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Factors Contributing to Military-Veteran Student Success

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This is to certify that the doctoral study by

Charlene Cofield

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Walden University
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Abstract

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by

Charlene Cofield

MA, Troy University, 2007

BS, Averett University, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

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Abstract

The enrollment of military/veteran students at U.S. colleges and universities is growing steadily; however, factors affecting their academic success need further investigation. Guided by Tinto's student integration model and Bean and Metzner's model of nontraditional student attrition, the relationships between student characteristics and academic success for military/veteran, and civilian students were investigated. For this nonexperimental study, preentry characteristics (military/civilian status, race/ethnicity, age, gender, transfer credits) as well as 1st-year academic performance (total terms attended and grade point average [GPA]) archived in 393 students' records were examined to determine whether these variables predicted 4 student success measures: retention after 1 year, associate degree (AA) within 4 years, bachelor's degree (BA) within 8 years, and final GPA. Binary logistic regression and ordinary least squares multiple regression were conducted for the 3 retention/graduation measures and GPA, respectively. Significant findings indicated that Black students were more likely than White students to complete both AA and BA degrees and military, but not veterans, were more likely than civilians to earn AA degrees. Age was a positive predictor for earning a BA degree and a higher final GPA; transfer credits and total terms attended predicted student retention and AA degree completion; first-year GPA only predicted final GPA. Based on outcomes from this military-focused college, which showed the academic potential of two student groups often deemed less academically successful (military and Black students), colleges that focus on military students' success can better prepare these students for degree completion.

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Dedication

"Now thanks to my Lord and Savior Jesus Christ, who always causes me to triumph" (2 Corinthians 14:16).

To my children, Shakerrah, Sharrod, Kameryn and Kannen, who encouraged me so many times throughout this journey. We made it! To my husband of over 25 years, Kenneth, thank you for your continued love and support.

To Reverend Doris Hardy, who knew that a message you preached over 25 years ago entitled, "Are you a man or mouse?" would inspire a young woman, with a full-time job, a husband and four children to return to college and that return would produce a terminal degree?

To all of my friends, family, and co-workers, your well wishes, inquiries about my progress have inspired me to persist. To my late parents, Henry and Evelyn Sutton, who never completed high school, your encouragement to "finish school" has guided me.

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There is absolutely no way to make a journey of this magnitude without help. I owe a debt of thanks to so many people. As I reflect, I can remember so many well-wishers and empathic listeners that have been there for me along the way.

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Chapter 1: Introduction to the Study

Although military-veteran students are among the largest growing subgroups of nontraditional students, their graduation rates are not increasing. From 2000 to 2009, 30% of veterans over age 18, as compared to 26% of nonveterans, had earned college credits without an earned degree (National Center for Veteran Analysis [NCVAS], 2011). In addition to developing better support for these students academically, research leading to the increased graduation rates of military-veteran students is needed to ensure that adequate GI Bill funding levels will continue. In an address to the Student Veterans of America (SVA), Secretary of Veterans Affairs Shinseki told veteran students that GI Bill funding was at risk of being reduced without adequate proof of benefits to both the student and taxpayers (O'Brien, 2013). However, despite the increase in the number of military-veteran students entering U.S. classrooms, there is a lack of understanding of this student group among education staff and faculty (Barr, 2015; Bellafiore, 2012; Phelps, 2015).. Data regarding student outcomes for the student-veteran population are also lacking (Martorell & Bergman, 2013). For example, retention and graduation rates are often not tracked, even by the U.S. Department of Veterans Affairs (VA), for students using Post-9/11 GI Bill Benefits (Wagner, Cave, & Winston, 2013).

This study was conducted to assist in filling the gap in current research concerning military-veteran students' academic success in U.S. post-secondary classrooms by identifying which student factors are most predictive of student success. The first chapter provides the introduction of the topic, background for the study, and the problem statement. Chapter 2 addresses the purpose of the study followed by the related

research establishing the problem's current relevance and a concise review of related literature. Chapter 3 includes the research design and methodology. Chapter 4 presents the data collection procedures and the results of the study. Finally, Chapter 5 provides a synopsis of the findings followed by recommendations for future research.

Background of the Study

Educational degree attainment has become a national concern, in part because "an undereducated citizenry leaves the country at a competitive disadvantage, diminishes the middleclass, and lowers the standard of living for more people" (Finney, Perna, & Callan, 2014, p. 1). The U.S. Bureau of Labor Statistics (2018) also reported that there is a direct relationship between lack of education and unemployment. Educational attainment affects lifetime earning potential (see Table 1). People who are unable to acquire sufficient employment to provide for themselves and their families can become dependent on government assistance and other social programs. Thus, increasing education attainment among adults can produce a positive effect on the students, their families, their community, and society (Pike, Hansen, & Childress, 2014; U.S. Department of Education, 2006).

Table 1

Earnings and Unemployment Rates by Education Attainment 2017

Educational level	National rate of unemployment	Median annual earnings
No high school diploma	6.5%	$27,042
High school diploma	4.6%	$37,024
Associate degree	3.4%	$43,472
Bachelor's degree	2.5%	$60,996
Master's degree	2.2%	$72,852

Note. From U.S. Bureau of Labor Statistics, Employment Projections (2018).

Degree attainment represents the requirements essential to meet the increasing needs of a changing society (The White House, n.d.). Almost two-thirds, or 63%, of all future jobs in the United States will have required an academic credential greater than a high school diploma by 2018 (Carnevale, Smith, & Strohl, 2010). Further, by 2025, it is projected that this percentage will increase to 65%, an increase of 28% since 1973 (Carnevale, Smith, & Strohl, 2013). Because of the deficit in degree attainment, potential social and cultural benefits of education may not be realized (Lumina Foundation, 2013), including improved physical health for graduates (Cutler & Lleras-Muney, 2006) and more global awareness as well as participation in voting and volunteering, which benefit others in society (Lumina Foundation, 2013).

Considering the projected shortfall of college graduates to meet future employment needs, a plan to increase the rate of degree attainment is necessary (Lumina Foundation, 2013). To achieve this goal, it is estimated that the United States needs approximately 50% more of the adult population aged 25-34 to earn undergraduate degrees (Nettles, 2017). In 1990, the United States ranked first in the world in degree attainment among adults aged 25-34 years; today the United States ranks 12th (Pike et al., 2014; The White House, n.d.). However, the racial/ethnic composition of this goal remains undefined, which could contribute to the perpetuation of an undiversified academic community among underrepresented groups (Nettles, 2017).

The study of adult student retention is newer considering the length of time colleges and universities have existed. Though Harvard was established in 1636 (The President and Fellows of Harvard College, 2016), it was not until 1938 that McNeely

conducted a retention study examining student demographic data and institutional characteristics from 60 colleges and universities to identify reasons for student attrition. The study of student retention was not necessary because earlier colleges were for training future clergymen (Oliven, 2014). It was not until the 1950s that the face of the American college student began to change (McCardle, 2017), which was due largely to the GI Bill. Then in 2008, Congress passed a more generous GI Bill (Barr, 2015; Ford & Vignare, 2015; Metzner, Black, & Spohn, 2015). This bill's enactment provided the financial means for thousands of recently separated servicemen and women to enter postsecondary institutions for the first time (McCardle, 2017), which made college available to those of different socioeconomic backgrounds including first-generation Americans, minorities, and those from low-income households (Bound & Turner, 2002). However, this is not reflected in research outside of the GI Bill financial data and the limited institutional enrollment data (Bound & Turner, 2002; Ford & Vignare, 2015), and outcomes of these increased enrollments from the GI Bill can only be estimated (Bound & Turner, 2002; Larsen, McCarthy, Moulton, Page, & Patel, 2015; Meyer, 2013). Currently, research concerning use of GI Bill benefits is still limited (Jones, 2013; Vacchi & Berger, 2014). In comparison to their nonveteran counterparts, the amount of information concerning veterans is significantly less (Vacchi & Berger, 2014; Phelps, 2015). Most current data only identify the number of students using education benefits, the amount expended, and the schools where the funding has been expended (Wagner et al., 2013).

This lack of data needs to be addressed because one sector of the adult population where educational attainment needs improvement is military members and veterans. The VA recorded a 53% increase in the use of educational benefits from 2009 through 2012, with 42% of that increase recorded between 2009 and 2010 (NCVAS, 2014). By 2012, the VA reported that more than 900,000 servicemembers and veterans had received some form of educational funding (NCVAS, 2014). As of 2016, the VA reported that there were 4.2 million military members and veterans receiving academic funding (NCVAS, 2018). Based on the current growth rate, the VA estimates a 55% increase in the number of military-veteran students using Post-9/11 education benefits by 2021 (NCVAS, 2018). This has created a need for research-based strategies to ensure this student population's success (Cate, 2014; Pike et al., 2014). According to a survey conducted by the National Center for Education Statistics (NCES), 96% of all Title IV eligible, degree granting 2-year and 4-year postsecondary institutions reported enrolling military-veteran students during the 2012-13 academic year, amounting to 1,535 institutional responses from 1,650 Title IV public and private institutions—institutions that participate in financial aid (Queen & Lewis, 2014).

There are limited data regarding student outcomes for the military-veteran population (Hitt et al., 2015; Schiavone & Gentry, 2014). But as the military-veteran student population continues to increase, taxpayers and policymakers are seeking current and accurate data to document these students' progression and outcomes (Education Working Group, 2012). The Obama Administration commissioned the American Council on Education to establish a group of college and university administrators, the

National Commission on Higher Education Attainment, to examine student success strategies. The commission identified the need for American colleges and universities to keep better student retention and completion data (National Commission on Higher Education Attainment, 2013). Now higher education institutions are realizing the need for military-veteran student data and are finding that they had previously not recorded basic data for military-veteran students (Metzner et al., 2015). The availability of military-veteran student data is necessary to aid this student population in being successful.

In addition to scarcity, current military-veteran student research can be conflicting. For instance, one report suggested that 88% of military-veteran students starting college will drop out within the first year (Wood, 2012). In contrast, the SVA in partnership with the VA, conducted the Million Records Project that compared graduation rates and related information between veterans and nonveterans (Cate, 2014; Metzner et al., 2015). The findings from the SVA study revealed that the military-veteran student population has maintained satisfactory degree completion pace with its civilian counterparts (Cate, 2014; Metzner et al., 2015).

In 2012, the National Association of Student Personnel Administrators (NASPA) sponsored a survey to inquire about each school's reporting and tracking practices for their military-veteran student population. Of the 1,139 institutions surveyed, only 239 responded (Sponsler, Wesaw, & Jarrat, 2013). Despite a 21% response rate, the survey administrators concluded that data concerning military-veteran students is limited. In addition, the study revealed student information deficiencies: (a) there were not any

accurate enrollment numbers pertaining to military-veteran students attending U.S. colleges and universities; (b) student success data were limited; and (c) knowledge of the factors affecting student success and regarding institutional best supporting practices was lacking (Sponsler et al., 2013).

Considering the increase in the military-veteran student population, the lack of data concerning military-veteran students also results in not including this student population in nontraditional student research (Elfman, 2015). As a result, there is not sufficient research to support the outcomes, or specific needs, of these students (Hitt et al., 2015; Jones & Fox Garrity, 2017; Phelps, 2015). College and university administrators and government officials may need this research to assist this nontraditional student population in obtaining successful outcomes (Elfman, 2015; Phelps, 2015; Southwell, Whiteman, Wadsworth, & Barry, 2018). Therefore, this study was conducted using archival data to provide more information on the factors that affect the success of military-veteran students.

Problem Statement

Nationally, many colleges and universities are experiencing an increasing number of military and veteran students. However, few data are available concerning academic outcomes and factors supporting successful outcomes of these students (Martorell & Bergman, 2013; Phelps, 2015). The purpose of this research was to address this gap in practice through a study of archival data reflecting student preentry characteristics and academic performance measures to identify predictors of success factors for military-veteran students as compared to their nontraditional peers.

The downsizing of U.S. military troops, coupled with the new GI Bill, provided incentive for hundreds of thousands of veterans to seek higher education to aid in their transition into the civilian job market (Daly & Fox, 2013; Ryan, Carlstrom, Hughley, & Harris, 2011; Semer & Harmening, 2015). However, many colleges and universities were not prepared to handle the unique issues that this new student population brought with them (Bain, Kim, Cook, & Snead, 2012). Military-veteran students represent the most nontraditional of nontraditional students. Military-veteran students share many of the same characteristics as their nontraditional counterparts (age, race, socioeconomic status), but these students add military experiences to those attributes (Lumina Foundation, 2013).

Since the inception of the latest GI Bill, it is estimated that the VA has spent over $8 billion annually to fund educational claims of approximately 600,000 active duty servicemembers, veterans, and dependents through the Post 9/11 GI Bill program (Sponsler et al., 2013). In addition, the U.S. Department of Defense (DoD) estimated that, through the Voluntary Education Program, it has awarded more than $1 billion annually to active duty members (Sponsler et al., 2013). The Voluntary Education Program administers the tuition assistance program, which provides funding for active duty personnel to participate in post-secondary courses (DoD, 2015a). This tuition assistance program has been responsible for funding the education of over 495,000 active duty members (DoD, 2015b).

As taxpayers demand more transparency and more fiscal accountability, student success and outcome data will be needed if current federal funding levels are to continue.

Yet neither the institutions that have received these educational benefits nor the VA have been able to provide the data needed to support the programs' efficacy (Cate, 2014) such as an accurate military-veteran student count from the institutions (Sponsler et al., 2013). Currently, military-veteran student enrollment figures are estimated from VA benefit usage, which does not report whether the recipient is a veteran or dependent, and there is also no data regarding student outcomes. Although the VA can document how many months of benefits a member used, there is no available data that track whether this same military-veteran student met the academic requirements for degree completion (McCaslin, Leach, Herbst, & Armstrong, 2013). There are also limited data available that can assist in identifying success factors among this student population.

Data are also needed to address how college degree attainment has failed to meet the increasing needs shown in future employment projections (Lumina Foundation, 2013; U.S. Department of Education, 2006). The DoD Voluntary Education Levels Report for 2011 indicated that "approximately 85% of the enlisted force do not possess at least an associate's degree; nearly 95% of the enlisted force do not possess a bachelor's degree or higher; and approximately 58% of the officer corps do not possess a master's degree" (DoD, as cited by Education Working Group, 2012, p. 12). In comparison, 69.5% of civilian nontraditional students did not earn a bachelor's degree or higher during the same time (NCES, 2015). If education attainment goals are to be met, such as Goal 2025, comprehensive data are required to substantiate the problem and guide efforts to develop solutions and strategies (Lumina Foundation, 2014).

To restore the United States to its previous level of national degree completion superiority, the Obama Administration issued a challenge to its adult citizenry to obtain or complete a higher education credential by 2020 (The White House, n.d.). Because the nontraditional student population typically has earned some form of college credit without completing a degree (Lumina Foundation, 2013), the study of this student population will be essential to meeting the national goal. Among nontraditional students, military-veteran students are one of the fastest growing subpopulations of nontraditional students (Bellafiore, 2012), which is a reason that this population was selected for this study to identify factors that contribute to degree completion among military-veterans compared to nontraditional students.

Purpose of the Study

The purpose of this research was to identify predictors of success factors for military-veteran students compared to their nontraditional peers. For this study, student success was defined by four measurable dependent variables: (a) retention after 1 year; (b) associate degree received within 4 years; (c) bachelor's degree received within 8 years, and (d) GPA at time of departure from the institution. These degree completion times correspond to recommendations of the Education Working Group (2012), convened by the Servicemembers Opportunity Colleges to define degree completion metrics for this student population. Their recommendation was to "track the cohort at a rate of 200% that of 'normal' time, as adult and military students attend on a part-time basis–eight years for bachelor's and four years for associate programs" (Education Working Group, 2012, p. 8).

The site chosen for this study, Liberal Arts University (LAU; a pseudonym) has been a military education provider for over 40 years with continuing education centers (CECs) located on many military bases that have made the university a convenient educational choice for servicemembers, veterans, and their dependents. Over 80% of the total student population at LAU is from its continuing education component (NCES, 2017), but this figure does not indicate how many of these students are military-veteran students, or how many are using any form of military education benefits. Additionally, the center director stated that the progress of this group of students is not tracked or studied by the institution. Without this information, it is impossible for LAU, or any other higher education institution, to provide the types of support most beneficial to facilitating success of these military and veteran students. Thus, this study fills a gap in the literature and in practice by providing information to the administration, faculty, and staff of LAU regarding student demographics and other characteristics that can predict success among military-veteran students compared to other nontraditional students enrolled at these sites.

Research Question and Hypotheses

This study addressed a research question using military-veteran student preentrance characteristics as independent variables: (a) military/student status, (b) race/ethnicity, (c) age, (d) gender, and (e) transfer credits awarded, as well as first-year, academic performance measures including (f) total terms attended (first year), and (g) GPA (first year). In addition, the four measures of success that were dependent variables were (a) student retention after 1 year, (b) graduation within 200% of the usual

timeframes, 4 years for the associate degree, (c) 8 years for the bachelor's degree, and (d) GPA at time of departure from the institution.

Research Question: Which military-veteran preentrance and academic performance variables are predictive of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution?

$H_0$1: None of the military-veteran preentrance and academic performance variables are significant predictors of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution.

H_a1: One or more of the military-veteran preentrance and academic performance variables is a significant predictor of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution.

Theoretical Framework for the Study

This study was based on a combination of two student retention models: Tinto's student integration model (1975) and Bean and Metzner's (1985) conceptual model of nontraditional student undergraduate attrition. I used Tinto's and Bean and Metzner's models to provide a more comprehensive theoretical framework for military-veteran student attrition. Tinto's (1975) student integration model suggests that a student's decision to depart an institution prior to degree completion is based on the student's ability to integrate into the institution academically and socially. Students who have

successfully integrated into an institution are less susceptible to attrition. Tinto identified certain student characteristics as possible predictors of a student's probability for institutional integration: family background, individual background, and prior academic performance. For this study, individual background and family background were categorized as *preentry attributes*. The focus of this study was on nontraditional students (over age 24), who were assumed to be mature and self-sufficient. This self-sufficiency or independent student status is based on the definition from the U.S. Department of Education Office of Federal Student Aid (n.d.):

> An independent student is one of the following: at least 24 years old, married, a graduate or professional student, a veteran, a member of the armed forces, an orphan, a ward of the court, or someone with legal dependents other than a spouse, an emancipated minor or someone who is homeless or at risk of becoming homeless.

Although a student can be classified as nontraditional by ascribing to at least one or more of the previously listed attributes, age has been cited as the most widely accepted characteristic (Bean, 1980; Chung, Turnbull, & Chur-Hansen, 2014; Wladis, 2015; Wyatt, 2011; Zerquera, Ziskin, & Torres, 2018).

Expanding on Tinto's work, Bean (1980) developed a student retention model to address the individuality of the nontraditional student. Bean posited that the nontraditional student will, by definition (commuter, older, employed full time, etc.), be more likely to be influenced by factors that are external to the institution. In contrast, Tinto's (1975) model emphasized the importance of the student's social and academic

integration into the institution. However, Bean's model does support that students' social integration is important to traditional student success, though it suggests that social integration is less important to nontraditional student success.

Later Bean partnered with Metzner to create one of the most cited retention theories in higher education (Park & Choi, 2009): the Bean and Metzner (1985) nontraditional undergraduate student attrition model was designed to identify the nontraditional student characteristics that are associated with retention. Based on the model, student individual characteristics such as age, gender, academic level of preparation, and GPA can predict whether a student will persist to degree completion (Berger, Ramirez, & Lyon, 2012).

A review of student retention theories has revealed several similar constructs. Of these similarities, this study used two constructs—student background or precollege attributes and academic performance—that are common to a number of retention theories (Astin, 1975; Bean, 1980; Bean & Metzner, 1985; Pascarella & Terenzini, 1980; Tinto, 1975, 1993). This study was based primarily on Tinto's (1975) student integration model and Bean and Metzner's (1985) nontraditional student attrition model, both of which shared a focus on the two constructs (preentry attributes and academic performance) whose hypothesized relationships with student success framed this study. These constructs guided the selection of independent and dependent variables for inclusion in this study; they were also used to interpret results, draw conclusions, and provide recommendations for future research. Chapter 2 includes a more detailed explanation of these constructs and their related theories.

Nature of the Study

This study was conducted using a quantitative, nonexperimental design with a single method of data collection and a regression approach to data analysis (see Creswell, 2014). The nonexperimental design is used in studies where the researcher is unable to manipulate the variables. Therefore, nonexperimental research is compatible with archival data such as student records and demographic variables (Muijs, 2011). In the case of this study, preentrance characteristics included military/student status, race/ethnicity, age, gender, and transfer credits awarded, as well as first-year academic performance measures such as total terms attended and GPA. In addition, the following student success measures were used as dependent variables: (a) student retention after 1 year, (b) graduation with an associate degree within 4 years, (c) graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution. These archival data were extracted from the student records at LAU, deidentified prior to receipt, and analyzed using binary logistic regression and multiple regression approaches.

Definitions

Attrition: A student leaving an academic program prior to degree completion (Berger et al., 2012).

Military-veteran student: A nontraditional student who is active duty, reserve, or a retired veteran (Education Working Group, 2012).

Nontraditional student: A student who is older than 24 years, or maintains part-time enrollment, or is a commuter, "or a combination of these three factors: is not greatly influenced by the social environment of the institution and is chiefly concerned with the

institution's academic offerings especially courses, certification and degrees" (Bean & Metzner, 1985, p. 484).

Persistence: "The desire and action of a student to stay within the system of higher education from beginning year through degree completion" (Berger et al., 2012, p. 12).

Post-9/11 GI Bill: "An educational benefit program for individuals with at least 90 days of aggregate service on or after September 11, 2001 or individuals discharged with a service-connected disability after 30 days that provides financial support for education and housing" (VA, 2013).

Retention: "The ability of a particular college or university to graduate a student who enrolls with them" (Berger et al., 2012, p. 8).

Student success: A student's ability to persist to degree completion with an acceptable GPA and within 200% of an established program timeline (Education Working Group, 2012).

Veteran: A person who has served in any branch of the United States Armed Forces and has been discharged honorably (VA, 2013).

Assumptions

Assumptions made for this study were that the data requested from LAU were accurately recorded in, and extracted from, the student records and that LAU students have been relatively consistent over time with respect to demographic characteristics and success. These assumptions were necessary because of the use of archival data covering a full year of entering students. It was also assumed that all student characteristics were

consistent throughout the student's enrollment with exception of age. For instance, students who are listed as active-duty in the beginning year of data were assumed to have remained in that status during their entire enrollment period.

Scope and Delimitations

The scope of the study includes five student preentrance characteristics and three first-year academic performance variables—the independent variables—as predictors of four dependent variables indicative of student success for students enrolling in LAU from fall 2007 through summer 2008. These dates were selected to include the most recently enrolled students who could have graduated within the 200% timeframe.

External validity refers to the extent to which a study can be generalized to a larger portion of a population (Creswell, 2008). Inclusion of military-veteran students who hold different levels of military status as either active military or veteran provided information that may be generalized to the various military subgroups as well as being used to provide comparisons with civilian students. Generalizations beyond the current institution would depend on institution and program similarity.

Many researchers have studied student retention and a number of these have developed theories to account for their findings (Demetriou & Schmitz-Sciborski, 2011). The theories selected to guide this study were those whose key tenets were consistent with retention and success of nontraditional students. As the intent of this study was to assist institutions and policy makers in understanding how to help this student population in increasing student persistence, I included only the variable sets that can directly assist colleges and universities in better serving this student population.

A delimitation of the study was that the data were retrieved from only one CEC at one university and included students who entered during a specified period, which could result in a limitation of generalizability of the study's findings to other institutions. Because CECs can offer courses over different locations, it is not possible to determine the exact location the student attended. This delimitation did not decrease the validity of the study because the students' actual home locations were not among the variables researched. However, the data received were generated from three geographically proximate locations of one CEC. In addition, due to the nature of the process for recording transfer credit, it was difficult to distinguish whether the military-veteran students have actual college transfer credits or whether they were being awarded academic credit for their military training.

Limitations

A possible limitation of generalizability was due to including only one type of study site. The student data received were generated from three different military education sites of the same CEC. Thus, the findings of the study cannot be attributed to a specific site, but rather across all three locations. Additionally, the variables included in the study due to use archival data created several limitations. At LAU, students can combine course offering methods; a student can take an online course and an on-ground course simultaneously. The archival data received from LAU did not distinguish the type of course offering, or instructional platform, used by the student. It was also assumed that each student maintained the same military, veteran, or civilian status throughout the 2007-2008 academic year, their first year at the institution. Although it was assumed that

the student's initial status was reflective of the student's entire enrollment period, it was the initial status in the first year that was critical to the predictions based on the theoretical framework that guided this study.

Despite the limitation with archival data, it diminished the potential for researcher bias. Although I am a current a LAU employee, this did not present conflicts of interest with respect to the students whose data were included in the study due to the use of deidentified archival data that were provided by LAU's Institutional Effectiveness Department.

Significance

As the United States' economy changes, occupations that were once thought of as recession proof have now been affected (Shanker & Drew, 2011). Even the U.S. military is decreasing its troops due to declining budgets; the fiscal year 2017 DoD budget reflects a decrease that will comprise a 15,000 member decrease for the U.S. Army and a 4,400 member decrease for the U.S. Navy (DoD, 2016). As a result, some veteran career seekers may realize that their current skill levels may not be sufficient to meet current or future employment demands. The U.S. Bureau of Labor Statistics (2009) estimated that 24 of the 30 projected fastest growing occupations of 2008-2018 would require an academic degree. In contrast, in 2008, less than 45% of the U.S. population (including military and veterans) between the ages of 24 and 64 had earned a postsecondary degree (Chappell, 2012), and that number dropped to approximately 32% in 2014 (U.S. Census, 2014). This discrepancy in workforce needs and the availability of appropriately skilled jobseekers offers opportunities for individuals completing their college education.

A study jointly conducted by the SVA, the VA, and the National Student Clearinghouse reported that "51.7% of a sample of 788,915 military-veterans" who pursued some type of academic credential earned, on average, a bachelor's degree within an 8-year timeframe (Cate, 2014, p. 33). However, as revealed in the Million Records Project study, these figures are inconclusive because they represent less than 80% of the approximately 1 million military-veteran students who have enrolled in some form of higher education institution since 2009 (Wagner et al., 2013). Thus, the 51.7% who earned academic credentials may only represent about 40% of those military-veterans who were enrolled in higher education. In addition, transfer or part-time student data were not included in these numbers (Cate, 2014). Though data could be improved, it has indicated that civilian nontraditional students' completion rates were better than their military counterparts (McCaslin et al., 2013). Compared to the 51.7 % of military-veteran students who earned a credential in 8 years, 54% of nonmilitary, first-time college students have completed some form of academic credential in just 6 years (Cate, 2014).

For LAU, military-veteran students are a considerable portion of the entire student population however, similar to the VA, LAU has not studied the academic outcomes of its military-veteran student population. According to the College Navigator, which presents data from the Integrated Postsecondary Education Data System, LAU did not provide demographic data on military and veteran students until 2013 (NCES, 2017). LAU reported nearly 14,000 students, of which 68% were over age 25, which is characteristic of the nontraditional student. In addition, the NCES data revealed that

LAU reported nearly 2,900 veteran students who used their GI Bill benefits for 2016-17 school year and over 3,000 active military students received DoD tuition assistance during the same time (NCES, 2017.). However, funding status has been the only clear indicator of military and veteran status for students (Zhang, 2018). Without their identification in student data, the needs of the military and veteran students may not be met, leading to student attrition and unnecessary failures.

The significance of this study was in its attempt to identify factors contributing to the success of military-veteran students, a traditionally underserved population (Evans, Pellegrino, & Hoggan, 2015; Moon & Schma, 2011) who face unique challenges as they move from combat to classroom (Barr, 2015; Callahan & Jarrat, 2014; Rumann & Hamrick, 2010). This study assists in alleviating a gap in literature—the lack of available research that may lead to greater understanding of the factors affecting military-veteran student success—and possibly a gap in practice by providing the comparative information needed for the development of programs to promote success of the LAU military-veteran student population. This represents a positive social change for the students, institution, and community.

Summary

The VA data reveal that over 1 million beneficiaries have taken advantage of the Post 9/11 GI Bill, which equates to approximately 40 billion taxpayer dollars that have been invested in U.S. servicemembers (Cate, 2014). But there are little available data to document the outcome from this investment or assist in identifying and providing the types of support for facilitating success of military and veteran students. Retention and

completion information identifying military-veteran students is scarce or the data are conflicting (Cate, Lyon, Schmeling, & Bogue, 2017). As a result, this study was conducted to add to the current body of knowledge by employing a nonexperimental research method using archival data from LAU to examine how student characteristics predict military-veteran student success in comparison to their nonmilitary counterparts. Chapter 2 presents a review of current literature related to the academic outcomes of military-veteran students.

Chapter 2: Literature Review

Current literature reveals a significant disparity between the number of employment opportunities and the number of college graduates available to meet them. According to a 2013 Lumina Foundation Report, over 60% of all Americans between the ages of 25 and 64 will not be able to meet the education requirement for projected employment opportunities (Lumina Foundation, 2013; Massa & Gogia, 2017). Additionally, a Georgetown University report indicated that by 2018, 820,000 of the expected 1.3 million job vacancies would require postsecondary credentials (Weathers, 2013). This issue has received both national and local attention. Nationally, President Obama introduced legislation to alert colleges and universities of the growing need to graduate more students.

Many of the nation's colleges and universities have been forced to develop strategies to reach other available groups of potential students, including one of the fastest growing populations in higher education, nontraditional students (Osborne, 2013; Southwell et al., 2018). The term *nontraditional student* typically refers to an individual between the ages of 25-64. This group has the potential to become a vital resource to this country's higher education providers if they can be convinced to return to the classroom. It is estimated that over eight million individuals have some college credits without having earned a college degree (Schatzel, Callahan, Scott, & Davis, 2011). To lessen the gap between future jobs and qualified applicants, higher education will have to expand it focus to include more of the nontraditional student population to increase graduation rates. However, many college and university programs and policies were created for

traditional students, which can lead to the needs of the nontraditional student being missed (Gilardi & Guglielmetti, 2011).

Among nontraditional students are another rapidly growing category, the nation's transitioning veterans (Schiavone & Gentry, 2014). As federal budgets demand military downsizing, many higher education instutitions are experiencing an influx of veterans (Jones, 2013; Vacchi, 2012). The veteran student provides a different dynamic to America's classrooms. In addition to the many challenges that the nontraditional student faces, the veteran can enter the classroom accompanied by traumatic stress sydrome coupled with the challenges of trying to transistion from military to civilian life (Kirchner, 2015). Thus, veteran students are less likely than civilian students to have college credits without completing the degree (Zhang, 2018). Therefore, it is necessary to develop strategies to assist this student population in degree completion.

A review of current data revealed gaps in research concerning education and veteran students—the results of Post-9/11 GI Bill usage. Although it was estimated that by the end of 2014, Post-9/11 GI Bill expenditures would have reached $42 billion, there are no data to support whether this investment has resulted in degree completion or workforce readiness (Cate, 2014; Massa & Gogia, 2017). However, one of source of data indicated that the VA education and employment spending had reached approximately $92.7 billion by 2015, and of the education benefits paid out in 2015, 42% was used for Post-9/11 GI Bill payments to students pursuing bachelor's degrees (Zogas, 2018).

Without accurate data, there has been speculation that the Post-9/11 GI Bill may run the risk of being cut if military veterans do not show a return on investment to the American people (Cate, 2014). More data collection is needed to ensure student veteran success, which substantiates the need for this research. This chapter presents a discussion of student retention and factors contributing to student success in general as well as characteristics of military-veteran students and barriers to military-veteran student success.

Literature Search Strategy

Sources that were reviewed include books, dissertations, reports, articles from various journals, websites, and databases with a focus on literature published within the past 5 years, 2012–2016. The lack of literature documenting characteristics related to successful academic outcomes of military-veteran students (Jones & Fox Garrity, 2017) was part of the impetus for this study. The following electronic databases were used to assist in identifying sources: ERIC, ProQuest, Academic Search Complete, ProQuest Dissertation and Thesis Global, and Thoreau. Descriptors used to conduct these searches separately and in combination include: *military*, *veteran*, *nontraditional*, *adult learner*, *student success*, *nontraditional* AND *retention*, *military* AND *veteran* AND *student success*, and *Post-9/11 GI Bill*.

Theoretical Foundation

I used two well-known retention theories to ground the study—Tinto's (1975) student integration model and Bean and Metzner's (1985) nontraditional student retention model—because of their common constructs of preentry attributes and academic

performance. Students' preentry attributes and academic performance variables were analyzed to determine which variables served as predictors of the four identified success measures.

Tinto's student integration model builds on Spady's (1970) explanatory sociological model of the dropout process. Because Spady and Durkheim's research contributed to the theoretical framework for Tinto's student integration model, it is important to acknowledge the theories that contributed to the model's origin. Spady's model introduced academic and social integration to student retention research. Spady's model was also partially based on Emile Durkheim's (1951) theory of suicide. Durkheim's theory posits that an individual's propensity to commit suicide could be predicted by the individual's level of integration into society. Tinto, like Spady, applied Durkheim's theory to student dropout. From Durkheim's theory, Tinto posited that the level of students' academic or social integration into their university will predict whether the students will persist or depart.

Bean and Metzner's (1985) conceptual model provided the other half of the theoretical framework for this study. Although there was some nontraditional student research available prior to the development of their theory, there was no attrition model designed to aid in more effective study of this unique population (Bean & Metzner, 1985). Influenced by the previous research of Spady (1970), Tinto (1975), and Pascarella & Terenzini (1980), Bean & Metzner's creation of an attrition model reflected the characteristics of the population being represented. According to Bean and Metzner, a nontraditional student has at least one of the following characteristics: (a) over 24 years

old, (b) nonresidential–commuter, (c) maintains part-time enrollment status. Further, nontraditional students are not concerned with social integration; nontraditional students are more concerned with course availability (Bean & Metzner, 1985).

Several models (Bean & Metzner, 1985; Metzner & Bean, 1987; Tinto, 1975, 1993) use student characteristic variables in relationship to student persistence. Through identifying patterns that might develop in student characteristics, factors that inhibit success and opportunity can be addressed (Carter, 2006). Thus, in student retention studies, many researchers analyze student demographic information and student characteristics such as background, defining variables, and family and precollege attributes to better understand the student's decision to drop out or persist (Demetriou & Schmitz-Sciborski, 2011; Levitz, 2017).

As the scope of retention studies has expanded to include different student populations, the development of new retention theories has decreased over time (Berger et al., 2012). More recently, some researchers have applied existing models to examine their student populations and others have expanded on current models with constructs from other disciplines (Berger et al., 2012). However, "no single view (retention theory) is comprehensive enough to account for the complicated set of factors that interact to influence student and institutional performance" (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006, p. 11). Current models only cover part of a range of behaviors that could influence a student to leave an institution (Tinto, 1982). This promotes the need for additional research and the need to review and revise existing theories and models to meet the changing student populations (Tinto, 1982).

As U.S. colleges and universities continue to serve as the societal melting pots, student retention research must examine differences between student groups—traditional versus nontraditional and military-veteran versus civilian (Seidman, 2012). This study was conducted to address this gap. The theoretical framework for this study shaped the following research hypothesis: One or more of the military-veteran preentrance and academic performance variables is a significant predictor of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution.

Applying Tinto's Student Integration Model

Studies have demonstrated successful use of Tinto's model. For example, Pascarella and Terenzini (1980) conducted a validity test of the predictability of Tinto's (1975) student integration model to by testing (a) background, (b) initial commitment, (c) integration, (d) sequential commitments, and (e) decision to depart. Pascarella and Terenzini supported the validity of Tinto's model to predict whether students were dropping or stopping out in their study.

Pascarella and Terenzini (1983) affirmed that their findings were consistent with Tinto's model that academic integration is determined by academic performance, and social integration is determined by the quality of interaction between the student and faculty. Pascarella and Terenzini's study validated a relationship between academic integration and students' commitment to their academic goal.

In a more recent study, DiRamio and Jarvis (2011) modified Tinto's (1993) longitudinal model—a model built on the student integration model—of student

departure to attempt to understand student veterans' persistence and academic success. Each model begins with student preentry attributes that are directly linked to the student's commitment to an academic goal and institutional goal. It is this commitment (reflected in both models) that serves as the first indicator of student intent to stay or leave the institution. The modified institutional departure model added three characteristics to the preentry category: financial matters, health concerns, and psychological and adjustment difficulties (DiRamio & Jarvis, 2011). Because the student integration model was designed for traditional students, these additional characteristics were added to better understand the nontraditional student veteran population. The financial variables were added because many transitioning veterans returning to college can encounter tremendous financial loss after leaving the military (DiRamio & Jarvis, 2011). For the servicemember leaving, whether retiring or otherwise, there will be a substantial loss in income. These factors can affect the student's ability to integrate into the institution.

Applying Bean and Metzner's Nontraditional Student Attrition Model

Research has also supported the validity of Bean and Metzner's model. Metzner and Bean (1987) conducted a study to test the validity of their student attrition model, revealing a strong relationship between student grades and academic behavior. Under the Bean and Metzner (1985) model, student cumulative grades are categorized under academic outcome. Although high school performance is used a potential predictor of college performance, the effect of high school performance is significantly diminished over time (Astin & Oseguera, 2005).

Due to the complexity of the subject of military-veteran student retention and success, the use of multiple theories, rather than attempting to limit this study to fit one theory, provided the best platform for research and understanding (Pascarella & Terenzini, 2005). For instance, Tinto's (1975) model is limited because of its reliance on identifying the student's level of school commitment and dependency on social integration. Bean and Metzner's (1985) model asserts that nontraditional student social integration is not a critical factor in preventing student attrition. According to Tinto's theory, institutions must provide some form of social integration to ensure student success, but Bean and Metzner posit that the nontraditional student's sense of belonging is found outside of the institution. Thus, while Tinto's theory asserts that nontraditional students would expect their learning environment to fulfill them socially, Bean and Metzner's model suggests nontraditional students enter the learning environment with their social needs already fulfilled (Metzner & Bean, 1987). For the nontraditional student, the lack of need for social integration with the institution is one of the most distinguishing characteristics. Both Tinto's and Bean and Metzner's models support the importance of examining student background characteristics, or preentry attributes, and student academic characteristics to better understand attrition.

Literature Review Related to Key Variables

The purpose of this research was to identify predictors of success factors for military-veteran students as compared to their nontraditional peers. Nontraditional students represent the fast-growing student population in U.S. colleges and universities (Markle, 2015; Wyatt, 2011). Although the definition and characteristics of these

students can be ambiguous, they have a significant presence in higher education (Wyatt, 2011).

This literature review will begin with examination of existing research on the prominent theories on student retention. The most notable are Tinto's student retention models (1975, 1987, 1997, 2006) and Bean's (1980, 1982, 1983, 1985) model of nontraditional student attrition. Although the framework for this study was grounded in Tinto's (1975) and Bean and Metzner's (1985) models, it is necessary to consider other retention theories to gain a more comprehensive understanding of student dropout. In doing so, this literature review includes student retention research that relates to the identified student population. This review includes research for student preentry and academic performance factors that can be used to distinguish nontraditional, undergraduate students—military-veteran and civilian—who meet, versus those who do not meet, the success criteria of this study: (a) student retention after 1 year, (b) graduation with an associate degree within 4 years, (c) graduation with a bachelor's degree within 8 years, and (d) an acceptable GPA at time of departure from the institution.

Student Retention Theories

The study of undergraduate student retention/attrition is one of the most researched aspects in higher education (Berger & Lyons, 2005; Tinto, 2012). Retention research can be traced back to the early 1930s (Berger & Lyons, 2005). In accordance with the changing face of today's student, retention studies must evolve to explain a more complex student and problem (Campbell & Misley, 2013). It is estimated that one-third

of the students entering U.S. postsecondary classrooms will leave without completing a degree, or academic credential (Johnson, 2012). To explain the decision process that many students endure, researchers have developed a number of theoretical models (Demetriou & Schmitz-Sciborski, 2011).

Most notable among theoretical models on retention is Tinto's (1975) student integration model that suggested the student's ability to become socially active into his or her institution indicates the student's commitment to the institution. Institutional integration does not provide a clear measure, especially for social integration (Berger & Braxton, 1998). Social integration is how a student fits into the institution's social system and can be used to indicate whether a student will drop out (Tinto, 1975). Further, it is this commitment that Tinto attributes as the best indicator of a student's intent to persist although there is not a true measure to determine how much student commitment is needed to persist. Although Tinto's student integration model is among the most cited in student retention research (Seidman, 2012), the model has come under a considerable amount of scrutiny (Bean, 1980; Bean & Metzner, 1985; Cabrera, Nora, & Castaneda, 1993). According to Bean and Metzner, Tinto's integration model was designed for traditional students. The strongest criticism of Tinto's student integration model is its lack of applicability to diverse student populations (Bean, 1980). For example, environmental factors have been identified by Bean and Metzner as a primary predictor of student intent to drop out. Cabrera et al. (1993) also referenced the absence of environmental factors as another shortcoming of Tinto's model. Similarly, nontraditional students are more susceptible to external factors, or environmental

outcomes, than traditional students (Southwell et al., 2018). Because these environmental factors (such as finances, family and work responsibilities) can have a detrimental effect on a student's desire to persist, the inclusion of these variables in student retention models can provide more extensive understanding of diverse student populations (Metzner & Bean, 1987).

The Need for Retention Research

Further research has indicated factors that affect attrition of nontraditional students. Kuh, Kinzie, Schuh, Whitt, and Associates (2005) suggested that additional student characteristics such as those associated with nontraditional students (race/ethnicity, student income level, first generation college attender) are potential factors related to attrition. Further, Kuh et al. (2006) referred to student characteristics such as gender, race/ethnicity and other student characteristics as being linked to academic performance. To understand student success, research should be conducted that is student-group and student-characteristic focused (Kuh et al., 2005). Institutions need to better understand their students, assess their students' academic preparedness, and address their students' needs and expectations (Kuh et al., 2005). Similarly, the Bean and Metzner (1985) model provides background and defining variables (such as race/ethnicity, age, gender), which align with Kuh et al.'s findings and were included in the focus of this study.

It is important to study characteristics of historically, underrepresented student populations because minority student populations may have different experiences than those of majority, or White students attending a predominately White institution (Kuh et

al., 2005). Although the study of race in regard to student persistence has produced inconclusive results, Astin (1975) found race to be a significant factor in predicting student persistence.

A chronological, historical glance into centuries of student retention studies beginning in the 1600s through the 2000s was provided in Demetriou and Schmitz-Sciborski's (2011) review highlighting the contributions of several theorists (Bean & Metzner, 1985; Cabrera et al., 1993; Metzner & Bean, 1987; Spady, 1970; Tinto, 1975) and describing how selected theories have affected the study of student retention. Demetriou and Schmitz-Sciborski (2011) defined factors associated with student success, including student demographic characteristics, but drew no conclusions about how these factors related to academic preparation or academic and social engagement. However, Demetriou and Schmitz-Sciborski concluded that much current student retention research involves assessing student problems, then attempting to provide solutions; they do not provide the needed focus on student successes rather than failures.

In addressing the strengths and weaknesses of selected retention models, it is evident that the magnitude of the student retention problem and diversity of students is too vast to be captured in one model. Considering the numerous reasons students enroll, start, and stop an academic pursuit, it is important to understand that although theorists may disagree on which variables should be studied, decades of research without defining a universal retention model indicate that there is still a need for more research (Berger & Lyons, 2005).

Nontraditional Students

The Integrated Postsecondary Education Data System of the U.S. Department of Education indicated that there were 16.7 million students enrolled in undergraduate courses for Fall 2017 (NCES, 2018). Nontraditional students comprised approximately 4.4 million, or 27% of all undergraduate students in the United States (NCES, 2018). Of these 27%, there were 16% between the ages of 25-34 and 11% were 35 years or older (NCES, 2018).

The term *nontraditional student* embodies various demographic characteristics that distinguish these students from their traditional counterparts. Although nontraditional student characteristics can vary, there are certain defining attributes that they share. Nontraditional students are older than their traditional counterparts and they do not enter college directly after high school (Bean & Metzner, 1985; Chung et al., 2014; Ogren, 2003). Although college represents an important part of the nontraditional student's life, it is not their life (Zerquera et al., 2018) because many nontraditional students have full-time jobs, children, and spouses (Jenkens, 2009). The classification of the nontraditional student has been expanded to encompass a diverse population of students (Adelman, 2006; Bean & Metzner, 1985; Ogren, 2003; Tinto, 2006) and later retention studies began to focus on different student populations, including women (Markle, 2015), first generation attendees (Petty, 2014), and veteran students (Schiavone & Gentry, 2014).

The most distinguishing characteristic of nontraditional students can be found in the students' work experience (Hitt et al., 2015; Jenkens, 2009) which has been defined

by the level of importance that the work experience represented to the student—a nontraditional student's work experience had to represent a livelihood, or sole source of sustainment (Jenkens, 2009). To their credit, nontraditional students are usually more mature, self-motivated, and are considered to be better able to understand course material because of their out-of-class experiences (Berger et al., 2012; Smith, Vilhauer, & Chafos, 2017).

For most nontraditional students, education is not pursued simply to quench a thirst for knowledge. Education provides a means to learn specific skills sets in an effort to make the student more marketable in the workforce (Kasworm, 2012) as a way of protecting their economic position and their family (Cole, 2009). The driven nature of nontraditional students' pursuit to gain re-entry into the workforce has led many nontraditional students to select an institution based more on program length or career enhancement promises than based on school reputation or degree relevance to current job market needs (Davies-Vollum & Greengrove, 2010).

Selecting a school where the administrators, faculty, and staff do not understand the unique needs and challenges of nontraditional students can be detrimental to their academic success (O'Keefe, 2013). The characteristics alone (over 25 years old, first generation college, part-time, commuter, substantially employed, married, have parenting responsibilities) associated with a student being classified as nontraditional can be very different for faculty and staff who have not been trained to work with nontraditional students (O'Keefe, 2013). Students who experience feelings of rejection or exclusion are more susceptible to attrition (O'Keefe, 2013).

Although nontraditional students typically have higher GPAs than their traditional counterparts (Grabowski, Rush, Ragen, Fayard, & Watkin-Lewis, 2016; Hoyert & O'Dell, 2009), nontraditional students are often more likely to leave school without degree completion (Simmons, 2012). Nontraditional students may be more dedicated to obtaining a degree than their traditional counterparts; this can also make them susceptible to external influences and commitments (family, job, spouse, and religious or community service) that can cause them not to persist to degree completion (Bettinger, Boatman, & Bridget, 2013). In Bean and Metzner's (1985) model, nontraditional student attrition is presumed to be strongly influenced by environmental factors such as finances, long working hours, and family responsibilities. In a study conducted by the National Postsecondary Education Cooperative in 2006, the external influences found to affect a student's resolve to continue included full-time employment, relationship and parenting responsibilities, lack of academic preparedness, and less than full-time enrollment.

Further, nontraditional students are more likely to enter college unprepared (Bettinger et al., 2013; Davies-Vollum & Greengrove, 2010). Many nontraditional students have earned some college credits, and therefore are able to reenter many institutions without a current placement or aptitude test; thus the students could be erroneously placed into courses above their level of academic ability. The students may not be successful, which could influence the students' intent to persist. Many nontraditional students have been out of the classroom for a considerable length of time or may have experienced financial difficulties which can cause self-doubt and increased fear of failure (Davies-Vollum & Greengrove, 2010). These types of background and

defining variables described by Bean and Metzner (1985) can cause nontraditional students to be more susceptible to leaving the learning environment without earning a degree (Gilardi & Guglielmetti, 2011).

Students' college experiences can relate to their academic persistence to the second year of enrollment. Using definitions for traditional and nontraditional students that were consistent with prior works of Tinto (1975) and Bean and Metzner (1985), Gilardi and Guglielmetti (2011) concluded that demographic factors such as age, gender, and previous high school GPA were not significant indicators of student persistence. Part-time employment status had the greatest effect on nontraditional students' attrition and the lack of social integration, or student engagement, also had a significant effect on student attrition. Conversely, Bean and Metzner's (1985) model rejected the value of social integration among nontraditional students but did acknowledge the effect of social integration in association with nontraditional student background variables such as age, residence, ethnicity, and gender.

Factors Contributing to Nontraditional Student Success

Similar to the attributes differentiating traditional and nontraditional students, there are characteristics that differ between successful and unsuccessful students (Tinto, 1993). In this study, successful students were those who persisted to graduation and unsuccessful students were those who did not. A review of the current literature revealed that the term, *student success* is frequently used; however, there is not a standard definition. Kuh et al. (2005) described *successful students* as "those who persist, benefit in desired ways from their college experiences, are satisfied with the college, and

graduate" (p. 8). Student retention and student success are often used interchangeably, but student retention is institutionally focused (Berger et al., 2012), involving the institution's ability to keep the student enrolled through graduation. Student success can refer to any factor that can be associated with student retention (Wyatt, 2011). Student success can also focus on the student's perspective of success: actually graduating, taking courses for a job promotion, or transferring to another institution (Tinto, 1993).

Based on a qualitative study to identify potential motivators that influence persistence and overall engagement among nontraditional students, a model was created that listed seven institutional components for nontraditional student success: "(a) institutional commitment, (b) facilities, (c) staff, (d) counselors, (e) curriculum, (f) programs and services, (g) communication, and (h) environment" (Wyatt, 2011, p. 18). In addition, to be successful, students perceived their need for: "(a) a basic orientation to the campus, (b) information about university practices and policies, (c) classes taught by faculty members who understand nontraditional student learning styles, (d) communication, and (e) an understanding of the time constraints of nontraditional students" (Wyatt, 2011, p. 17). Although this study involved only one university, these findings may be generalizable to other student populations, but as Wyatt concluded, there is not a blueprint for student success for either nontraditional or traditional students.

Barriers to Nontraditional Student Persistence

Nontraditional students constitute a significant portion of the enrollment at American colleges and universities; therefore, it is important to identify barriers that hinder nontraditional students' academic success. 'Time constraints, costs, family

responsibilities, inconvenient class schedules, transportation, and employment problems" were among the most frequently noted barriers to enrollment (Schatzel et al., 2011, p. 50). Bean and Metzner (1985) referred to these barriers as environmental factors, defined as "objective and subjective assessments of the student's environment" (p. 20) including finances, hours of employment, and family responsibility. Similar to Schatzel et al., (2011), Markle (2015) identified "academic classification, university satisfaction, work-school conflict and school-family conflict" as the most influential variables in the decision of nontraditional students aged 25 years or older not to persist to degree completion (p. 279).

Nontraditional students must live in two worlds—the world of family and responsibility and the world of academia (Petty, 2014). When the balancing of both become too much to handle, the nontraditional student will retreat to the familiar. Some nontraditional students may interpret their inability to fit into college life socially as personal failure and choose to drop out (Exposito & Bernheimer, 2012). Nontraditional students may experience difficulties adapting to the post-secondary environment and may experience feelings of isolation and rejection (Alschuler & Yarab, 2018). This inability to connect to one's surroundings can cause the student feelings of anxiety and stress, which can also lead to the student's desire to drop out (Petty, 2014).

Student unpreparedness and the lack of adequate academic advising represent potential barriers that can also influence a student's resolve to persist. As indicated in Bean & Metzner's (1985) model, students who are failing academically may be subject to unfavorable psychological outcomes such as decreased goal commitment, increased

stress, and increased program dissatisfaction, which could lead to attrition. Not all barriers are outside of the student's control; Metzner and Bean (1987) refer to factors such as students' levels of study skills and the amount of time that the students dedicate to their study as predictors of the students' academic outcome.

Factors Affecting Nontraditional Student Retention

There can be many factors that contribute to student's ability to persist. According to Bean and Metzner's (1985) model, age, race, gender, and previous academic performance are credited with affecting the student's academic outcome. In addition, nontraditional students, who are usually commuters, tend to maintain a greater connection with their non-college than their college environment; therefore, factors such as financial aid availability, family/parenting, and employment responsibilities have a greater propensity to affect their intent to leave or remain (Bean & Metzner, 1985; David et al., 2013; Jenkins, 2012). Several of these factors, or pre-entry attributes, affecting nontraditional student retention are reviewed here in greater depth.

Pre-entry Attributes

Military status. For this study, military status included individuals who were either military (active duty) or veterans (retired, or previously served). Active duty military students are those currently serving in one of the branches of the United States Armed Forces (Air Force, Army, Coast Guard, Marines, and Navy) while enrolled in college courses (Dortch, 2011).

Military students are full-time employees of the federal government. Similar to other full-time employees, military students have to balance work, home, and school.

Unlike other full-time employees, the military student is subject to long deployments and changing duty stations (Callahan & Jarrat, 2014; Ford, Northrup, & Wiley, 2009; Johnson, 2009). Although military students and veterans are both characterized as nontraditional students, each brings its own set of unique characteristics to the classroom (Smith et al., 2017).

As with other nontraditional students, military-veteran students are often only able to commit to part-time enrollment (Crosta, 2014; Sportsman & Thomas, 2015). For military students, part-time enrollment is indicative of their active, full-time commitment to the military and family obligations (Callahan & Jarrat, 2014; Kirchner, 2015). In contrast, the veteran student may not be employed, which would allow more time to be focused on academics. For the veteran student, part-time enrollment can be a symptom of family issues, financial problems, academic underpreparedness, and often illness (Osborne, 2013). Veteran students are more likely than active duty military students to be diagnosed with posttraumatic stress disorder (PTSD) or another cognitive disorder (McCaslin et al., 2013; Smith et al., 2017). PTSD and other cognitive disorders do not only plague veterans, these disorders are believed to be present in many active duty military members (McCaslin et al., 2013).

Many military-veteran students are also first generation college students (Ford & Vignare, 2015). As characteristic of this subpopulation, first generation college students can face unique challenges in pursuing degree completion including financial challenges, family expectations and prejudices, and a lack of motivation (Bain et al., 2012; Petty, 2014). Nontraditional students, who often are first-generation college students, can be

more susceptible to financial hardship (D'Amico & Dika, 2013). Many first-generation students come from homes where their parents were subjected to low wages due to limited education. Similarly, nontraditional students may need to accept low wages due to their lack of education and workforce marketability.

First generation students are at greater risk of attrition due to their potential for being academically underprepared (Bergman, Gross, Berry, & Shuck, 2014; Zerquera et al., 2018). Petty (2014) postulated that nontraditional students may experience feelings of intimidation when faced with having to ask faculty or even younger students for help. Military training in leadership and initiative could intensify military-veteran students' desire to drop out when experiencing academic difficulty. A consequence of leadership training can be military members' unrealistic expectation of their academic performance based on their military performance (Vacchi, 2012). Moreover, military-veteran students may be more likely to ask for help if their military status is not known and less likely to seek assistance in fear of appearing weak or because "failure is not an option for the veteran" (Vacchi, 2012, p. 18). Military and veteran status could be a significant predictor of this student population's decision to persist. With respect to Bean and Metzner's (1985) model, military students display both academic variables (lack of academic preparedness, less than full-time enrollment) and environmental variables (family, work stress, and unstable work schedules) that could have a substantial influence on the student's decision to drop out.

Race/ethnicity. Nontraditional student attrition may not be directly affected by ethnicity; however, ethnicity may have an indirect effect on dropping out through its

direct relationship to students' GPAs as was found by Metzner and Bean (1987) who studied the propensity to drop out of 624 nontraditional students based on their GPA, the total number of credits enrolled per semester (full-time or part-time), student satisfaction, age, and ethnicity. Although race or ethnicity has been included as a predictor of student persistence in several studies, the effect has either been ambiguous (Clayton & Cate, 2004), or it was found that neither race or ethnicity significantly related to students' academic progress (Metzner & Bean, 1987; Fournier & Ingeson, 2014; Tinto, 2006). However, in Semer and Harmening's (2015) study, race was found to be a significant predictor of student success for student veterans; the mean GPA of non-White students was lower than that of White students. Semer and Harmening noted socioeconomic factors, the racial climate on campus, and the lack of academic and financial resources as possible reasons why students of color had lower grades than their White counterparts. Similarly, Baker and Robnett (2012) postulated that Black and Hispanic students are more likely to enter higher education from lower socioeconomic backgrounds than their White counterparts and therefore, less likely to be academically or socially prepared for college. Students' lack of preparedness can increase their overall college cost through remedial courses and degree completion time, which can contribute to students' discontentment with their institution and willingness to persist (Baker & Robnett, 2012).

Academic progress, as defined by Bean and Metzner (1985), is represented by student GPA and number of credits earned. Although the effect of race and ethnicity were inconclusive, studies (Bean & Metzner, 1985; Semer & Harmening, 2015) indicated that there were other factors associated with race and ethnicity that could relate to student

persistence. Metzner and Bean's (1987) findings indicated that while race and ethnicity did not reveal a significant direct relationship to student attrition, race and ethnicity did reveal a significant relationship to student GPA, or academic performance. Therefore, Metzner and Bean's study identified race and ethnicity as having an indirect influence on student attrition.

Age. Age has always been considered the key deciding factor for whether a student was classified as traditional or nontraditional (Jenkens, 2009). According to current literature, nontraditional students are characterized as being 25 years or older (Caruth, 2014; Chung et al., 2014). Older students bring several advantages to the classroom including being better able to process information based on their life experiences; their critical thinking ability and problem-solving skills are enhanced by age (Morrison-Beedy & Rossiter, 2018; Scott & Lewis, 2012). However, these older, nontraditional students tend to have substantial additional roles and responsibilities that can overshadow their educational goals (Stone, 2008): many nontraditional students are spouses, parents, employed full time, care-givers for elderly parents, and military members (Kasworm, 2012; Ross-Gordon, 2011). Bean and Metzner (1985) used the term *external environmental issues* to acknowledge the additional roles that many nontraditional students must balance, including student relationships and work responsibilities. Nontraditional students are more likely to lose their resolve to persist when faced with an external environmental issue than are their more traditional-aged classmates (Bean & Metzner, 1985).

In contrast to most current literature concerning the effect of age on nontraditional student classification, Jenkens (2009) reported the opinions of 30 accounting faculty members that student age alone was not an accurate indicator of whether a student should be classified as traditional or nontraditional. A life changing event such as losing a job, having a child, losing a spouse, and terminal illness are possible catalysts that can be instrumental in changing a student's perception about education (Jenkins, 2012).

Gender. Prior to 1930, gender equality existed in degree completion, but the 1930s brought a slight increase in male degree attainment due to the severe unemployment created by the Great Depression (Goldin, Katz, & Kuziemko, 2006). It would be over 50 years before women would surpass men in degree attainment. The increase in female students has been credited to their ability to outperform male students in college entrance determinants including testing, high school GPA, and course work (Goldin et al., 2006; Marrs & Sigler, n.d.). Yet, the research concerning whether gender alone can be an accurate contributor to student success is unclear at best.

Sulaiman and Mohezar (2006) studied archival data from 489 student records of MBA students enrolled between 2000 and 2004. Seven demographic variables were examined to identify which were possible indicators of student success; gender was not related to student success. This finding did not support the Bean and Metzner model in which gender is a component of the background construct, although Metzner and Bean's (1987) study affirmed that background variables have a direct relationship to student attrition.

Transfer credit. When transferring to a new institution, receipt of credit for academic work completed elsewhere can provide an advantage to the incoming student. Monaghan and Attewell's (2014) study focused on students who transferred from associate to bachelor's degree programs. Students allowed to transfer 90% or more of their associate degree credits to their bachelor's degree programs were 2.5 times more likely to complete the bachelor's degree. Many nontraditional students have previously attended other colleges or universities and may enter into their next school with earned academic credits that can be applicable to a future degree plan. Military-veteran students are likely to have transfer college credits due to constantly changing duty stations and frequent deployments that force them to start and stop their academic pursuits. They can often enter a new college with transfer credits from various schools.

In an effort to assure that military-veteran students do not lose their academic credit because of their military service, the Servicemembers Opportunity Colleges (SOC) was established in 1972 to coordinate post-secondary educational opportunities for servicemembers (SOC, 2015). Although SOC is managed by the American Association of State Colleges and Universities, SOC is a DoD program. SOC establishes certain standards for colleges and universities that want to be recognized as a SOC institution, which is similar to being endorsed by the DoD as an education provider for its servicemembers. SOC institutions design their transfer practices to minimize the loss of college credit by servicemembers (SOC, 2015) by engaging in a guaranteed-transfer course network that contains the name of all SOC institutions and their respective guaranteed transfer courses.

In addition to college credit, military and veteran students can have a Joint Services Transcript. This transcript has been evaluated by the American Council on Education and provides colleges and universities with credit recommendation for servicemembers' military training and experience (National Commission on Higher Education Attainment, 2013).

Academic Performance

Academic performance has been identified as an important predictor of student success (Davidson & Wilson, 2013-2014; Markle, 2015) and has been named in both past and present retention research. Metzner and Bean (1987) noted poor academic performance as direct indicator of student attrition. Davidson (2015) acknowledged the earlier works of Tinto (1975), Bean and Metzner (1985), and Martinez (2011) who all cited the accumulation of academic credits as a measure of academic performance, which is a factor of academic success. Davidson concurred with the previous researchers concerning the importance of earned credits in predicting student persistence.

Although academic ability, as measured by an acceptable GPA, has been considered as a contributor to student retention, academic performance refers to more than a student's grades (Campbell & Misley, 2013). Other factors contributing to academic success include a student's declaration of their major and degree selection within the first year of enrollment (D'Amico & Dika, 2013; Jenkins & Cho, 2012) as well as the number of credits earned by the student in the first year of enrollment (Martinez, 2011). Students earning 30 credits by the end of their first year of enrollment were more likely to persist than students who did not (Jenkins & Cho (2012). In addition, first-year

GPA has been found to be another good indicator of academic success (DeNicco, Harrington, & Fogg, 2015; Hein, Smerdon, & Sambolt, 2013).

Continuous enrollment. Especially during the student's first year, continuous enrollment may be a key factor in student success (Donhardt, 2012). In this study, the academic performance measure used was the student's first year of attendance which represents a critical milestone on the collegiate pathway to degree completion (see Sperry, 2015). Part-time enrollment, one of the known characteristics of nontraditional students, creates one of the greatest challenges to this student population's success because less than full-time continuous enrollment can increase the amount of time the student must attend courses in order to graduate. The longer a student has to matriculate in a program, the greater the probability that the student will not persist to graduation (Shapiro et al., 2012). Students' regular course attendance and consistent course completion has been attributed to raising students' retention rate by as much as 50% in comparison to students who stop out (Bautsch, 2014). This challenge can be greater for the nontraditional student who already must contend with equally or more important non-academic issues.

Grade point average. Of all the possible academic predictors, high school GPA has been identified as the best determinant of college academic success potential (Sawyer, 2013; Sulaiman & Mohezar, 2006; Tinto, 1975). In the Bean and Metzner (1985) model, high school performance, categorized under the background and defining variables, has a direct effect on academic and environmental outcomes that can directly influence either the student's intent to leave, actual departure, or decision to persist.

Although many theorists agree that high school GPA is instrumental in determining students' academic potential, college GPA can be a better predictor for nontraditional students because high school GPA is not as accurate a predictor for nontraditional students as it is for traditional students (Seidman, 2012). This is consistent with Metzner and Bean's (1987) finding that college GPA was not as significant a predictor of attrition among nontraditional students as it was with traditional students. In the current study, academic performance was a measure of student success as defined by first-year total number of credits earned and cumulative first-year GPA.

Military-Veteran Students

As most frequently used, the term *military student* encompasses both members serving on active duty and reserve duty. It covers members from all branches of the military and includes their spouses and primary dependents (Brown & Gross, 2011). However, in this study, the term *military student* referred only to the servicemembers, not their family members. The term *veteran student*, in contrast, includes members who have served in either an active duty or reserve status of the Armed Forces. Also, the term veteran can be applied to either retired or discharged persons (Brown & Gross, 2011).

Military-veteran students represent an increasing segment of the nation's nontraditional student population. Prior to the enactment of the Post-9/11 GI Bill, military-veteran students had a significant presence at less than 200 U.S. colleges and universities (Brown & Gross, 2011). In contrast, according to DoD, as of July 7, 2014, there were 2,641 colleges and universities that had a signed memorandum of understanding to abide by the requirements to receive VA funding (DoD, 2015a) and

military-veteran students are now estimated to exceed over one million beneficiaries. Although categorized as nontraditional students, the complexity of military life can separate the military-veteran student from the more traditional, civilian nontraditional student (Howard & Brode, 2013). Military-veteran students, like civilian nontraditional students, are typically characterized by age, as well as substantial family and employment responsibilities coupled with some previous college experience (Kim & Cole, 2013).

Factors Affecting Military-Veteran Student Retention

Military life. Although military students are considered nontraditional students, military students have some specific characteristics that seemingly decrease their potential for success in the classroom (Brown & Gross, 2011). Military members are subject to the risk of being reassigned to another duty station. These reassignments, whether temporary or permanent, often come without adequate warning, which can be very disruptive to the learning environment. Also, military members are prone to working long shift hours (Ady, 2009; Jones & Fox Garrity, 2013). Schedule and shift changes can cause undue hardship on military students in their interactions with faculty and civilian students. Many civilian students and professors may not have a military affiliation or direct knowledge of military practices (Kirchner, 2015); the military students' work-related absences could be misconstrued as laziness (Bergman et al., 2014). Missed assignments, or constant requests for extended assignment completion time can cause faculty to label military members as problematic (Brown & Gross, 2011; McCaslin et al., 2013) and even the best of excuses can create resentment among group members who have been assigned to work together. Unfortunately, these misperceptions

are not limited to either group (civilian or military). Military students may translate a civilian student's or faculty member's disagreement with military practices as personal dislike. Military students may have some misconceptions about their civilian classmates as well (Kim & Cole, 2013). These issues have the potential to affect the military-veteran student's academic experience, particularly because student interaction is imperative for student success (McNeely, 1938; Tinto, 1993).

Strange surroundings. Because many course standards are created with traditional students in mind, nontraditional students are already at a disadvantage (Brown & Gross, 2011). A course developed for a traditional student may connect the learning outcome to the student's critical thinking skills, but a nontraditional student may be more comfortable with using memorization and repetition to process the coursework, which could result in the student being unsuccessful in the course (Kenner & Weinerman, 2011). The student's unsuccessful academic effort may decrease the student's willingness to persist.

Disorders. The stress of past or present military missions has been evaluated and credited for both physical and mental disorders that can prove detrimental to classroom success. As many as 25% of veterans entering U.S. colleges and universities have hidden disabilities including traumatic brain injuries, post-traumatic stress disorder, and depression (Marniseishvili & Koch, 2011).

Over the last 10 years, more than 3.2 million military members have deployed to Operations Enduring Freedom and Iraqi Freedom (Ewert, Van Puymbroeck, Frankel, & Overholt, 2011; Hitt et al., 2015). Of this number, "it is reported that 29,000 of these

military personnel have been physically wounded, many more return with psychological issues" (Ewert et al., 2011, p. 356). One of these psychological issues is known as post-traumatic stress disorder (PTSD).

PTSD. Numerous military-veteran students will transition from deployment into U.S. colleges and universities with battlefield injuries, both visible and invisible, of which PTSD is among the most predominate cognitive injuries (American Council on Education, 2011); yet, many colleges and universities are not prepared to address the potential challenge that a veteran suffering with PTSD could bring to the classroom (Brown & Gross, 2011; Kirchner, 2015; Rumann & Hamrick, 2010). "It is estimated that approximately one-fifth of the veterans returning from Iraq and Afghanistan have experienced the symptoms of PTSD" (Barnard-Brak, Bagby, Jones, & Sulak, 2011, p. 31). Although some members of the psychology community may disagree on the validity of PTSD as an actual psychological disorder, most will agree that engaging in combat can most definitely contribute to some form of psychological abnormality (Barnard-Brak et al., 2011; Nyaronga & Toma, 2015). Some possible symptoms can include feeling anxious, jittery, or irritated; having difficulty sleeping; having trouble keeping one's mind on one thing; and having a hard time relating to and getting along with one's spouse, family, or friends (Nyaronga & Toma, 2015; VA, 2013). Students experiencing PTSD symptoms may also experience difficulties adjusting in the classroom; attention deficit is a symptom of PTSD (Nyaronga & Toma, 2015). Although not specifically listed as a student success factor, students need the mental capacity to maintain academic focus in order to be successful. In addition, student veterans can feel isolated and have

difficulties fitting into college life, leading to military-veteran student attrition (Canto, McMackin, Hayden, Jeffrey, & Osborn, 2015).

Summary and Conclusions

A review of the current literature revealed several recurrent themes relating to retention including: (a) student characteristics, (b) academic performance, and (c) social integration. Researchers have consistently found relationships between academic performance and student characteristics (Davidson, 2015) with student background or student precollege factors among the most relevant (Pascarella & Terenzini, 2005; Sparkman, Maulding, & Roberts, 2012). Both Tinto (1975) and Bean and Metzner (1985) included student background or preentry attributes in each of their studies to determine whether certain student characteristics were consistent with student success. In doing so, the expectation was to provide evidence-based information to institutions where policies and programs could be specifically designed to meet the needs of the student population.

Tinto's (1975) student integration model and Bean and Metzner's (1985) student attrition model have been credited with identifying predictors of student persistence or success. Tinto posits student academic and social integration as major indicators of a student's intention to persist or drop out. Tinto adds that students who are socially integrated will commit to their institution academically, which is evidenced by the students' academic performance, or GPA.

Building on Tinto's (1975) model, Bean and Metzner's (1985) student attrition model filled the gap in literature that distinguishes the nontraditional student from the

traditional student. Although the models have many similarities, Bean and Metzner's student attrition model was designed to identify external influences that can affect nontraditional students' ability to persist. Bean and Metzner posited that social integration is not necessary for the nontraditional student.

Both models acknowledge precollege attributes, or student characteristics, as important to predicting attrition, or persistence (Bean & Metzner, 1985; Tinto, 1975). Tinto refers to precollege attributes as student background, precollege schooling, and socioeconomic status. For the nontraditional student, precollege schooling can consist of high school or previous unsuccessful college attempts, which may not adequately reflect the student's current, academic ability, or willingness to persist. Because the focus of this study was on nontraditional, financially independent adult students, the socioeconomic factors that Tinto addressed in his student integration model were not relevant to this current study and were not addressed. Bean and Metzner's model defined precollege attributes, or student background characteristics, as age, hours enrolled, education goals, high school performance, race/ethnicity, and gender. Consistent with Tinto's and Bean and Metzner's models, this study adressed five precollege attributes: (a) military/student status, (b) race/ethnicity, (c) age, (d) gender, (e) transfer credits awarded and two first-year academic performance measures (f) total terms attended, and (g) GPA. Chapter 2 focused on these two constructs—precollege attributes and academic performance.

Much of the earlier research assigned the responsibility of retention solely to the student. For instance, Tinto's (1975) model declared that student retention, or success,

was based on the student's academic and social integration into the institution. It was not until Bean and Metzner's (1985) study that environmental issues including family or work responsibilities were associated with student attrition. It is these environmental issues, or external factors, that help to identify the student as traditional or nontraditional. Nontraditional students, by definition, are 24 years or older, do not attend college directly following high school, maintain part-time enrollment and are commuters. Graduation rates among nontraditional students tend to be lower than those of traditional students (Markle, 2015). Of the nontraditional student population, military-veteran students are among the fastest growing group, but the lack of information and understanding of the military-veteran student population has contributed to their less than stellar academic success (Semer & Harmening, 2015).

Chapter 3: Research Method

Three-fourths of all undergraduate students in the United States can be categorized as nontraditional (Lumina Foundation, 2014). The most widely recognized characteristic of the nontraditional student is age. Categorically, nontraditional students are over age 24 and typically have one or more of the following designations in addition to their student status; each is a spouse, parent, primary care-giver, full-time employee, and more recently added, active duty military or veteran (Cass & Hammond, 2015). These nontraditional students are more vulnerable to attrition (Lumina Foundation, 2014). Although many nontraditional students enter higher education due to an unstable job market (Lumina Foundation, 2014), attrition rates among nontraditional students are higher than those of traditional students (Goncalves & Trunk, 2014). Nontraditional students, or adult students, are more likely to complete a bachelor's degree in 6 years versus the 4-year completion time of the traditional undergraduate student (Lumina Foundation, 2014). However, this timeframe is not conducive to the guidelines of Goal 2025, the education initiative to increase the number of adult college graduates in the United States by 60% by the year 2025 (Lumina Foundation, 2014; Nettles, 2017).

To achieve Goal 2025, strategies must be devised to assist colleges and universities in recruiting, retaining, and graduating students in a timelier manner. Although there has already been focus on degree completion, the success of nontraditional students is significant for increasing degree completion rates (Miller, 2014). In this study, I compared how well students' preentry variables and measures of academic performance served as predictors of student success among military-veteran

versus civilian nontraditional students. This chapter includes the research design for the study and the processes used to conduct the study. This includes discussion of the collection, processing, and storing of the archival data received from LAU's Institutional Effectiveness Department.

Research Design and Rationale

In this study, I used a nonexperimental, quantitative research method. In accordance with the nonexperimental design, variables were not manipulated, and there were no treatment or control groups (Creswell, 2008). Archival data have already been collected, which reduced the cost and time of conducting a survey and increased the accuracy of the information received. In this study, the archival data were the student's official school records that were provided in deidentified form. The archival data were examined to determine whether any relationships exist between the students' preentry and academic performance variables and four measures of success in college. The independent variables included preentry characteristics of (a) military/student status, (b) race/ethnicity, (c) age, (d) gender, (e) transfer credits awarded, as well as first-year academic performance measures including (f) total terms attended, and (g) GPA. In addition, the following student success factors served as dependent variables: (a) retention after 1 year, (b) associate degree received within 4 years, (c) bachelor's degree received within 8 years, and (d) GPA at time of departure from the institution.

The nonexperimental research design is often referred to as correlational research. As is consistent with correlational research, regression analyses were conducted to determine whether a predictive relationship exists between the students' preentry and

student success variables (see Creswell, 2008). Of the two types of correlational research designs, this study included a prediction design "to identify variables that predict an outcome or criterion" (Creswell, 2008, p. 359). In accordance with the prediction design, the students' preentry and academic performance variables served as the predictor variables and the student success measures were the criterion variables (see Creswell, 2008).

Methodology

Population

The population for this study consisted of undergraduate military-veteran students and civilian nontraditional students attending any of three geographically proximate locations comprising one of LAU's CECs located on the east coast of the United States. In addition to LAU's traditional teaching campus, CECs are located throughout the country including on various military bases. The CEC provides evening courses to a mostly nontraditional adult student population, which includes active-duty military, veterans, military dependents, and civilian students. The CECs operate six 8-week terms per calendar year, providing different academic programs and degrees according to location. Although LAU is one university consisting of multiple CECs, each center operates independently with its own culture, staff, and students. CECs located within commuting distance of each other often share students, but all LAU students are attached to a home location based on where that student initially enrolled in class. According to the center director for the research site, there are over 600 total students enrolled at this CEC.

Sampling and Sampling Procedures

To obtain the broadest possible representation, the census sample included all students entering undergraduate programs beginning in fall 2007 through summer 2008, which included entering students for eight consecutive terms at one CEC site. These students were selected because their enrollment dates were consistent with the timeframe that would allow them to have completed either an associate degree or bachelor's degree within the 200% time frame of 4 and 8 years, respectively.

The request for student data submitted to LAU included military affiliation designation as categorized by the following student types: military, veteran, or civilian. For purposes of the study, the *military* classification applied to active duty students only. The *veteran* classification included all students who had previously been in any branch of the military, regardless of previous status, whether active or reserve. *Civilians* included all students who were not and had not served in the United States Armed Forces. For this study, military dependents who were receiving veteran funding to attend school were classified as civilian. LAU offers credit for military service, which is based on registrar evaluation and American Council on Education recommendations. As a result, the awarding of military transfer credits on the student records of military-veteran students (American Council on Education, 2015) serves as a distinguishing characteristic of military-veteran students.

Following receipt of Institutional Review Board approvals from Walden University (approval no. 4-10-17-0084633) and LAU, data from student records were requested in writing from the center director who granted permission to conduct the

study. For all students entering from fall 2007 through summer 2008, data requested included preentrance variables of military/student status, race/ethnicity, age, gender, transfer credits awarded and first-year, and academic performance measures including total terms attended and GPA (first year) as well as student success measures including retention after 1 year, associate degree received within 4 years, bachelor's degree received within 8 years, and GPA at time of departure from the institution. These data were extracted by the university's Office of Institutional Effectiveness from LAU's undergraduate student records and provided in a spreadsheet in deidentified form. Informed consent of the students was not needed because the data were anonymous.

Power analysis for sample size. Three of the four dependent variables were binary, therefore requiring logistic regression analyses. Results of studies conducted by Vittinghoff and McCulloch (2007) indicated that the rule of thumb requiring 10 outcome events per predictor variable may be too conservative and that 5-9 outcome events per predictor variable should provide sufficient power for the analysis. Thus, with 7 predictor variables, a sample of 393 students was more than satisfactory to provide sufficient power for the statistical tests corresponding to the binary logistic regression analyses. GPA was analyzed using ordinary least squares (OLS) multiple regression procedures. A power analysis using G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007) for a multiple linear regression analysis with 7 predictor variables, alpha of .05, a high level of power of .95, and a small effect size of .10 would require a sample size of 226 students. This sample size is within the range required for the binary logistic regression analyses and smaller than the actual sample size of 393 students.

Data Analysis Plan

Although the data were expected to be relatively clean as they were extracted directly from student records, preliminary preparation included the use of descriptive statistics and frequency distributions in SPSS prior to analyses. Data analyses were conducted using OLS multiple regression (for student success measured by GPA) and binary logistic regression (for student success measured by the three other dependent variables) to determine the value of students' pre-entrance variables including military/student status, race/ethnicity, age, gender, transfer credits awarded and first-year academic performance variables including number of credits earned and GPA as predictors of the student success measures of student retention after 1 year, graduation within 4 years with an associate degree, graduation within 8 years with a bachelor's degree, and GPA at time of departure from the institution. Results were interpreted using standard probability estimates and odds ratios as appropriate. The research question addressed, and the corresponding null and alternate hypotheses were:

Research Question: Which military-veteran preentrance and academic performance variables are predictive of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution?

H_0: None of the military-veteran preentrance and academic performance variables are significant predictors of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution.

H_a1: One or more of the military-veteran preentrance and academic performance variables is a significant predictor of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution.

Threats to Validity

Most quantitative research is based on the testing of the statistical, or null hypothesis (Creswell, 2008). The null hypothesis alleges that no relationship exists between variables (Creswell, 2014). As Garcia-Perez (2012) defends, the object of good research is to create reliable evidence that can be used for problem-solving and decision-making. As a result, the testing of the framework, design, and data management of a research study is necessary to ensure its validity (Rutkowski & Delandshere, 2016). Statistical conclusion validity refers to the testing of two variables to determine whether a relationship exists between the variables (Drost, 2011). Statistical conclusion validity ensures that the correct conclusion about the accuracy of the null hypothesis has been reached (Busk, 2010). Statistical conclusion validity testing can yield two possible incorrect results (Garcia-Perez, 2012). The first, a Type I error, occurs when the researcher erroneously reports that a relationship exists between two variables (Garcia-Perez, 2012). As a result, the researcher rejects the null hypothesis, when in actuality, there is not a relationship between the two variables (Lipsey, 2000). The null hypothesis is considered to be true unless research is provided to dispute this assertion (Creswell, 2008). When a researcher concludes that a relationship exists between two variables, the researcher rejects the null hypothesis. The second result, a Type II error, occurs when the

researcher does not reject a false null hypothesis (Lipsey, 2000). Thus, the researcher's failure to reject a false null hypothesis can result in the researcher making an inaccurate statistical conclusion.

Due to the nature of this study, a nonexperimental quantitative design, the variables were not manipulated, and therefore threats to interval validly related to experimental designs do not apply. In this study, variables were examined to determine whether a relationship existed between two or more of the variables (Creswell, 2008) including pre-entrance, academic performance, and student success variables. Accordingly, the study used a correlational predictive research design. Correlation research was designed to predict outcomes (Creswell, 2008); for this study, the outcome being predicted was student success as defined by four dependent variables.

Ethical Procedures

Permission to conduct the study and access the data at this CEC of LAU were provided by the center director. The archival data from student records were received in deidentified form to protect anonymity of the students. Prior to data collection, the study was reviewed and approved by the LAU and Walden University Institutional Review Boards. Once data were received, the files were placed in a locked file cabinet and will be retained for a period of no less than 5 years from the end of the study. No one other than myself will have access to the data.

The retrieved data were extracted from students' records from three locations of the CEC. Although I served at a site director for one of these locations, no data were included from the location under my direct supervision. In addition, I did not have any

contact with the individuals extracting the data from the student records. The data were extracted by the university's Office of Institutional Effectiveness, which is located in a different state. Once the deidentified data were compiled, the file was forwarded to me electronically.

Summary

The purpose of this research was to identify predictors of success factors for military-veteran students as compared to their nontraditional peers. These data were analyzed to determine the relationships between the independent and dependent variables to determine predictors of military-veteran and nontraditional student success. Chapter 4 provides the findings for the study.

Chapter 4: Results

The purpose of this research was to identify predictors of success factors for military-veteran students compared to their nontraditional peers. The predictors were based on two components: student preentry demographic characteristics and academic performance. The results of the study will assist institutions and related organizations in gaining better understandings of the influence of preentrance student characteristics and first-year academic performance in predicting student success. The following research question and hypotheses guided the direction of this study:

Research Question: Which military-veteran preentrance and academic performance variables are predictive of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution?

H_0: None of the military-veteran preentrance and academic performance variables are significant predictors of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution.

H_a: One or more of the military-veteran preentrance and academic performance variables is a significant predictor of student retention after 1 year, graduation with an associate degree within 4 years, graduation with a bachelor's degree within 8 years, and GPA at time of departure from the institution.

Data Retrieval

After approval was received from Walden University's IRB and the study site's IRB, data were requested from LAU's Institutional Research Office on May 31, 2017 and received on July 28, 2017. The data were extracted from the university's student database and were provided to me by e-mail in a password-protected Excel file. The data were stored on a password-protected hard drive in a locked file.

The data received constitutes a representative sample of the 2007–2008 student population. The former center director reported that the selected locations averaged 600 students. Based on this estimation, this study sample of 393 represents 66% of the student population. The Cochran formula was used to calculate how representative the sample size was for the population of interest (Israel, 1992)

$$n = \frac{z^2 * (p) * (1-p)}{e^2} = (1.96)^2 * (.05) * (.5) / (.05)^2 = 384.16$$

where n = sample size, z = z score 95% confidence level (1.96), p = level of significance (.05), e = error rate (.05)

Thus, the target sample size with a 95% confidence interval and a 0.5 level of significance is 384 (see Kadam & Bhalerao, 2010). As a result, the sample size of 393 used in this study was adequate to represent the population.

Data Coding

For the analyses conducted in this study, only the data received from LAU's Office of Institutional Effectiveness were used. These data required screening, cleaning, and recoding to be used in the study. To adapt the data for SPSS use, categorical data were dummy coded.

Military status. Military/student status was recoded as active duty, veteran, and civilian, with civilian as the reference category.

Race/Ethnicity. During the data review, a disproportionate distribution was discovered among reported races/ethnicities. The race/ethnicity distribution was as follows: White (128), Black (136), Hispanic (34), Asian (14), unknown (81). The category *unknown* referred to students' race/ethnicities that had not been designated by the students. Because of the smaller numbers of students, the Hispanic and Asian ethnicities were combined with the unknown category to create a third category that I entitled *other*. The race/ethnicity variable was coded as White, Black, and other. In the case of race/ethnicity, the students categorized as White served as the reference category.

Age. The students' ages were calculated from the birth year data provided. Each birth year was subtracted from the year students entered the university, 2007. However, there was one student record that indicated an age less than 18 years old. As this study used students' archival data, which did not allow student contact information, consent and assent for this minor could not be obtained. Therefore, this student's record was removed from the data file.

Gender. The students' gender information was extracted from the archival data as a dichotomous variable. For this study, the male category served as the reference.

Transfer credits. Transfer credits were included in the original data received from the study school. However, the number of transfer credits ranged from zero to 318 with the high values indicating possible entry errors. Extreme values can be removed or recoded to avoid the potential of one or two items having a disproportionate effect on the

mean in relation to the other more closely related data (Warren, 2013). Considering that an associate degree can be granted after successful completion of at least 60 semester hours and a bachelor's degree can be granted after the successful completion of at least 120 semester hours of collegiate level of study, the varying transfer credit awards were not consistent with degree requirements. Based on concerns about the varying number of credits reported in the original retrieved data, the transfer credit variable was changed from continuous to dichotomous, with the lack of transfer credits serving as the reference category.

Descriptive Statistics

Descriptive statistical analyses were conducted to provide a better understanding of the sample demographics (see Table 2). The frequency analysis revealed that Black (35%) and White (33%) were the two predominant races in the study. Additionally, the sample was comprised of 60% active duty, 7% veteran and 33% civilian students with the gender distribution fairly evenly proportioned between male students (56%) and female students (44%). Slightly more than half of the sample, 51%, did not receive any transfer credit applied to their selected academic program. The student ages ranged from 19-66 years old. As expected, nontraditional aged students (25 years and older) represented 77% of the sample.

Table 2

Descriptive Statistics for Preentrance Variables

Variable	Category	Frequency	Percent
Race/ethnicity	Black	136	35
	White	128	33
	Other	129	32
Military status	Military	236	60
	Veteran	27	7
	Civilian	130	33
Gender	Female	172	44
	Male	221	56
Transfer credit	Yes	194	49
	No	199	51

The academic performance measures for the study were dichotomous as shown in Table 3. Student retention after 1 year was only achieved by 29.5% (116) of the sample. Of the students included in the study, fewer than 20% (74) earned an associate degree and less than 10% (34) earned a bachelor's degree within 200% of the expected time allowed.

Table 3

Frequency Statistics for Student Retention and Degree Completion

Variable	Category	Frequency	Percent
Student retention > 1 year	Yes	116	29.5
	No	277	70.5
Associate degree	Yes	74	18.8
	No	319	81.2
Bachelor's degree	Yes	34	8.7
	No	359	91.3

The remainder of this chapter will consist of analyses of the statistical assumptions and further descriptive data analyses, followed by three binary logistic regression analyses and an OLS multiple regression analysis to address the components of the research question.

Assumptions of the Statistical Tests

The study involved two different tests for data analysis. Binary logistic regression was used to evaluate the three dichotomous outcome variables and OLS multiple regression was used to evaluate the one continuous outcome variable. However, prior to starting either of the regression analyses, each set of assumptions was tested for conformity.

Assumptions for binary logistic regression. The seven assumptions required to be met prior to starting the binary logistic regression analysis were divided into two groups; the first group of four assumptions were associated with the model's design. The first assumption was that the outcome variable must be dichotomous. All three dependent variables used in the binary logistic regression analyses were dichotomous, student retention after 1 year, associate degree completed, and bachelor's degree completed. The second assumption was that one or more predictor variables must be continuous or scale variables. In this study, three of the seven predictor variables were continuous (age, GPA, total terms attended). The other four predictor variables were binary; these were dummy coded for SPSS conformity. The third assumption was that the dichotomous dependent variables maintain independence of observations and continuous independent variables should be mutually exclusive and exhaustive. In this

study, all the dependent variables were mutually exclusive. At the study site, students can complete a bachelor's degree without completing an associate degree. Further, a student can fail to be retained after the first year, then later return and complete either degree. The fourth assumption was that each independent variable should have at least 15 minimum cases per independent variable. This study had a sample size of 393, so this assumption was met.

The second half of the assumptions for binary logistic regression are focused on the data. The fifth assumption relates to the determination of a linear relationship between the continuous independent variables and their logit transformed outcome variable (Laerd Statistics, 2015b; Stoltzfus, 2011). Each of the three continuous independent variables were transformed into their natural logs. The initial Box-Tidwell analysis revealed that only two of the three continuous independent variables indicated linearity as follows: age (p = .794), first-year GPA (p = .183), total terms (p = .005). The lack of statistical significance in the age and first-year GPA interaction terms indicate that these two continuous variables were linearly related to the logit of the dependent variable (Laerd Statistics, 2015a). Because linearity was not established for all three of the continuous variables, a Bonferroni correction was applied, using all 17 terms in the analysis (Laerd Statistics, 2015a). After the Bonferroni correction with the adjusted level of statistical significance (p < .05/17= .0029), all continuous independent variables in the model were found to be linearly related to the logit of the dependent variable.

The sixth assumption was the data would not reflect multicollinearity. The larger the collinearity, the greater the probability for error (Field, 2005). Cases with studentized

residual values greater than ±3 indicate the presence of outliers, which should be examined and removed as determined necessary (Laerd Statistics, 2015a). There was one standardized residual with a value of 3.59572 standard deviations, which was kept in the study. As a result, the final assumption in the binomial regression analysis revealed that the data did not have any significant outliers, leverage, or influential points (see Laerd Statistics, 2015a).

Assumptions for OLS multiple regression. The remaining outcome variable in the study was final GPA. An OLS multiple regression was conducted to test the relationships of the independent variables with the continuous dependent variable, final GPA. The OLS multiple regression method uses statistical modeling similar to the standard linear regression method in that both use the value of one variable to predict the value of another one (Field, 2005). The method of least squares uses regression to determine a solution that minimizes the sum of the squared distance between the observed and predicted values of the dependent variables (Field, 2005).

OLS multiple regression has eight assumptions. The first two assumptions are based on the research model selection. To be eligible to use the OLS multiple regression model, the data set must have at least one continuous dependent variable and at least two continuous or categorical independent variables (Laerd Statistics, 2015a). The next six assumptions involve the nature of the data (Laerd Statistics, 2015a). Assumption 3 requires the independence of the observations, as indicated by independence of their residuals, which was tested using the Dublin-Watson statistic that has an acceptable range

between 0 and 4 (Laerd Statistics, 2015a). There was independence of residuals, as indicated by a Durbin-Watson statistic of 1.826; thus, the observations were independent.

Assumption 4 requires the existence of a linear relationship between the dependent and independent variables, which can be assessed for the independent variables collectively by creating a scatterplot of the studentized residuals against the (unstandardized) predicted values (Laerd Statistics, 2015a). As can be seen in Figure 1, the normal probability plot did not indicate any curvature, which is a known indicator of nonlinearity (Field, 2005).

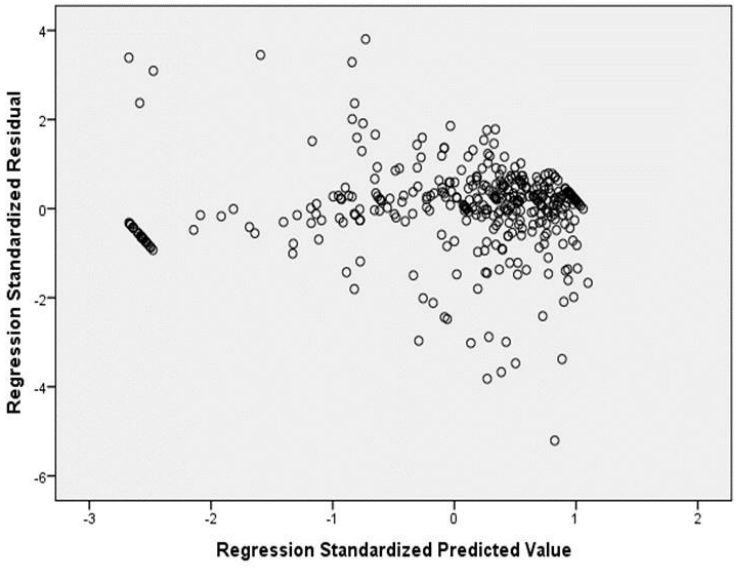

Figure 1. Scatterplot of linear relationship between independent and dependent variables.

Similarly, the partial regression plots for the continuous independent variables age (Figure 2) and first-year GPA (Figure 3) indicated linear relationships with the dependent variable, GPA. When the residuals in a scatterplot form a horizontal band, there is strong probability that there is a linear correlation between the dependent variable and independent variables (Laerd Statistics, 2015a).

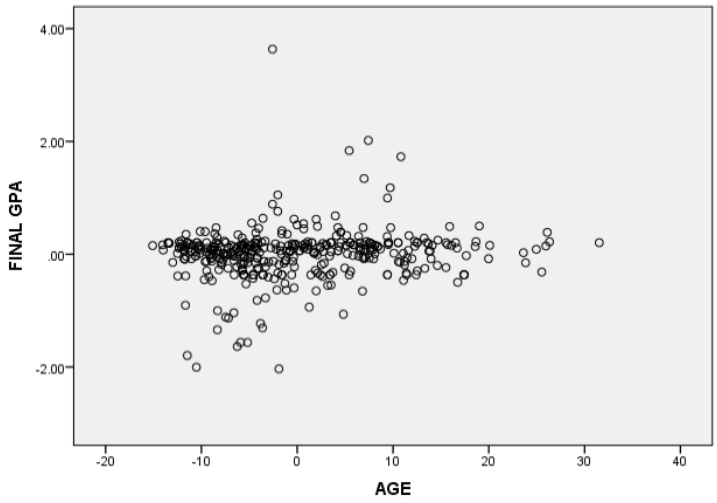

Figure 2. Partial regression plot for age and final GPA.

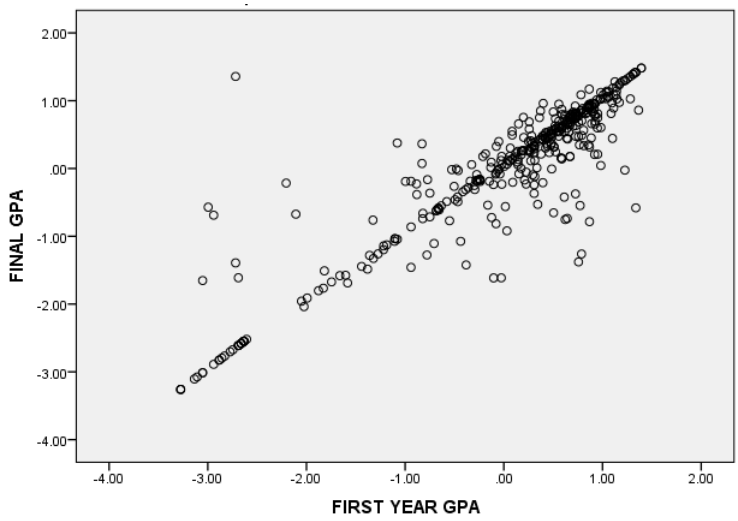

Figure 3. Partial regression plot for first year GPA and final GPA.

Assumption 5 was that the data will retain homoscedasticity, which means the residuals at each level the predictor variable should have the same range of variance (Field, 2005). As in Figure 1, the assumption of homoscedasticity was not violated, and no further testing was needed.

Assumption 6 was that the data must not show multicollinearity. In testing for multicollinearity, the correlation matrix was examined for predictor variables with values greater than .7. In this study, the largest correlation was .419 between transfer credit and total terms (first-year). The review did not reveal any violations; however, another means for testing multicollinearity was also performed. A visual scan of the collinearity statistics table was conducted for predictor variables with a Tolerance value of less than 0.1, which would represent a variance inflation factor (VIF) greater than 10 (Laerd Statistics, 2015a). In this study, all the tolerance values were greater than 0.1 (the lowest was 0.920) and the all the VIF values were less than 10 (the highest was 1.087). As a result, there was no evidence of collinearity, which confirms that the requirements for Assumption 6 were met.

Assumption 7 is that the data should not reveal any significant outliers, high leverage points, or highly influential points (Laerd Statistics, 2015a). Because the review of the case diagnostics table revealed 10 outliers, each student's data associated with an identified outlier was reviewed. Outliers represent irregular data points in a data set, which can increase the potential for error and decrease the normality of the data (Allen, 2017). However, outliers can also suggest the presence of a novel phenomenon (Allen, 2017). Using the case-wise diagnostics table, the studentized deleted residuals were reviewed for cases with values that exceeded ±3 standard deviations. Four residuals greater than ±3 standard deviations were identified. The student records containing the identified outliers were reviewed for error. After not identifying any data errors, I decided to conduct an analysis for leverage points. Leverage points with values less than

.2 are considered to be safe (Laerd Statistics, 2015a). A visual review of the leverage points indicated there were not any values that exceeded .2 (the highest was .06046). Next, the data were checked for influential points by reviewing the Cook's distance for values greater than 1. With respect to the Cook's distance test, there were no values that exceeded 1 (the highest was .08775). Although the data did reveal outliers, I determined that the removal of the outliers could have a detrimental effect on the overall study results. As a result, the outliers were left in the study.

Assumption 8, the errors in prediction (residuals) must be normally distributed, was assessed using the SPSS-generated histogram (Figure 4), which was reviewed for the existence of a symmetrical bell shaped curve (Field, 2005).

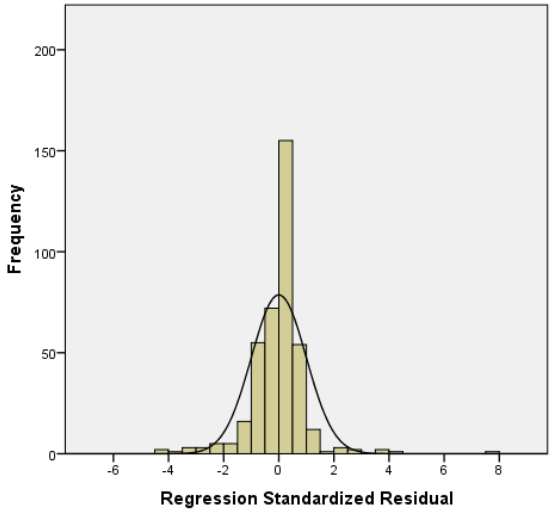

Figure 4. Normal distribution of residuals.

In addition, a visual inspection of the P-P plot (Figure 5) indicated that the residuals were sufficiently close to the diagonal line to indicate the assumption of normality of residuals had been met (Laerd Statistics, 2015a). According to Laerd

Statistics (2015a), the mean and standard deviation should have values of approximately 0 and 1 for the data to be considered normally distributed. In the case of this study, the mean was 3.69E-15 and the standard deviation was 0.996; therefore, the final assumption, that of normality, was met.

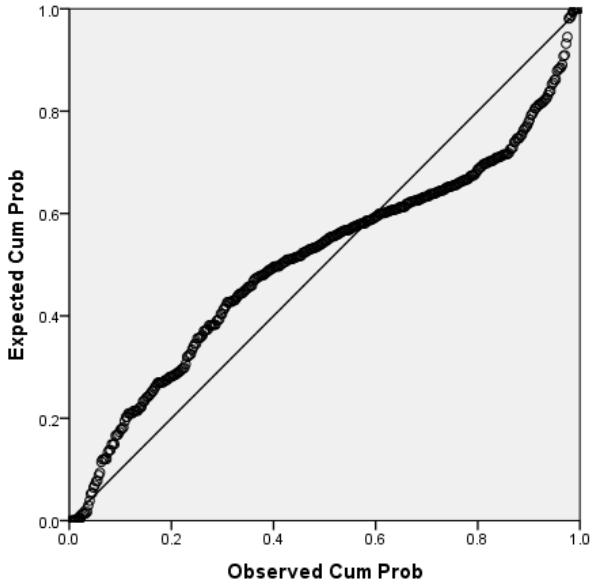

Figure 5. P-P plot of standardized residuals.

Results

Descriptive Statistics

The students' ages ranged from 19-66, with the majority over 30 years old. There were 90 (23%) traditionally aged (19-25) students and 303 (77%) nontraditionally aged (25 and older) students. First-year GPA ranged from 0.00-4.00, with the average being 2.93, and the majority of first-year GPAs being 4.00. Enrollment for the members of the sample fell from term to term with the highest enrollment in the first fall term, decreasing to only 11% of the original sample by the end of the second summer term (Table 4).

These students attended an average of 2.5 terms, or 42% of the academic year. Of the six academic terms, not one student consecutively attended the full academic year (Table 5).

Table 4

First-Year Enrollment by Term

Term	# Students Attending	Percentage of Sample
2007 fall 1	393	100.0
2007 fall 2	198	50.4
2008 spring 1	154	39.2
2008 spring 2	130	33.1
2008 summer 1	65	16.5
2008 summer 2	44	11.0

Table 5

Number of Terms Attended

#Terms	# Students Attending	Percentage of Sample
1	155	39.4
2	71	18.1
3	52	13.2
4	44	11.2
5	71	18.1
6	0	0.0
Total	393	100.0

Analyses Related to the Research Question

Data related to the research questions were also analyzed using SPSS software. Three separate binary logistic regression analyses were performed to assess the influence of multiple predictor variables on three separate dichotomous outcomes: retention after the first year, completion of an associate degree within 4 years, and a bachelor's within 8 years, based on students' pre-entry demographics of age, gender, military status, and race/ethnicity combined with their first-year academic performance including GPA and total terms attended.

Student Retention After the First Year

For this study, the initial measure of student success was whether students were retained after the first year. The null model, without applying any of the independent variables, produced a 70.5% (277/393 = 70.5%) rate of accuracy in predicting that the students would not persist after the first year. Based on this model, it could be assumed that a person guessing that no students would be retained after the first year would be correct in that assumption 70.5% of the time (see Laerd Statistics, 2015b). The addition of the predictor variables increased the model's accuracy from 70.5% to 86%. The model's fit was verified by two tests. The omnibus test of model coefficients confirmed the statistical significance ($p < .001$) of the model. The Hosmer and Lemeshow goodness of fit test confirmed the model's predictability of the outcome ($p = .212$). The result was not statistically significant, indicating that the model is not a poor fit. The Cox and Snell R^2 and Nagelkerke R^2 revealed that the variance accounted for in the dependent variable, student retention after the first year, ranged from 40% to 56%. The model explained 56%

of the variance in student retention after the first year and correctly classified students in 86% of the cases. The model's sensitivity (percentage of cases that had the observed statistic) was 71.6% and the specificity (percentage of cases that did not have the observed statistic) was 92.1%. The positive predictor value was 79% meaning that of the students predicted to be retained after the first year, the model predicted 79% correctly and negative predictor value was 89% which meant that of the students predicted to not be retained after the first year, the model predicted 89% correctly.

The model correctly predicted 70.5% of the students who did not attend after the first year would not attend after the first year. In the case of this dependent variable, student retention after first year (Table 6), two independent variables were determined to add to the model, transfer credits ($p = .040$) and total terms attended ($p < .001$). The odds ratio revealed that students with transfer credits were 2 times more likely to continue after the first year than those students who did not have transfer credits. As total terms attended increased by 1 term, the odds of student retention after 1 year increased threefold.

Table 6

Predictors of Student Success for Retention After the First Year

Predictor Variable	B	SE	Wald	df	Sig	Exp(B)	95% C.I. Exp(B)	
							Lower	Upper
Age	.016	.018	.778	1	.378	1.058	.980	1.053
Gender-Female	-.111	.329	.113	1	.737	.895	.470	1.706
First-year GPA	.382	.222	2.951	1	.086	1.465	.948	2.264
Military Status								
Active	-.504	.347	2.115	1	.146	.604	.306	1.192
Veteran	.163	.625	.068	1	.794	1.177	.346	4.008
Race/Ethnicity								
Black	.631	.373	2.869	1	.091	1.879	.905	3.899
Other	-.159	.394	.162	1	.687	.853	.394	1.848
Total Terms Attended	1.092	.121	81.857	1	< .001	2.981	2.353	3.776
Transfer Credit-yes	.671	.326	4.228	1	.040	1.955	1.032	3.706
Constant	-6.190	1.111	31.036	1	< .001	.002		

Completion of Associate Degree

The second measure of student success in this study was whether students completed an associate degree within 4 years. The null model, without applying any of the independent variables to the model, produced an 81.2% rate of accuracy revealing that 319 (81.2%) students did not complete an associate degree and 74 (19.8%) students did complete an associate degree. The addition of the independent variables slightly decreased the model's accuracy to 79.9%. The model's fit was verified by two tests. The omnibus test confirmed the statistical significance ($p < .001$) of the model. The Hosmer and Lemeshow goodness of fit test ($p = .516$) confirmed the model's predictability.

Using this test, goodness of fit is established by the model exceeding the statistically significant value of $p = .05$ (Laerd Statistics, 2015b). The Cox and Snell R^2 and Nagelkerke R^2 revealed that the variance accounted for in the dependent variable, associate degree completed, ranged from 14% to 24%. The model's sensitivity (percentage of cases that had the observed statistic) was 9.5% and the specificity (percentage of cases that did not have the observed statistic) was 96.2%. The positive predictability of this model was 37%, which meant that of the students predicted to complete the associate degree within 4 years, the model predicted 37% correctly. The negative predictability of this model was 82.1%, which meant that of the students predicted not to complete the associate degree within 4 years, the model predicted 82.1% correctly.

In the case of completing the associate degree, four independent variables were found to be statistically significant predictors: military status-active ($p = .010$), race/ethnicity-Black ($p = .012$), transfer credits ($p < .001$), and total terms ($p = .001$) as shown in Table 7. In the case of the variable military status, the odds of earning an associate degree were 2.5 times greater for active duty military students than for civilian students. The analysis also revealed that the odds ratio for Black students was 2.4 times greater to earn an associate degree than for White students. Students who received transfer credits were 3.4 times more likely to complete the associate degree than those who did not receive transfer credits. As the total number of terms attended during the first year increased, the odds of the student completing the associate degree increased by a multiplicative factor of 1.43.

Table 7

Predictors of Student Success for Completing Associate Degree in 4 Years

Predictor Variable	B	SE	Wald	df	Sig	Exp(B)	95% C.I. Exp(B)	
							Lower	Upper
Age	.025	.018	1.875	1	.171	.976	.942	1.011
Gender-Female	-.275	.308	.796	1	.372	.759	.415	1.390
First-year GPA	.282	.182	2.381	1	.123	1.328	.927	1.890
Military Status								
Active	.936	.363	6.641	1	.010	2.550	1.251	5.195
Veteran	.634	.591	1.149	1	.264	1.885	.600	6.054
Race/Ethnicity								
Black	.880	.351	6.285	1	.012	2.411	1.212	4.799
Other	.165	.384	.184	1	.668	1.179	.556	2.502
Total Terms Attended	.356	.104	11.813	1	.001	1.428	1.165	1.749
Transfer Credit-yes	1.220	.329	13.723	1	< .001	3.388	1.777	6.462
Constant	-4.222	.956	19.488	1	< .001	.015		

Completion of the Bachelor's Degree

Whether students completed a bachelor's degree within 8 years was the third measure of student success in this study. The null model, without applying any of the independent variables to the model, provided a 91.3% rate of accuracy for the no bachelor's degree decision option (353/393=91.3%). The addition of the independent variables increased the model's accuracy only slightly to 91.9%. The model's fit was verified by two tests. The omnibus test of model coefficients confirmed the statistical significance ($p < .001$) of the model. The Hosmer and Lemeshow goodness of fit test confirmed the model's predictability of the outcome ($p = .143$). The model is not

statistically significant, which means the model is not a poor fit (Laerd Statistics, 2015b). The Cox and Snell R^2 and Nagelkerke R^2 revealed that the variance accounted for in the dependent variable, bachelor's degree completed within 8 years, ranged from 7% to 15%. The model explained 14.6% of the variance in bachelor degree completion and correctly classified 91.3% of cases. The classification table identified the model's sensitivity at 5.9% and the model's specificity at 100%, positive predictability was 100% and negative predictability was 91.9%.

According to the model, 5.9% of the students who completed a bachelor's degree were correctly predicted by the model to complete a bachelor's degree. Also, the model revealed that 100% of the students who did not complete a bachelor's degree were correctly predicted by the model not to complete the degree. In the case of the bachelor's degree, two independent variables were determined to add to the model, race/ethnicity-Black (p = .028) and age (p = .002) as shown in Table 8. The odds ratio analysis revealed that Black students were 2.7 times more likely to complete a bachelor's degree than White students. With regard to the independent variable, age, although statistically significant, the analysis revealed that as age increased, the probability of bachelor's degree completion was only slightly increased.

Table 8

Predictors of Student Success for Completing Bachelor's Degree in 8 Years

Predictor Variable	B	SE	Wald	df	Sig	Exp(B)	95% C.I. Exp(B)	
							Lower	Upper
Age	.067	.021	10.072	1	.002	1.069	1.026	1.114
Gender-Female	-.190	.417	.207	1	.649	.827	.366	1.872
First-year GPA	-.014	.172	.008	1	.936	.986	.704	1.383
Military Status								
Active	-.264	.427	.383	1	.536	.768	.333	1.772
Veteran	-.414	.796	.272	1	.603	.661	.139	3.145
Race/Ethnicity								
Black	1.006	.459	4.809	1	.028	2.735	1.113	6.720
Other	-.231	.162	.297	1	.687	.794	.259	2.438
Total Terms Attended	-.283	.148	3.659	1	.056	.753	.564	1.007
Transfer Credit-yes	.674	.420	2.577	1	.108	1.963	.863	4.472
Constant	-4.538	1.080	17.652	1	< .001	.011		

Table 9 displays a comparison of the logistic regression models in relation to each of the dichotomous dependent variables. The bachelor's degree dependent variable had the best model fit without variables (91.3%) and with variables (91.9%). Further, the results of the omnibus tests of model coefficients indicated that each of the dichotomous dependent variables produced a statistically significant model ($p < .001$) as described by Laerd Statistics (2015b). The Hosmer and Lemeshow goodness of fit test results for each of these dependent variables was not statistically significant, indicating that the models were not poorly fitted (Laerd Statistics, 2015b). Finally, Cox and Snell R^2 and Nagelkerke R^2 denoted that the dependent variable, student retention after the first year,

had the largest percentage of variability (40% - 56%) that could be explained by the model (Laerd Statistics, 2015b).

Table 9

Logistic Regression Analyses Model Fit Comparison

Testing Method	Student Retention After First Year	Associate Degree	Bachelor's Degree
Overall without variables	70.5%	81.2%	91.3%
Overall with variables	86.0%	79.9%	91.9%
Omnibus tests of model	$p < .001$	$p < .001$	$p = .001$
Hosmer & Lemeshow Goodness of Fit	$p = .235$	$p = .516$	$p = .143$
Cox & Snell R^2 & Nagelkerke R^2	40%-56%	15%-23%	7%-15%

Final GPA

Age and first-year GPA were the only independent variables that were statistically significant predictors of mean final GPA, $F(2, 390) = 903.47$, $p < .001$, adj. $R^2 = .822$ (See Table 10). As shown in Table 11, the other five predictor variables (military status, race/ethnicity, gender, transfer credit, and total terms) were not significantly related to final GPA when other predictors were statistically controlled.

Table 10

Summary of Multiple Regression Analysis Predicting Final GPA

Variable	*B*	SE_B	β	t	Sig.
First-year GPA	.845	.021	.892	40.778	< .001
Age	.007	.003	.061	2.782	.016
Constant	.162	.097		1.675	.095

Table 11

Variables Excluded from Multiple Regression Analysis Predicting Final GPA

Variable	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
Military status					
Active	.024	1.114	.266	.056	.950
Veteran	-.026	-1.173	.242	-.059	.929
Civilian	-.011	-.526	.599	-.027	.986
Race/ethnicity					
White	.041	1.946	.052	.098	.993
Black	-.042	-1.977	.049	-.100	.986
Other	.001	.053	.957	.003	.994
Gender	-.021	-.986	.325	-.050	.981
Transfer credit	.031	1.433	.153	.072	.950
Total terms attended	-.009	-.406	.685	-.021	.920

To assess the contribution of individual predictors, the *t* ratios for the individual regression slopes were examined (Laerd Statistics, 2015b). Two of the seven predictors were statistically significant: age, $t(385) = 2.78$, $p = .006$; and first-year GPA, $t(385) = 40.78$, $p < .001$. The nature of the predictive relationship of age was expected; the positive sign for the slope for age indicated that higher ages (i.e., being older) predicted higher GPA scores. The predictive relationship of first-year GPA was also as expected;

higher scores on first-year GPA predicted higher scores on final GPA. The strongest unique predictive contribution was from first-year GPA. This finding corresponds with Pascarella and Terenzini's (2005) theory that credited first-year GPA as the most important factor in determining student success.

Summary

One research question guided this study to examine the variables that were predictive of student success. The null hypothesis, which stated that none of the variables were predictive of student success, was rejected. The alternative hypothesis that one or more of the variables were predictive of student success was supported. Student success was defined by four dependent variables: (a) student retention after first-year, (b) associate degree completed, (c) bachelor's degree completed, and (d) final GPA. Of the seven predictor variables, six were identified as statistically significant predictors of one or more dependent variables: (a) military/veteran status, (b) age, (c) race/ethnicity, (d) total terms attended (first-year), (e) transfer credit, and (f) first-year GPA. The dependent variable, student retention after first year, was denoted by two statistically significant predictors, total terms attended ($p < .001$) and transfer credits ($p = .040$). In the case of associate degree completion, there were four predictor variables found to be statistically significant: race/ethnicity-Black ($p = .012$), military status-active duty ($p = .010$), transfer credits ($p < .001$), and total terms in the first year (p .001). Bachelor's degree completion only yielded two statistically significant predictors: age ($p = .002$) and race/ethnicity-Black ($p = .028$). Age ($p = .006$) and first-year GPA ($p < .001$) were shown to be statistically significant predictors for the final GPA success factor.

There was no consistency between the statistically significant predictor variables for associate and bachelor's degree completion. Race/ethnicity was the only predictor shared between both degree completion dependent variables, with Black students more likely to obtain both degrees. This study included a slightly larger minority student sample. Of the students with identified race/ethnicity, there were 136 (35%) Black students and 48 (12%) other combined minority students, which indicates that there were more minority students than White students 128 (33%) in the sample. According to Williams-Klotz and Gansemer-Topf (2017), the percentage of minority military-affiliated students is expected to increase in the future.

The students' total terms attended, and transfer credits were shown to be the most statistically significant factors in determining whether students would persist after the first year. Juszkiewicz (2017) cited poor attendance and irregular enrollment as predictors of student attrition. As Wilson and Smith (2012) elaborated, many transfer students, those students receiving transfer credits, have already overcome many of the issues that plague incoming freshman students. Due to their previous academic experiences, transfer students enter their next academic institution better prepared and more likely to persist (Wilson & Smith, 2012). Active duty military status was only a significant predictor for the acquisition of an associate degree. Out of the 74 students who completed the associate degree within the 4-year timeframe, there were 52 active duty (70%), 7 veterans (9%), and 15 civilians (29%) earning degrees. For the bachelor's degree, there were a total of 34 degrees completed, of which there were 18 active duty (53%), 3 veterans (9%), and 13 civilians (38%) earning degrees. Degree completion

seemed to be distributed the same between the associate and bachelor's degrees, with the active duty military students earning the largest percentage of each degree. As Wilson and Smith (2012) posited, the active duty experience is a useful factor in assisting a student in adapting to college expectations. Gender was the only variable that was not a significant predictor of any of the dependent variables. Therefore, gender was not confirmed as a significant factor in predicting student academic performance, as was also noted by Sulaiman and Mohezar (2006).

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this research was to identify predictors of success factors for military-veteran students compared to their nontraditional peers. Archival student data including preentry student characteristics and first-year academic performance were analyzed to answer one research question with four student success measures: (a) student retention after 1 year, (b) associate degree completion within 4 years, (c) bachelor's degree completion within 8 years, (d) final GPA at student departure. My intention was to address a gap in the literature by increasing the current body of knowledge concerning variables that affect military-veteran student success to provide support for research-based strategies to assist postsecondary institutions, researchers, and other interested entities in improving nontraditional student success and retention, particularly that of military-veteran students.

Student retention is one of the most researched concepts in education (Aljohani, 2016), yet it remains a major concern among educators and academic institutions. For decades, retention research has been focused on the traditional aged students (18–24 years old) who attend traditional postsecondary institutions (Astin & Oseguera, 2005). As higher education continued to evolve, the students entering colleges and universities in the United States began to change. Nontraditional students are characterized as being commuters, having attended multiple colleges, and being older than 24 years while enrolled in an undergraduate academic program (Zerquera et al., 2018). Prior to the mid-1970s, most colleges and universities were predominately dominated by White males; however, it has been estimated that by 2019, diversity in student enrollment will increase

over 20% (Grabowski et al., 2016). However, current literature has not addressed adult learners such as students of color and veterans who are not always included in the literature (Ross-Gordon, 2011). It is estimated that 1.7 million (40%) of the 4.3 million servicemembers who will leave the military between 2003 and 2019 will enroll in a baccalaureate program (Morrison-Beedy & Rossiter, 2018). As a result, additional evidence-based strategies are needed to assist this diverse student population in achieving academic success (Callahan & Jarrat, 2014).

This study illustrated the military-veteran preentrance and academic performance variables that were predictive of student success, where student success was defined by (a) student retention after 1 year, (b) associate degree completion, (c) bachelor's degree completion, and (d) final GPA at departure. The first student success measure was student retention after 1 year. The findings indicated that students who received transfer credits were 2 times more likely to be retained after 1 year than students who did not receive transfer credits. In regard to retention, the completion of each additional academic term during the students' first year of enrollment indicated students were 3.8 times more likely to be retained. The second student success measure was associate degree completion within 4 years. The odds ratio for associate degree completion revealed that active duty military students were 2.5 times more likely to complete an associate degree than veteran or civilian students. Black students were 2.4 times more likely than White students to complete an associate degree. Additionally, receipt of transfer credits increased the odds of obtaining an associate degree by 3.4 times. The odds of associate degree completion were also increased by 1.4 times for each term

attended. The third student success measure was bachelor's degree completion within 8 years. For every year older a student became, the odds that the student would complete the bachelor's degree increased slightly, 1.1 times. The findings also revealed that Black students were 2.7 times more likely to earn a bachelor's degree than White students. In regard to the fourth student success measure, first-year GPA ($p < .001$) and student age ($p = .006$) were the best predictors of final GPA. As expected, the findings revealed that first-year GPA was the most significant predictor of final GPA. More specifically, students who were at least 33 years old who earned a first-year GPA of 2.9 could expect to graduate with approximately the same final GPA of 2.9.

Preentry Characteristics

To summarize the findings of this study in relation to the research question, the findings are divided into two sections. The first section describes student preentry characteristics and how each characteristic related to each outcome variable. The preentry characteristics for this study were: (a) military status, (b) race/ethnicity, (c) age, and (d) gender.

Military status. Environmental and academic variables are constructs influencing nontraditional student retention such as issues outside of school that influence students (Bean & Metzner, 1985). Military status fits within this definition. Active duty military students are subject to the stressors and uncertainty of military life, which could have a negative influence on the student's desire to persist (Callahan & Jarrat, 2014).

In recently published research, the influence of military status on student success was inconclusive. There are studies that indicate military-veteran students are

academically inferior to civilian nontraditional students (e.g., Callahan & Jarrat, 2014). However, higher education institutions should not expect military-veteran students' academic performance to be lower than their civilian counterparts (Vacchi, 2012). The presence of stereotypes concerning military students' academic preparedness in postsecondary institutions is a potential factor in student attrition (Callahan & Jarrat, 2014).

The results of the current study indicated that active duty military students had the highest graduation rate for both associate and bachelor's degree completion. In the case of the 74 associate degrees awarded, active duty military earned 70%, veteran students 9%, and civilian students 18%. Of the 34 students earning a bachelor's degree, the distribution was active duty military 53%, veterans 9%, and civilian students 38%. In the context of this study, military student status was determined to be statistically significant in predicting associate degree completion.

Race/Ethnicity. The variable of race/ethnicity has been analyzed in several retention studies (Cochran, Campbell, Baker, & Leeds, 2014; Ishitani & Reid, 2015). Many of the popular theorists—Spady (1970), Bean (1980), Pascarella and Terenzini (1980), Bean and Metzner (1985), and Tinto (1993)—created student retention models that included family background as a predictive factor in student retention (Aljohani, 2016). However, race and ethnicity have not been clear predictors of student persistence (Cochran et al., 2014). For instance, a minority student's academic failure may be incorrectly attributed to race or ethnicity when the student's lack of academic preparedness maybe the reason (Cochran et al., 2014). A more careful analysis may

surface that the student's lower academic performance may be a product of the student's increasing work responsibilities (Grabowski et al., 2016). Traditionally, minority and economically challenged student populations have been associated with lower retention rates than their majority counterparts (Chung et al., 2014; Otero, Rivas, & Rivera, 2007). Furthermore, these students have represented the largest percentage of first-year college attrition (Otero et al., 2007).

In contrast to some other retention studies where race/ethnicity has been depicted as a risk factor (Grabowski et al., 2016), the current study identified race/ethnicity-Black to be a statistically significant positive predictor of associate and bachelor's degree completion. In determining student success predictors, the characteristic of race/ethnicity has been viewed differently depending on the model used to evaluate the data (Cochran et al., 2014). In studies where race/ethnicity was combined with other student characteristics like age and/or GPA, the effect of race/ethnicity was more clearly identified (Cochran et al., 2014). This was the case in this study where race/ethnicity was combined with first-year GPA, age, military status, and gender.

Age. As the principal indicator of nontraditional student status (usually defined as being more than 24 years old), student age is often the only factor considered in distinguishing traditional and nontraditional students (NCES, 2002). In the current study, age was shown to be statistically significant in predicting bachelor's degree completion and students' final GPA. However, age was not a statistically significant predictor of student retention after the first year and associate degree completion. As consistent with Bean & Metzner's (1985) nontraditional undergraduate attrition model, the students'

demographic data were expected to influence retention (Aljohani, 2016). Age and family responsibilities were credited with providing stronger motivation for nontraditional students' academic performance, which could explain why the nontraditional aged students outperformed the traditional aged students (Grabowski et al., 2016). Findings from the current study indicated that older students achieved better academic performance than the traditional aged students. In this study, there were 393 total student records. There were 265 students with first-year GPAs of 3.0–4.0. Of those 265, 218 students, or 87%, were 25 years old or older.

Gender. Research findings concerning the effect of gender on student retention are somewhat divided (Marrs & Sigler, n.d.). Some researchers have acknowledged the increasing number of female students in postsecondary education as exceeding that of their male counterparts (Grabowski et al., 2016; Williams-Klotz & Gansemer-Topf, 2017). Furthermore, researchers have reported females as the recipients of more than half of all bachelor's degrees awarded, and that they maintained overall better academic performance than male students (Grabowski et al., 2016). In the case of this study, the male students represented 56% (221) of the sample, compared to 44% (172) for the female students. Female students earned 33 (45%) of the associate degrees compared to the male students who earned 41 (55%). Female students earned 13 (38%) of the bachelor's degrees compared to male students who earned 21 (62%) of the bachelor's degrees. In this study, male students earned an overall better final GPA than their female counterparts. Of the 393 total students, 246 (63%) had a final GPA of 3.0, or higher. Male students represented 149 (61%) of the 246 final GPAs of 3.0 or higher.

Researchers studying gender inequity in postsecondary education have linked student performance to academic environment, academic program, and student preparation (Jayanthi, Balakrishnan, Ching, Latiff, & Nasirudeen, 2014). Similar to Metzner and Bean's (1987) conceptual model that indicated student background characteristics were important to student success, in this study, gender was not identified as having a direct relationship with student retention. Gender was not found to be statistically significant in predicting any of the student success factors.

Academic performance measures

This second section describes the relationship of the first-year academic performance measures to the measures of student success. In the current study, the academic measures, all from the first year, were (a) transfer credit, (b) total terms attended, and (c) first-year GPA.

Transfer credit. Receipt of transfer credit is among the most recognized characteristics of the nontraditional student. Nontraditional students have been characterized as having attended multiple institutions prior to degree completion, as well as being older than 24 years of age, and commuters (Hanover Research, 2016). In the current study, transfer credits were found to be statistically significant in predicting student success for two of the four outcomes: retention after the first year and associate degree completion. Of the variables studied, transfer credits were expected to have the greatest influence. This discrepant finding may have resulted from my decision to change transfer credits to a dichotomous variable.

Total terms attended. Inconsistent attendance can lengthen the time required for degree completion, which can add to a student's unwillingness to persist (Shapiro et al., 2012). In the current study, the independent variable, total terms attended, referred to the number of terms that a student attended courses within the first academic year. The 393 students present in the first of six terms in the academic year established the baseline. The second term revealed a 49.6% decrease in student enrollment with a steady decline for the additional four terms. In the sixth term of the academic year, there were only 44 students remaining, which meant that 89% of the initial student sample did not persist through the six terms of the first year. The total terms attended was a statistically significant predictor of retention after the first year as well as associate degree completion.

First-year GPA. Students' college GPA may be the overall best student characteristic to use as a predictor of student persistence (Allen, 2017; Motl, Multon, & Zhao, 2018; Pascarella & Terenzini, 2005). Higher first-year GPA has been associated with student persistence (Bean & Metzner, 1985; Gershenfeld, Hood, & Zhan, 2016; Motl et al., 2018; Pascarella & Terenzini, 2005; Westrick, Le, Robbins, Radunzel, & Schmidt, 2015). In response to the prevailing retention theories, a multiple regression analysis was conducted to determine whether a relationship existed between first-year GPA and student retention after the first year. This study revealed that 265 (67%) of the sample (n=393) achieved 3.0 or higher first-year GPAs. There were 116 (30%) students who persisted through the first year. Of those 116 persisting students, 93 (80%) had GPAs of 3.0 or greater. These findings were consistent with Bean and Metzner's (1985)

model, which indicated that higher first-year GPAs were indicative of student persistence. First-year GPA was only statistically significant ($p < .001$) in predicting final GPA, not the other student success dependent measures.

Limitations

Limitations of this study included the previously noted generalizability concerns. In conducting research with data retrieved from one study site, it is possible that the findings will not generalize to other academic communities. As Cochran et al. (2014) posited, student retention studies are not easily generalized because each student and institution have certain unique characteristics that decrease the uniformity of the studies. Also, the current study entailed analyses of archival data. A limitation of the archival data was the inability to verify the accuracy of the data; the study was limited to the accuracy of the data provided. The use of archival data presented several additional limitations. As stated in Chapter 4, some of the data requested were not provided. For example, student enrollment status identifying whether the student maintained full- or part-time enrollment was not available. This may have affected the findings because in other studies, part-time enrollment has been considered one of the key predictors of student attrition within the first year of enrollment (Ishitani & Reid, 2015).

Another limitation was not knowing the academic or educational goals of the students whose data were used in the study. Student success was measured as retention after the first year, degree completion, and GPA. Archival data did not avail itself to answering questions concerning students' intent to persist to graduation, goal commitment, or intent to transfer to another institution. Bean and Metzner (1985)

postulated that psychological outcomes like goal commitment and intent to leave were among the most influential predictors of attrition. As a result, student attrition rates may be incorrect without the inclusion of these additional data. For example, the data did not indicate what happened to the students who did not persist. Nontraditional students may attend several different institutions prior to degree completion; therefore, the student may be recorded as a dropout when in actuality the student may be attending another institution or have graduated elsewhere.

Military status information was limited. These data only indicated whether students were active duty or veteran students. Not identifying the students' current career information or servicemember's branch of service are limitations in understanding the complexity of environmental factors that have the potential to influence students' academic progress.

Recommendations

As the nontraditional student population continues to change, additional research is needed to develop programs and resources to assist this unique population in becoming academically successful (Grabowski et al., 2016; Vacchi, Hammond, & Diamond, 2017). It has been reported that nontraditional students have a higher attrition rate than traditional students (Grabowski et al., 2016). Among those nontraditional subpopulations, student veterans are among the fastest growing groups (Schiavone & Gentry, 2014; Vacchi et al., 2017). Yet, there is still limited research available regarding academic outcomes of the military-student population (Cass & Hammond, 2015).

A student's decision to persist at an institution until graduation can be dependent on many different factors. As a result, it is recommended that a student survey be created to determine some of the potential barriers that military-veteran nontraditional students encounter. The survey would include questions concerning academic finances, family issues, and career challenges, all of which can affect a nontraditional student's decision to persist. Also, the inclusion of additional data such as enrollment status (part time or full time), student satisfaction, academic goals, and intent to leave would enhance retention studies. New studies should include more than one site. Although research restraints require the study location to remain anonymous, the addition of the school's setting or predominate population can be helpful in gaining additional insight into the student population. The setting of the current study was an education center, or satellite campus, of a liberal arts university. The education center in this study had locations on three different military installations. However, most of the nontraditional student retention data reported in the current literature has been collected from traditional campus settings. Thus, a review of the available literature regarding military-veteran students indicated that many studies were focused on the students' transition into civilian and academic life (Alschuler & Yarab, 2018; Callahan & Jarrat, 2014; Ishitani & Reid, 2015; Kirchner, 2015; Rumann & Hamrick, 2010; Southwell et al., 2018; Vacchi et al., 2017). Because this study was conducted in a setting where military-veteran students were not the minority, this could explain why the military students performed better than other student groups. This finding could prompt the need to conduct studies on different types of campuses to determine how the institutional culture and environment affect student

retention of various subpopulations. In future studies, additional military specific characteristics such as military branch, rank, and length of service time should be included. Also, the preentry variables could be expanded to include students' entry degree program selection and an indication of transfer or first-time student status. Additional research is needed regarding the support services that could assist this student population in degree completion (Kirchner, 2015).

Conclusion

As the demographic landscapes of U.S. colleges and universities continue to evolve, the need for administrators and staff members to understand and embrace a more diverse student population becomes essential for student success (Grabowski et al., 2016). Due to their age, lack of preparation, or career obligations, nontraditional students have been more likely to leave school prior to degree completion (Markle, 2015). As a result, research is needed to identify the student characteristics that can be predictive of student success.

The purpose of this research was to identify predictors of success factors for military-veteran students compared to their nontraditional peers. Because there can be many factors that contribute to a student's decision to persist or to drop out, this study focused on students' preentry characteristics and first-year academic performance. By focusing on factors that were measurable, it was my intent to conduct a study that would gather quantitative data that could be generalized to a larger population. Studying student demographic characteristics is not a new practice. Aljohani (2016) acknowledged the numerous studies and models developed to address the retention decline in U.S. colleges

and universities. As student populations become more diverse, demographic studies can be helpful in developing policies and student services that are more representative of the entire student populations. Conversely, demographics do not provide insight into the students' psychological reasons for departure. In order to gain a more accurate picture of military-veteran, nontraditional students, there needs to be greater consideration of the psychological issues that this population faces. Although it is acknowledged that external factors can be more influential in the nontraditional students' decision to stay or leave, these other factors should be considered.

While research involving nontraditional students has been limited, research involving military-veteran nontraditional students has been more limited. As most research concludes, nontraditional students face external issues that traditional students do not. These issues can serve as either motivators or deterrents that assist the nontraditional student in deciding whether to persist or leave. Although military-veteran students are nontraditional students, military service has its own set of issues that could create an intriguing dichotomy with respect to its effect on student success. In one regard, military service, because of the potential for long hours and unexpected deployments, can be a detriment to academic progress. On the other hand, military service provides members with the much needed discipline to be academically successful.

Expanding studies of nontraditional student retention will ensure that adequate data exist to develop much-needed services and resources for this underrepresented group. In doing so, institutions will be able to assist students in identifying barriers and facilitators of student success. Student success means that more military-veteran students

will achieve the fulfilment of their academic goals, which will translate into a more educated and academically prepared community, workforce, and society.

References

Adelman, C. (2006). The toolbox revisited: Paths to degree completion from high school through college. Washington, DC: U.S. Department of Education.

Ady, M. J. (2009). Factors contributing to the academic success among military students (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Global. (Order no. 305170269)

Allen, M. (2017). *The sage encyclopedia of communication research methods* (vols. 1-4). doi:10.4135/9781483381411

Aljohani, O. (2016). A comprehensive review of the major studies and theoretical models of student retention in higher education. *Higher Education Studies, 6*(2), 1-18. doi:10.5539/hes.v6n2p1

Alschuler, M., & Yarab, J. (2018). Preventing student veteran attrition: What more can we do? *Journal of College Student Retention: Research, Theory & Practice, 20*(1), 47-66. doi:10.1177/1521025116646382

American Council on Education. (2011). Accommodating student veterans with all traumatic brain injury and post-traumatic stress disorder: Tips for campus faculty and staff. Retrieved from http://www.acenet.edu/news-room/Documents/Accommodating-Student-Veterans-with-Traumatic-Brain-Injury-and-Post-Traumatic-Stress-Disorder.pdf

American Council on Education. (2015). College credit for military personnel. Retrieved from http://www.acenet.edu/news-room

Astin, A. W. (1975). *Preventing students from dropping out*. San Francisco, CA: Josey-Bass.

Astin, A. W., & Oseguera, L. (2005). Pre-college and institutional influences on degree attainment. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 245-276). Westport, CT: American Council on Education/Praeger.

Baker, C. N., & Robnett, B. (2012). Race, social support and college student retention: A case study. *Journal of College Student Development, 53*(2), 325-335. doi:10.1353/csd.2012.0025

Bain, L. M., Kim, Y. M., Cook, B. J., & Snead, K. M. (2012). From solider to student II: Assessing campus programs for veterans and service members. Washington, DC: American Council on Education.

Barnard-Brak, L., Bagby, J., Jones, N., & Sulak, T. (2011). Teaching post 9/11 student-veterans with symptoms of PTSD: The influence of faculty perceptions and self-efficacy. *Journal of Vocational Rehabilitation, 35*(1), 29-36. doi:10.3233/JVR-2011-0551

Barr, A. (2015). From the battlefield to the schoolyard: The short-term impact of the Post 9/11 GI Bill. *Journal of Human Resources, 50*(3), 580-613. doi:10.3368/jhr.50.3.580

Bautsch, B. (2014). The effects of concurrent enrollment on the college-going and remedial education rates of Colorado's high school students. Retrieved from https://highered.colorado.gov/academics/concurrent/ConcurrentEnrollmentEffectsAnalysis_2014.pdf

Bean, J. P. (1980). Dropouts and turnover: The synthesis and test of a causal model of student attrition. *Research in Higher Education, 12*(2), 155-187. doi:10.1007/bf00976194

Bean, J. (1982). Conceptual models of student attrition: How theory can help the institutional researcher. *New Directions for Institutional Research, 1982*(36), 17-33. doi:10.1002/ir.37019823604.

Bean, J. (1983). The application of a model of turnover in work organizations to the student attrition process. *Review of Higher Education, 6*(2), 129-148. doi:10.1353/rhe.1983.0026

Bean, J. P. (1985). Interaction effects based on class level in an explanatory model of college-student dropout syndrome. *American Educational Research Journal, 22*(1), 35-64. doi:10.3102/00028312022001035

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional student attrition. *Review of Educational Research, 55*(4), 485-540. doi:10.3102/00346543055004485

Bellafiore, M. (2012). Combat to campus. *Bridgewater Review, 31*(1), 12-14. Retrieved from http://vc.bridgew.edu/br_rev/vol31/iss1/8

Berger, J. B., & Braxton, J. M. (1998). Revisiting Tinto's interactionalist theory of student departure through elaboration: Examining the role of organizational attributes in the persistence process. *Research in Higher Education, 39*(2), 103-119. doi:10.1023/a:1018760513769

Berger, J. B., & Lyons, S. C. (2005). Past to present: A historical look at retention. In A. Seidman (Ed), *College student retention: Formula for student success* (pp. 1-27) Westport, CT: American Council of Education/Praeger.

Berger, J. B., Ramirez, G. B., & Lyon, S. C. (2012). Past to present: A historical look at retention. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 1-30). Westport, CT: American Council of Education/Praeger.

Bergman, M., Gross, J. K., Berry, M., & Shuck, B. (2014). If life happened but a degree didn't: Examining factors that impact adult student persistence. *Journal of Continuing Higher Education, 62*(2), 90-101. doi:10.1080/07377363.2014.915445

Bettinger, E. P., Boatman, A., & Bridget, T. L. (2013). Student supports: Developmental education and other academic programs. *The Future of Children, 23*(1), 93-115. doi:10.1353/foc.2013.0003

Bound, J., & Turner, S. (2002). Going to war and colleges: Did World War II and the GI Bill increase and education attainment for returning veterans? *Journal of Labor Economics, 20*(4), 784-815. doi:10.1086/342012

Brown, P. A., & Gross, C. (2011). Serving those who have served—Managing veteran and military student best practices. *Journal of Continuing Higher Education, 59*(1), 45-49. doi:10.1080/07377363.2011.544982

Busk, P. L. (2010). Statistical conclusion validity. In P. Peterson, E. Baker, & B. McGaw, *International encyclopedia of education* (3rd ed.; pp. 147-151). Oxford, England: Elsevier Science.

Cabrera, A. F., Nora, A., & Castaneda, M. B. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *Journal of Higher Education, 64*(2), 123-139. doi:10.2307/2960026

Callahan, R., & Jarrat, D. (2014). Helping student servicemembers and veterans succeed. *Change: The Magazine of Higher Learning, 46*(2), 36-41. doi:10.1080/00091383.2014.897189

Campbell, C. M., & Misley, J. L. (2013). Student perceptions matter: Early signs of undergraduate student retention/attrition. *Journal of College Student Retention, 14*(4), 467-493. doi:10.2190/cs.14.4.c

Canto, A. I., McMackin, M. L., Hayden, S. C., Jeffrey, K. A., & Osborn, D. S. (2015). Military veterans: Creative counseling with student veterans. *Journal of Poetry Therapy: The Interdisciplinary Journal of Practice, Theory, Research and Education, 28*(2), 147-163. doi:10.1080/08893675.2015.1011473

Carnevale, A., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and education requirments through 2018*. Retrieved from http://www.cew.georgetown.edu

Carnevale, A., Smith, N., & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. Retrieved from http://www.cew.georgetown.edu/recovery2020

Carter, D. F. (2006). Key issues in the persistence of underrepresented minority students. *New Directions for Institutional Research, 130*(33), 33-46. doi:10.1002/ir.178

Caruth, G. D. (2014). Meeting the needs of older students in higher education. *Participatory Educational Research, 1*(2), 21-35. Retrieved from http://files.eric.ed.gov/fulltext/ED552755.pdf

Cass, D., & Hammond, S. (2015). Bridging the gap: Technology and veteran academic success. *Online Learning*, *19*(1). Retrieved from http://olj.onlinelearningconsortium.org/index.php/olj/article/view/517

Cate, C. A. (2014). *Million records project: Research from student veterans of America*. Washington, DC: Student Veterans of America.

Cate, C. A., Lyon, J. S., Schmeling, J., & Bogue, B. Y. (2017). National veteran education success tracker: A report on the academic success of student veterans using the Post-9/11 GI Bill. Washington, DC: Student Veterans of America.

Chappell, J. M. (2012). *A study of prior learning assessment in degree completion* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Global database. (Order No. 3546175)

Chung, E., Turnbull, D., & Chur-Hansen, A. (2014). Who are "non-traditional students"? A systematic review of published definitions in research on mental health of tertiary students. *Educational Research and Reviews, 9*(23), 1224-1238. doi:10.5897/ERR2014.1944

Clayton, G. E., & Cate, T. (2004). Predicting MBA no-shows and graduation success with discriminate analysis. *International Advances in Economic Research, 10*(3), 235-243. doi:10.1007/bf02296218

Cochran, J. D., Campbell, S. M., Baker, H. M., & Leeds, E. M. (2014, February). The role of student characteristics in predicting retention in online courses. *Research in Higher Education, 55*(1), 27-48. doi:10.1007/s11162-013-9305-8

Cole, A. (2009, February 4). Bad economy boosts two-year college enrollment. *Gadsden Times*. Retrieved from http://www.gadsdentimes.com

Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Pearson.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Crosta, P. M. (2014). Intensity and attachment: How the chaotic enrollment patterns of community college students relate to educational outcomes. *Community College Review*, *42*(2), 118-142. doi:10.1177/0091552113518233

Cutler, D., & Lleras-Muney, A. (2006). Educating and health evaluating theories and evidence (NBER Working Paper). Cambridge, MA: National Bureau of Economic Research, Retrieved from http://www.nber.org/papers/w12352.

D'Amico, M. M., & Dika, S. L. (2013). Using data known at the time of admission to predict first-generation college student success. *Journal of College Student Retention: Research, Theory & Practice*, *15*(2). 173-192. doi.10.2190/CS.15.2.c

Daly, D., & Fox, G. (2013). From boots on the ground to seats in the classroom: An assessment of institutional structure and veteran students. *American Journal of Business Research, 6*(1), 5-17. Retrieved from http://www.academia.edu/7543651/

David, K. M., Lee, M. E., Bruce, J. D., Coppedge, B. R., Dickens, D., Friske, J., … Thorman, J. (2013). Barriers to success predict fall-to-fall persistence and overall GPA among community college students. *Journal of Applied Research in the Community College*, *21*(1), 5-13.

Davidson, C., & Wilson, K. (2013-2014). Reassessing Tinto's concept of social and academic integration in student retention. *Journal of College Student Retention*, *15*(3), 329-346. doi:10.2190/cs.15.3.b

Davidson, J. C. (2015). Precollege factors and leading indicators: Increasing transfer and degree completion in a community and technical college system, *Community College Journal of Research and Practice*, *39*(11), 1007-1021, doi:10.1080/10668926.2014.919619

Davies-Vollum, K., & Greengrove, C. (2010). Developing a "gateway" course to prepare nontraditional students for success in upper-division science courses. *Journal of College Science Teaching*, *40*(1), 28-33. Retrieved from https://www.nsta.org/college/

Demetriou, C., & Schmitz-Sciborski, A. (2011). Integration, motivation, strengths and optimism: Retention theories past, present and future. In R. Hayes (Ed.) Proceedings of the 7th National Symposium on Student Retention, 2011, Charleston. (pp. 300-312). Norman, OK: The University of Oklahoma

DeNicco, J., Harrington, P., & Fogg, N. (2015). Factors of one-year college retention in a public state college system. *Research in Higher Education Journal*, *27*(1). Retrieved from https://files.eric.ed.gov/fulltext/EJ1056244.pdf

DiRamio, D., & Jarvis, K. (2011). Special Issue: Veterans in higher education—When Johnny and Jane come marching to campus. *ASHE Higher Education Report, 37*(3), 1-144. doi:10.1002/aehe.v37.3

Donhardt, G. L. (2012). The fourth-year experience: Impediments to degree completion. Veteran Ally. *Innovative Higher Education, 38*(3), 207-221. doi:10.1007/s10755-012-9234-z

Dortch, C. (2011). The Post 9/11 Veteran's Education Assistance Improvement Act of 2010, Enacted. Washington, DC: Congressional Research Service.

Drost, E. A. (2011). Validity and reliability in social science research. *Education Research and Perspectives, 38*(1), 105-124. Retrieved from https://www3.nd.edu/~ggoertz/sgameth/Drost2011.pdf

Education Working Group (2012). Education attainment: Tracking the academic success of servicemembers and veterans. Retrieved from http://www.soc.aascu.org/socconsortium/publicationssoc.html

Elfman, L. (2015). A helping hand: Diverse examines the dos and don'ts of attracting and retaining veteran and military-affiliated students at higher ed institutions. *Diverse: Issues in Higher Education, 32*(19), 18-20. Retrieved from https://diverseeducation.com/

Evans, J., Pellegrino, L., & Hoggan, C. (2015). Supporting veterans at the community college: A review of the literature. *Community College Enterprise, 21*(1), 47. Retrieved from http://www.schoolcraft.edu/a-z-index/community-college-enterprise/search-archives/441#.VjIPcbfnvrc

Ewert, A., Van Puymbroeck, M., Frankel, J., & Overholt, J. (2011). SEER 2010 abstract: Adventure education and the returning military veteran: What do we know? *Journal of Experiential Education, 33*(4), 365-369. doi:10.5193/jee33.4.365

Exposito, S., & Bernheimer, S. (2012). Nontraditional students and institutes of higher education: A conceptual framework. *Journal of Early Childhood Teacher Education*, *33*(2), 178-189. doi:10.1080/10901027.2012.675942

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191. doi:10.3758/bf03193146

Field, A. P. (2005). *Discovering statistics using SPSS: And sex and drugs and rock 'n' roll* (2nd ed.). London: Sage.

Finney, J. E., Perna, L. W., & Callan, P. M. (2014). Renewing the Promise: State Policies to Improve Higher Education Performance. Institute for Research on Higher Education at the University of Pennsylvania Graduate School of Education. Retrieved from http://www.gse.upenn.edu/pdf/irhe/renewing_promise_national.pdf

Fournier, S. M., & Ingeson, E. M. (2014). Age, gender and work experience as predictors of success. *Education & Training*, *56*(1), 59-77. doi:108/ET-10-2012-0093

Ford, D., Northrup, P., & Wiley, L. (2009). Connections, partnerships, opportunities, and programs to enhance success for military students. *New Directions for Student Services*, *2009*(126), 61-69. doi:10.1002/ss.317

Ford, K., & Vignare, K. (2015). The evolving military learner population: A review of the literature. *Online Learning Journal*, *19*(1), 7-30. Retrieved from http://olj.onlinelearningconsortium.org/index.php/olj/article/view/503/122

Garcia-Perez, M. A. (2012). Statistical conclusion validity: Some common threats and simple remedies. *Frontiers in Psychology*, *3*(325), 1-11. doi:10.3389/fpsyg.2012.00325

Gershenfeld, S., Hood, D. W., & Zhan, M. (2016). The role of first-semester GPA in predicting graduation rates of underrepresented students. *Journal of College Student Retention: Research, Theory & Practice*, *17*(4), 469–488. doi:10.1177/1521025115579251

Gilardi, S., & Guglielmetti, C. (2011). University life of non-traditional students: Engagement styles and impact on attrition. *Journal of Higher Education*, *82*(1), 33-53. doi:10.1353/jhe.2011.0005

Goldin, C., Katz, L., & Kuziemko, I. (2006). The homecoming of American college women: The reversal of the college gender gap. *Journal of Economic Perspectives*, *20*(4), 133-156. doi:10.3386/w12139.

Goncalves, S. A., & Trunk, D. (2014). Obstacles to success for the nontraditional student in higher education. *Psi Chi, The International Honor Society in Psychology*, *19*(4), 164-172. doi:10.24839/2164-8204.jn19.4.164

Grabowski, C., Rush, M., Ragen, K., Fayard, V., & Watkin-Lewis, K. (2016). Today's non-traditional student: Challenges to academic success and degree completion. *Inquiries Journal/Student Pulse*, *8*(3). Retrieved from

http://www.inquiriesjournal.com/a?id=1377

The President and Fellows of Harvard College. (2016). Harvard-at-a-glance. Retrieved from Harvard University: http://www.harvard.edu/about-harvard/harvard-glance

Hanover Research (2016, January). *Strategies for attracting and supporting non-traditional students*. Retrieved from http://www.hanoverresearch.com.

Hein, V., Smerdon, B., & Sambolt, M. (2013). *Predictors of post-secondary success*. Washington, D.C.: American Institute for Research.

Hitt, S., Sternberg, M., Wadsworth, S., Vaughan, J., Carlson, R., Dansie, E., & Mohrbacher, M. (2015). The higher education landscape for United States student service members and veterans in Indiana. *Higher Education, 70*(3), 535-550. doi:10.1007/s10734-014-9854-6

Howard, K., & Brode, C. A. (2013). Engaging student veterans on campus. *Campus Activities Programming, 46*(4), 28-31. Retrieved from https://issuu.com/naca/docs/october_2013_plus_web

Hoyert, M. S., & O'Dell, C. D. (2009). Goal orientation and academic failure in traditional and nontraditional aged college students. *College Student Journal, 43*(4), 1052-1061.

Israel, G. D. (1992). Determining Sample Size. PEOD-6. Gainesville, FL: University of Florida Institute of Food and Agriculture Sciences. Retrieved from http://sociology.soc.uoc.gr/socmedia/papageo/metaptyxiakoi/sample_size/samplesize1.pdf

Ishitani, T. T., & Reid, A. M. (2015). First-to-second-year persistence profile of commuter students. *New Directions for Student Services, 150*, 13-26. doi:10.1002/ss.20123

Jayanthi, S. V., Balakrishnan, S., Ching, A. L. S., Latiff, N. A. A., & Nasirudeen, A. (2014). Factors contributing to academic performance of students in a tertiary institution in Singapore. *American Journal of Educational Research, 2*(9), 752-758. doi:10.12691/education-2-9-8

Jenkins, D., & Cho, S. (2012, January). Get with the program. Accelerating community college students' entry into and completion of programs of study. (CCRC working paper No. 32). New York, NY: Community College Research Center, Teachers College Columbia University. Retrieved from: http://ccrc.tc.columbia.ed media/K2/attachments/accelerating-student-entry-completion.pdf

Jenkins, R. (2012). The new 'traditional student' on campuses. *The Chronicle of Higher Education, 59*(8). Retrieved from https://www.chronicle.com/article/The-New-Traditional-on/135012

Jenkens, R. (2009). Nontraditional students: Who are they? *College Student Journal, 43*(4).

Johnson, N. (2012). The institutional costs of student attrition. Delta Cost Project at American Institution for Research. Retrieved from http://www.deltacostproject.org/sites/default/files/products/Delta-Cost-Attrition-Research-Paper.pdf.

Johnson, T. (2009). Ensuring the success of deploying students: A campus view. *New Directions for Student Services, 2009*(126), 55-60. doi:10.1002/ss.316

Jones, K. (2013). Understanding student veterans in transition. *The Qualitative Report, 18*(74), 1-14. Retrieved from https://nsuworks.nova.edu/tqr/vol18/iss37/2

Jones, K., & Fox Garrity, B. (2017). For-profit institutions and student veteran data. *New Directions for Institutional Research, 2016*(171), 75-85. doi:10.1002/ir.20195

Juszkiewicz, J. (2017, November). Trends in Community College Enrollment and Completion Data, 2017. Washington, DC: American Association of Community Colleges.

Kadam, P., & Bhalerao, S. (2010). Sample size calculation. *International Journal of Ayurveda Research, 1*(1), 55-7. doi:10.4103%2F0974-7788.59946

Kasworm, C. E. (2012). U.S. adult higher education: One context of lifelong learning. *International Journal of Continuing Education and Lifelong Learning, 5*(1), 1-19. Retrieved from https://www.informit.org/product-details/615/IJCELL/titles

Kenner, C., & Weinerman, J. (2011). Adult learning theory: Applications to non-traditional college students. *Journal of College Reading and Learning, 41*(2), 87-96. doi:10.1080/10790195.2011.10850344

Kim, Y. M., & Cole, J. S. (2013). Student Veterans/Service Members' Engagement in College and University Life. Washington, DC: American Council of Education.

Kirchner, M. J. (2015). Supporting student veteran transition to college and academic success. *Adult Learning, 26*(3), 116-123. doi:10.1177/1045159515583813

Kuh, G. D., Kinzie, J., Schuh, J. H., Whitt, E. J., & Associates. (2005). *Student success in college: Creating conditions that matter*. San Francisco, CA: Jossey Bass.

Kuh, G. D., Kinzie, J., Buckley, J., Bridges, B., & Hayek, J. (2006). What matters to student success: A review of the literature. Commissioned Report for the National Symposium on Postsecondary Student Success: Spearheading a Dialogue on Student Success. National Postsecondary Education Cooperative. Retrieved from http://nces.ed.gov/npec/pdf/Kuh_Team_Report.pdf.

Laerd Statistics (2015a). Multiple regression using SPSS Statistics. *Statistical tutorials and software guides.* Retrieved from https://statistics.laerd.com/

Laerd Statistics (2015b). Binomial logistic regression using SPSS Statistics. *Statistical tutorials and software guides*. Retrieved from https://statistics.Laerd Statistics.com/

Larsen, M. F., McCarthy, T. J., Moulton, J. G., Page, M. E., & Patel, A. J. (2015). War and marriage: Assortative mating and the World War II GI Bill. *Demography*, *52*(5), 1431-1461. doi:10.1007/s13524-015-0426-x

Levitz, R. N. (2017). 2017 student retention indicators, benchmarks for first-year, second-year, and transfer students. Retrieved from RuffaloNL.com/BenchmarkReports.

Lipsey, M. W. (2000). Statistical conclusion validity for intervention research: A significant ($p < .05$) problem. In L. Bickman, (Ed.), *Validity and social experimentation: Donald Campbell's legacy*. (pp. 101-120). Thousand Oaks, CA: Sage.

Lumina Foundation. (2013). Strategic Plan 2013 to 2016. Indianapolis, IN: Retrieved from https://www.luminafoundation.org/files/resources/2013-lumina-strategic-plan.pdf

Lumina Foundation. (2014). A stronger nation through higher education. Indianapolis, IN: Lumina Foundation for Education, Inc.

Markle, G. (2015). Factors influencing persistence among nontraditional university students. *Adult Educational Quarterly*, *65*(3), 267-285. doi:10.1177/0741713615583085

Marniseishvili, K., & Koch, L. (2011). First-to-second-year persistence of students with disabilities in postsecondary institutions in the United States. *Rehabilitation Counseling Bulletin*, *54*(2), 93-105. doi:10.1177/0034355210382580

Marrs, H., & Sigler, E. A. (n.d.). Male academic performance in college: The possible role of study strategies. *Psychology of Men & Masculinity*, *13*(2), 227–241. doi:10.1037/a0022247

Martinez, D. (2011). What's in your toolbox? Investigating milestones and completions at a local institution based on Adelmen's study, "The Toolbox Revisited." Retrieved from http://www.rpgroup.ort/sites/defualt/files/Martinez-RiversideCCD,pdf

Martorell, P., & Bergman, B. (2013). Understanding the Cost and Quality of Military-Related Education Benefit Programs. Retrieved from https://www.rand.org/pubs/research_reports/RR297.html

Massa, T., & Gogia, L. (2017). Exploring veteran success through state-level administrative data sets. *New Directions for Institutional Research, 171*, 87-95. doi:10.1002/ir.20196

McCardle, T. (2017). A promise deferred: Black veterans' access to higher education through the GI Bill at the University of Florida, 1944-1962. *Educational Studies, 53*(2), 122-134. doi:10.1080/00131946.2017.1283504

McCaslin, S. E., Leach, B., Herbst, E., & Armstrong, K. (2013). Overcoming barriers to care for returning veterans: Expanding services to college campuses. *Journal of Rehabilitation Research and Development, 50*(8), vii-xiv. doi:10.1682/jrrd.2013.09.0204

McNeely, J. H. (1938). College student mortality, U.S. Office of Education, Bulletin 1937, no 11, Washington DC: United States Government Printing Office.

Metzner, B. S., & Bean, J. P. (1987). The estimation of a conceptual model of nontraditional undergraduate student attrition. *Research in Higher Education, 27*(1), 15-38. doi:10.1007/bf00992303

Metzner, B. S., & Black, E. L. & Spohn, R. T. (2015) An analysis of supports for persistence for the military student population. *Online Learning, 19*(1), 31-48. doi:10.24059/olj.v19i1.500

Miller, N. (2014). Nontraditional student graduation rate benchmarks. *Journal of Continuing Higher Education, 62*(3), 141-151. Retrieved from http://eric.ed.gov/?q=source%3a%22Journal+of+Continuing+Higher+Education%22&id=EJ1044974

Monaghan, D., & Attewell, P. (2014). The community college route to bachelor's degree. *Educational Evaluation and Policy Analysis*, *37*(1), 1-22. doi:10.3102/0162373714521865

Moon, T. L., & Schma, G. A. (2011), A proactive approach to serving military and veteran students. *New Directions for Higher Education*, *2011*(153), 53-60. doi:10.1002/he.426

Morrison-Beedy, D., & Rossiter, A. G. (2018). Next set of orders: Best practices for academia to ensure student success and military/veteran focus. *Nurse Education Today, 66*, 175-178. doi:10.1016/j.nedt.2018.02.041

Motl, T. C., Multon, K. D., & Zhao, F. (2018). Persistence at a tribal university: Factors associated with second year enrollment. *Journal of Diversity in Higher Education, 11*(1), 51-66. doi:10.1037/dhe0000034

Muijs, D. (2011). Designing non-experimental studies. In *Doing quantitative research in education with SPSS* (2nd ed., pp. 30-56). doi:10.4135/9781849203241.n3

Meyer, H. (2013). *Fairness in access to higher education in a global perspective: Reconciling excellence, efficiency, and justice*. Rotterdam, Netherlands: Sense.

National Center for Education Statistics (2002). Nontraditional undergraduates, trends in national undergraduate enrollment. Retrieved from https://nces.ed.gov/pubs/web/97578f.asp

National Center for Education Statistics. (2015). Web tables: Demographic and enrollment characteristics of nontraditional undergraduates: 2011-12. Retrieved from https://nces.ed.gov/pubs2015/2015025.pdf

National Center for Education Statistics. (2017). College navigator. Retrieved from http://nces.ed.gov/collegenavigator

National Center for Education Statistics. (2018). Total fall enrollment in degree-granting postsecondary institutions, by level of enrollment, control and level of institution, attendance status, and age of student: 2017. Retrieved from https://nces.ed.gov/programs/digest/d18/tables/dt18_303.50.asp

National Center for Veterans Analysis and Statistics. (2011). Educational attainment of veterans: 2000 to 2009. Washington, DC: U.S. Department of Veterans Affairs.

National Center for Veterans Analysis and Statistics. (2014). Utilization. Retrieved from http://www.va.gov/vetdata/docs/quickfacts/Education_Beneficiaries.pdf.

National Center for Veterans Analysis and Statistics. (2018). Profile of Veterans: 2016, Data from the American Community Survey. Retrieved from https://www.va.gov/vetdata/docs/SpecialReports/Post_911_Veterans_Profile_2016.pdf

National Commission on Higher Education Attainment. (2013). An Open Letter to College and University Leaders: College Completion Must Be Our Priority. Retrieved from https://www.acenet.edu

Nettles, M. T. (2017). *Challenges and opportunities in achieving the national postsecondary degree attainment goals* (Research Report No. RR-17-38). doi:10.1002/ets2.12141

Nyaronga, D., & Toma, R. (2015). Student services members/veterans' mental health: Who is at a greater risk for posttraumatic stress symptoms on college campuses? *Military Psychology*, *27*(4), 223-231. doi:10.1037/mil0000079

Ogren, C. A. (2003). Rethinking the "nontraditional" student from a historical perspective: State normal schools in the late nineteenth and early twentieth centuries. *The Journal of Higher Education, 74*(6), 640-664. doi:10.1080/00221546.2003.11780862

O'Brien, B. (2013, January 11). VA Secretary Shinseki to student veterans: Graduate, graduate, graduate. *WUSF Public Media*. Retrieved from http://wusfnews.wusf.usf.edu/post/va-sec-shinseki-student-vets-graduate-graduate-graduate#stream/0

O'Keefe, P. (2013). A sense of belonging: Improving student retention. *College Student Journal*, *47*(4), 605-613.

Oliven, A. C. (2014). Higher education in the United States and Brazil: How the two systems origins shaped their further development. *Creative Education*, *5*(18), 1662-1672. doi:10.4236/ce.2014.518184

Osborne, N. J. (2013). Veteran Ally. Practical strategies for closing the military-civilian gap on campus. *Innovative Higher Education*, *39*(3), 247-251. doi:10.1007/s10755-013-9274-z

Otero, R., Rivas, O., & Rivera, R. (2007). Predicting persistence of Hispanic students in their 1st year of college. *Journal of Hispanic Higher Education*, *6*(2), 163–173. doi:10.1177/1538192706298993

Park, J. H., & Choi, H. J. (2009). Factors influencing adult learners' decision to drop out or persist in online learning. *Educational Technology & Society, 12*(4), 207–217. Retrieved from https://www.learntechlib.org/p/74987/

Pascarella, E. T., & Terenzini, P. T. (1980). Predicting freshman persistence and voluntary dropout decisions from a theoretical model. *The Journal of Higher Education, 51*(1). 60-75. doi:10.1080/00221546.1980.11780030

Pascarella, E. T., & Terenzini, P. T. (1983). Predicting voluntary freshman year persistence/withdrawal behavior in a residential university: A path analytic validation of Tinto's model. *Journal of Educational Psychology, 75*(2), 215-226. doi:10.1037/0022-0663.75.2.215

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students (Vol. 2): A third decade of research*. San Francisco, CA: Jossey-Bass.

Petty, T. (2014). Motivating first-generation students to academic success and college completion. *College Student Journal, 48*(2), 257-264.

Phelps, S. (2015). The veteran student experience and the academic librarian. *The Journal of Academic Librarianship, 41*(3), 236-240. doi:10.1016/j.acalib.2015.04.001

Pike, G. R., Hansen, M. J., & Childress, J. E. (2014). The influence of students' pre-college characteristics, high school experiences, college expectations, and initial enrollment characteristics on degree attainment. *Journal of College Student Retention, 16*(1), 1-23. doi:10.2190/cs.16.1.a

Queen, B., & Lewis, L. (2014, February). Services and support programs for military members and veterans at postsecondary institutions, 2012-2013. U.S. Department of Education. Retrieved from http://nces. ed.gov/pubs2014/2014017.pdf

Ross-Gordon, J. M. (2011). Supporting the needs of a student population that is no longer nontraditional. *Peer Review*, *13*(1), Retrieved from https://www.aacu.org/publications-research/periodicals/research-adult-learners-supporting-needs-student-population-no

Rumann, C. B., & Hamrick, F. A. (2010), Student veterans in transition: Re-enrolling after war zone deployment. *The Journal of Higher Education, 81*, 431-458. doi:10.1353/jhe.0.0103

Rutkowski, D., & Delandshere, G. (2016). Causal inferences with large scale assessment data: Using a validity framework. *Large-scale Assessments in Education*, *4*(1), 1. doi:10.1186/s40536-016-0019-1

Ryan, S. W., Carlstrom, A. H., Hughley, K. F., & Harris, B. S. (2011). From boots to books: Applying Schlossberg's model to transitioning American veterans. *NACADA Journal*, *31*(1), 55-63. doi:10.12930/0271-9517-31.1.55

Sawyer, R. (2013). Beyond correlations: Usefulness of high school GPA and test scores in making college admissions decisions. *Applied Measurement in Education, 26*(2), 89-112. Retrieved from http://eric.ed.gov/?id=EJ998681

Schatzel, K., Callahan, T., Scott, C. J., & Davis, T. (2011). Reaching the non-traditional stop population: A segmentation approach. *Journal of Marketing for Higher Education*, *21*(1), 47-60. doi:10:1080/08841241.2011.569590

Schiavone, V., & Gentry, D. (2014). Veteran-students in transition at a Midwestern university. *The Journal of Continuing Higher Education*, *62*(1), 29-38, doi:10.1080/07377363.2014.872007

Scott, L. M., & Lewis, C. W. (2012). Nontraditional college students: Assumptions, perceptions, and directions for a meaningful academic experience. *The International Journal of Interdisciplinary Social Sciences*, *6*(4), 1-10. doi:10.18848/1833-1882/cgp/v06i04/52068

Seidman, A. (2012). *College student retention: Formula for student success*. (2nd ed.) Lanham, MD: Rowman & Littlefield.

Semer, C., & Harmening, D. (2015). Exploring significant factors that impact academic success of student veterans in higher education. *Journal of Higher Education Theory and Practice*, *15*(7) 31-43. Retrieved from http://www.m.www.na-businesspress.com/JHETP/SemerC_Web15_7_.pdf

Servicemembers Opportunity Colleges. (2015, Spring). SOC Degree Network System-4 Handbook. Retrieved from http://www.soc.aascu.org/docs/default-source/default-document-library/dns-4-handbook-spring-2015.pdf?sfvrsn=0

Shanker, T., & Drew, C. (2011). The Pentagon seeks biggest military cut since before 9/11. *The New York Times*. Retrieved from http://www.nytimes.com/2011/01/07/us/07military.html?_r=1

Shapiro, D., Dundar, A., Chen, J., Ziskin, M., Park, E., Torres, V., & Chiang, Y. (2012, November). *Completing college: A national view of student attainment rates* (Signature Report No. 4). Herndon, VA: National Student Clearinghouse

Research Center.

Simmons, J. (2012, February 13). Nontraditional students: Time isn't always on their side. *The Hispanic Outlook in Higher Education, 22*, 10-12.

Smith, J. G., Vilhauer, R. P., & Chafos, V. (2017). Do military veteran and civilian students function differently in college? *Journal of American College Health, 65*(1), 76-79. doi:10.1080/07448481.2016.1245193

Southwell, K. H., Whiteman, S. D., Wadsworth, S. M., & Barry, A. E. (2018). The use of university services and student retention: Differential links for student service members of veterans and civilian students. *Journal of College Student Retention: Research, Theory & Practice, 19*(4), 394-412. doi:10.1177/1521025116636133

Spady, W. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange*, 64-85. doi:10.1007/bf02214313

Sparkman, L. A., Maulding, W. S., Roberts, J. G. (2012). Non-cognitive predictors of student success in college. *College Student Journal, 46*(3), 642-652.

Sperry, R. A. (2015). Predicting first-year student success in learning communities: The power of pre-college variables. *Learning Communities Research and Practice, 3*(1), Article 2. Retrieved from https://washingtoncenter.evergreen.edu/lcrpjournal/vol3/iss1/2

Sponsler, B. A., Wesaw, A. J., & Jarrat, D. (2013). Measuring the success of student veterans and active duty military. Retrieved from https://www.naspa.org/rpi/reports/measuring-the-success-of-student-veterans-and-active-duty-military

Sportsman, M., & Thomas, L. (2015). Coming home to school: Challenges and strategies for effective teaching with military veterans. *InSight: A Journal of Scholarly Teaching, 10,* 43-55. Retrieved from https://files.eric.ed.gov/fulltext/EJ1074051.pdf

Stoltzfus, J. C. (2011). Logistic regression: A brief primer. *Academic Emergency Medicine, 18,* 1099-1104. doi:10.1111/j.1553-2712.2011.01185.x

Stone, C. (2008). Listening to individual voices and stories--The mature-age student experience. *Australian Journal of Adult Learning, 48*(2), 263-290. Retrieved from https://files.eric.ed.gov/fulltext/EJ809724.pdf

Sulaiman, A., & Mohezar, S. (2006). Student success factors: Identifying key predictors. *Journal of Education for Business, 81*(6), 328-333. doi:10.3200/joeb.81.6.328-333

Tinto, V. (1975). Dropouts from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89-125. doi:10.2307/1170024

Tinto, V. (1982). The limits of theory and practice in student attrition. *Journal of Higher Education, 53*(6), 687-700. doi:10.2307/1981525

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago, IL: University of Chicago Press.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.

Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *Journal of Higher Education, 68*(6), 599-623. doi:10.1080/00221546.1997.11779003

Tinto, V. (2006). Research and practice of student retention: What next? *Journal of College Student Retention, 8*(1), 1-9. doi:10.2190/c0c4-eft9-eg7w-pwp4

Tinto, V. (2012). Enhancing student success: Taking the classroom success seriously. *The International Journal of the First Year in Higher Education, 3*(1), 1-8. doi:10.5204/intjfyhe.v3i1.119

U.S. Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections (2009). Earnings and unemployment rates of educational attainment. Retrieved from https://www.bls.gov/news.release/archives/ecopro_12102009.htm

U.S. Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections (2016). Earnings and unemployment rates of educational attainment. Retrieved from https://wwww.bls.gov/ep_table_001.htm

U.S. Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections (2018). Unemployment and earnings rates of educational attainment. Retrieved from https://www.bls.gov/emp/tables/unemployment-earnings-education.htm

U.S. Census. (2014). Educational attainment of the population 25 years and over, by selected characteristics: 2014. Retrieved from http://www.census.gov/hhes/socdemo/data/cps/2014/tables.html

U.S. Department of Defense. (2011). Voluntary education programs. Retrieved from http://dtic.mil/whs/directives/corres/pdf/132225p.pdf

U.S. Department of Defense. (2015a). *Memorandum of understanding voluntary education: 2015-2020 DoD volunteer education strategic plan*. Retrieved from https://www.dodmou.com/documents/Resources/Documents/2015-2020%20DoD%20VolEd%20Strategic%20Plan_final_5Aug2015.pdf

U.S. Department of Defense. (2015b). *Tuition assistance: Naval and training professional development center*. Retrieved from https://www.navycollege.navy.mil/ta_info.html

U.S. Department of Defense. (2016, February 9). Department of defense (DoD) releases fiscal year 2017 president's budget proposal. Retrieved from http://www.defense.gov

U.S. Department of Education Office of Federal Student Aid. (n.d.). Glossary. Retrieved from https://studentaid.ed.gov/sa/glossary#Independent_Student

U.S. Department of Education. (2006). A test of leadership: Charting the future of U.S. higher education. Retrieved from http://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/final-report.pdf

U.S. Department of Veterans Affairs. (2013). Education and training veterans benefits administration. Retrieved from http://www.benefits.va.gov/gibill/history.asp

U.S. Department of Veterans Affairs. (2016). Education and training veterans benefits administration post 9/11 GI Bill information handouts. Retrieved from http://www.benefits.va.gov/gibill/docs/pamphlets/ch33_pamphlet.pdf

Vacchi, D. (2012). Veterans in higher education: When Johnny and Jane Come marching to campus (review). *The Review of Higher Education, 36*(1), 138-139. doi:10.1353/rhe.2012.0055

Vacchi, D., & Berger, J. (2014). Student veterans in higher education. In M. Paulsen (Ed.), *Higher education: Handbook of theory and research (Vol. 29*). Netherlands: Springer.

Vacchi, D., Hammond, S., & Diamond, A. (2017). Conceptual models of student veteran college experiences. *New Directions for Institutional Research, 2016*(171), 23-41. doi:10.1002/ir.20192

Veterans Benefits, U.S.C.A 101, Part 1, Chapter 1 Title 38, Public Law 114-38. Retrieved from https://www.law.cornell.edu/uscode/text/38/101

Vittinghoff, E., & McCulloch, C. (2007). Relaxing the rule of ten events per variable in logistic and cox regression. *American Journal of Epidemiology,165*(6), 710-718. doi:10.1093/aje/kwk052

Wagner, M., Cave, A., & Winston, H. (2013, September 3). GI bill covered tuition for nearly a million post-9/11 veterans without tracking their progress. *Center for Public Integrity*. Retrieved from http://www.publicintegrity.org/print/13297

Warren, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Thousand Oaks, CA: Sage.

The White House. (n.d.). Higher education. Retrieved from https://www.whitehouse.gov/issues/education/higher-education

Wyatt, L. G. (2011). Nontraditional student engagement: Increasing adult student success and retention. *The Journal of Continuing Higher Education, 59*(1), 10-20. doi:10.1080/07377363.2011.544977

Weathers, L. (2013, July 1). Lumina Foundation features two colleges for the work seving student veterans: America needs more vets with degrees to meet attainment needs. *Lumina Foundation*. Retrieved from https://www.luminafoundation.org

Westrick, P. L., Le, H., Robbins, S. B., Radunzel, J. M. R., & Schmidt, F. L. (2015). College performance and retention: A meta-analysis of the predictive validities of ACT scores, high school grades, and SES. *Educational Assessment, 20*(1), 23-45. doi:10.1080/10627197.2015.997614

Williams-Klotz, D. N., & Gansemer-Topf, A. M. (2017). Military-connected student academic success at 4-year institutions: A multi-institution study. *Journal of College Student Development, 58*(7), 967-982. doi:10.1353/csd.2017.0078

Wilson, K., & Smith, N. (2012). Understanding the importance of life mission when advising soldiers. *New Directions for Adult and Continuing Education, 136*, 65-75. doi:10.1002/ace.20036

Wood, D. (2012, October 25). Veteran's college drop-out rate soars. *Huffington Post*. Retrieved from http://www.huffingtonpost.com

Zhang, L. (2018). Veterans going to college: Evaluating the impact of the Post-9/11 GI Bill on college enrollment. *Educational, Evaluation and Policy Analysis, 40*(1), 82-102. doi:10.3102/0162373717724002

Zerquera, D. D., Ziskin, M., & Torres, V. (2018). Faculty views of "nontraditional" students: Aligning perspective for student success. *Journal of College Student Retention: Research, Theory & Practice, 20*(1), 29-46. doi:10.1177/1521025116645109

Zogas, A. (2018). US military veterans' difficult transitions back to civilian life and the VA's response. Retrieved from http://watson.brown.edu/costsofwar/papers/2017/us-military-veterans-difficult-transitions-back-civilian-life-and-va-s-response