>Stopouts %</th>
<th>SE</th>
<th>Dropouts %</th>
<th>SE</th>
<th>Continuously Enrolled %</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a disability</td>
<td>6.60</td>
<td>4.40</td>
<td>5.80</td>
<td>1.60</td>
<td>6.70</td>
<td>1.90</td>
</tr>
<tr>
<td>Other</td>
<td>93.50</td>
<td>4.40</td>
<td>94.20</td>
<td>1.60</td>
<td>93.30</td>
<td>1.90</td>
</tr>
</tbody>
</table>

Appendix B (Continued)

Table B7

*Weighted Estimates and Standard Errors of Size of Institution* \(^1\) *First Enrolled 1995-96 by Stopouts, Dropouts, and Students Continuously Enrolled (Column Percentages)*

<table>
<thead>
<tr>
<th>Size of Institution(^1)</th>
<th>Stopouts</th>
<th>(SE)</th>
<th>Dropouts</th>
<th>(SE)</th>
<th>Continuously Enrolled</th>
<th>(SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>Enrolled</td>
<td>%</td>
</tr>
<tr>
<td>Small</td>
<td>5.90</td>
<td>13.80</td>
<td>12.40</td>
<td>13.90</td>
<td>22.50</td>
<td>14.30</td>
</tr>
<tr>
<td>Medium</td>
<td>28.90</td>
<td>14.00</td>
<td>25.10</td>
<td>11.00</td>
<td>14.50</td>
<td>10.70</td>
</tr>
<tr>
<td>Other</td>
<td>65.30</td>
<td>15.90</td>
<td>62.50</td>
<td>15.30</td>
<td>62.90</td>
<td>16.50</td>
</tr>
</tbody>
</table>

*Note.* \(^1\) All public and private, not-for-profit and for-profit, two-year degree-granting, Title IV-participating institutions in the 50 states and the District of Columbia.

### Appendix C

#### Table C1

**T-Tests for Comparisons Between Stopouts and Dropouts**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate #1</th>
<th>Estimate #2</th>
<th>SE #1</th>
<th>SE #2</th>
<th>t-value</th>
<th>Number of Comparisons</th>
<th>z-value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Integration Index</td>
<td>154.50</td>
<td>148.20</td>
<td>2.57</td>
<td>2.00</td>
<td>1.93458</td>
<td>1</td>
<td>1.96</td>
<td>FALSE</td>
</tr>
<tr>
<td>Hours Worked per Week</td>
<td>26.40</td>
<td>25.40</td>
<td>1.13</td>
<td>1.57</td>
<td>0.51696</td>
<td>1</td>
<td>1.96</td>
<td>FALSE</td>
</tr>
</tbody>
</table>

## Table D1

*Correlations Between Independent Variables Used in This Study*

<table>
<thead>
<tr>
<th></th>
<th>ACADINT</th>
<th>PURPOSE</th>
<th>J1HOURY1</th>
<th>PARENTS</th>
<th>PARTTIME</th>
<th>DISABLED</th>
<th>ITNPCTSZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACADINT</td>
<td>Pearson R</td>
<td>1.000</td>
<td>.140**</td>
<td>-.162**</td>
<td>.122**</td>
<td>-.261**</td>
<td>.024</td>
</tr>
<tr>
<td>PURPOSE</td>
<td>Pearson R</td>
<td>.140**</td>
<td>1.000</td>
<td>-.025</td>
<td>.152**</td>
<td>-.201**</td>
<td>-.037</td>
</tr>
<tr>
<td>J1HOURY1</td>
<td>Pearson R</td>
<td>-.162**</td>
<td>-.025</td>
<td>1.000</td>
<td>.035</td>
<td>.281**</td>
<td>-.152**</td>
</tr>
<tr>
<td>PARENTS</td>
<td>Pearson R</td>
<td>.122**</td>
<td>.152**</td>
<td>.035</td>
<td>1.000</td>
<td>-.080**</td>
<td>.011</td>
</tr>
<tr>
<td>PARTTIME</td>
<td>Pearson R</td>
<td>-.261**</td>
<td>-.201**</td>
<td>.281**</td>
<td>-.080**</td>
<td>1.000</td>
<td>-.053*</td>
</tr>
<tr>
<td>DISABLED</td>
<td>Pearson R</td>
<td>.024</td>
<td>-.037</td>
<td>-.152**</td>
<td>.011</td>
<td>-.053*</td>
<td>1.000</td>
</tr>
<tr>
<td>ITNPCTSZ</td>
<td>Pearson R</td>
<td>-.086**</td>
<td>.186**</td>
<td>.121**</td>
<td>.085**</td>
<td>.181**</td>
<td>.027</td>
</tr>
</tbody>
</table>

Appendix E

Table E1

*Change in Percentage Points (Delta p) for Academic Integration Index (ACADINT)*

*Relative to Dropouts versus Stopouts*

<table>
<thead>
<tr>
<th></th>
<th>( B )</th>
<th>( X )</th>
<th>( B^*X )</th>
<th>( e(B^*X) )</th>
<th>( P(Y) )</th>
<th>Delta p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dropouts (Y=0)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Integration Index</td>
<td>0.002</td>
<td>0.00</td>
<td>0.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purpose for Enrolling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.360</td>
<td>1.49</td>
<td>0.5364</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours Worked per Week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.003</td>
<td>23.10</td>
<td>0.0693</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ Level of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.337</td>
<td>1.53</td>
<td>0.5156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-Time</td>
<td>-0.060</td>
<td>1.64</td>
<td>-0.0984</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ Disability Status</td>
<td>0.179</td>
<td>1.93</td>
<td>0.3455</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small institution(^1)</td>
<td>-0.611</td>
<td>1.83</td>
<td>-1.1181</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Institution(^1)</td>
<td>-0.094</td>
<td>1.69</td>
<td>-0.1589</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table E1 (Continued)

*Change in Percentage Points (Delta p) for Academic Integration Index (ACADINT)*

*Relative to Dropouts versus Stopouts*

<table>
<thead>
<tr>
<th></th>
<th>$B$</th>
<th>$X$</th>
<th>$B^*X$</th>
<th>$e^{(B^*X)}$</th>
<th>$P(Y)$</th>
<th>Delta p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.534</td>
<td>1.00</td>
<td>-0.5340</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>-0.4426</td>
<td>0.6424</td>
<td>0.3911</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stopouts (Y=1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Integration Index</td>
<td>0.002</td>
<td>1.00</td>
<td>0.0020</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Purpose for Enrolling</td>
<td>0.360</td>
<td>1.49</td>
<td>0.5364</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours Worked per Week</td>
<td>0.003</td>
<td>23.10</td>
<td>0.0693</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ Level of Education</td>
<td>0.337</td>
<td>1.53</td>
<td>0.5156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students Enrolled Part-Time</td>
<td>-0.060</td>
<td>1.64</td>
<td>-0.0984</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ Disability Status</td>
<td>0.179</td>
<td>1.93</td>
<td>0.3455</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small institution$^1$</td>
<td>-0.611</td>
<td>1.83</td>
<td>-1.1181</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E (Continued)

Table E1 (Continued)

*Change in Percentage Points (\(\text{Delta} \ p\)) for Academic Integration Index (\(\text{ACADINT}\))*

*Relative to Dropouts versus Stopouts*

<table>
<thead>
<tr>
<th></th>
<th>(B)</th>
<th>(X)</th>
<th>(B^*X)</th>
<th>(e^{(B^*X)})</th>
<th>(P(Y))</th>
<th>(\text{Delta} \ p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institution(^1)</td>
<td>-0.094</td>
<td>1.69</td>
<td>-0.1589</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.534</td>
<td>1.00</td>
<td>-0.5340</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
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<td>-0.4406</td>
<td>0.6436</td>
<td>0.3916</td>
<td>0.0005</td>
</tr>
</tbody>
</table>

*Note.\(^1\) All public and private, not-for-profit and for-profit, two-year degree-granting, Title IV-participating institutions in the 50 states and the District of Columbia. From U. S. Department of Education, National Center for Education Statistics, 1996-2001 Beginning Postsecondary Students Longitudinal Study (BPS:1996/2001).*
Table E2

*Change in Percentage Points (Delta p) for Those Who First Attended a Small Institution\(^1\) (SMALL) Relative to Dropouts versus Stopouts*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>X</th>
<th>B*X</th>
<th>e (B*X)</th>
<th>P(Y)</th>
<th>Delta p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dropouts (Y=0)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Integration Index</td>
<td>0.002</td>
<td>141.66</td>
<td>0.28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purpose for Enrolling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours Worked per Week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ Disability Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students Enrolled Part-Time</td>
<td>-0.060</td>
<td>1.64</td>
<td>-0.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ Disability Status</td>
<td>0.179</td>
<td>1.93</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small institution(^1)</td>
<td>-0.611</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Institution(^1)</td>
<td>-0.094</td>
<td>1.69</td>
<td>-0.16</td>
<td></td>
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<td></td>
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</tbody>
</table>
Appendix E (Continued)

Table E2 (Continued)

*Change in Percentage Points (Delta p) for Those Who First Attended a Small Institution* \(^1\) (SMALL) Relative to Dropouts versus Stopouts

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>X</th>
<th>B*X</th>
<th>e (B*X)</th>
<th>P(Y)</th>
<th>Delta p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.53</td>
<td>1.00</td>
<td>-0.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td>0.96</td>
<td>2.61</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>Stopouts ((Y=1))</td>
<td></td>
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<tr>
<td>Academic Integration Index</td>
<td>0.002</td>
<td>141.66</td>
<td>2.88</td>
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<tr>
<td>Purpose for</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Enrolling</td>
<td>0.360</td>
<td>1.49</td>
<td>0.54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours Worked</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per Week</td>
<td>0.003</td>
<td>23.10</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ Level of</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.337</td>
<td>1.53</td>
<td>0.52</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Students Enrolled</td>
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<td></td>
<td></td>
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<tr>
<td>Part-Time</td>
<td>-0.060</td>
<td>1.64</td>
<td>-0.10</td>
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<tr>
<td>Students’ Disability Status</td>
<td>0.179</td>
<td>1.93</td>
<td>0.35</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Small institution (^1)</td>
<td>-0.611</td>
<td>1.00</td>
<td>-0.61</td>
<td></td>
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</tr>
</tbody>
</table>
Appendix E (Continued)

Table E2 (Continued)

Change in Percentage Points (Delta p) for Those Who First Attended a Small Institution (SMALL) Relative to Dropouts versus Stopouts

<table>
<thead>
<tr>
<th></th>
<th>$B$</th>
<th>$X$</th>
<th>$B^*X$</th>
<th>$e^{(B^*X)}$</th>
<th>$P(Y)$</th>
<th>Delta $p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
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<tr>
<td>Institution $^1$</td>
<td>-0.094</td>
<td>1.69</td>
<td>-0.16</td>
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<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.534</td>
<td>1.00</td>
<td>-0.53</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td>0.35</td>
<td>1.42</td>
<td>0.59</td>
<td>-0.14</td>
</tr>
</tbody>
</table>