

DISSERTATION

CAMPUS EMPLOYMENT AS A HIGH IMPACT PRACTICE: RELATIONSHIP TO
ACADEMIC SUCCESS AND PERSISTENCE OF FIRST-GENERATION COLLEGE
STUDENTS

Submitted by

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ABSTRACT

CAMPUS EMPLOYMENT AS A HIGH IMPACT PRACTICE: RELATIONSHIP TO ACADEMIC SUCCESS AND PERSISTENCE OF FIRST-GENERATION COLLEGE STUDENTS

The double burden of spiraling costs and limited financial aid has prompted more college students to work more hours than ever. Yet, working more hours can be detrimental to students' academic success and persistence, and first-generation college students are at even higher risk. While institutions cannot control off campus employment students choose, they do have opportunity to influence the content of jobs on campus. Campus jobs purposefully designed to provide a high-impact experience for students could potentially mitigate risk. The purpose of this study was to investigate how campus employment impacts academic success and persistence of first-generation college students, and compare differences in academic success and persistence of first-generation college students whose campus jobs were configured as high-impact practices with first-generation college students whose campus jobs were not, and make recommendations for practitioners.

Archival datasets were collected from two institutions with a selection of campus jobs configured as high impact practices. The final sample included 1413 records of sophomores who had entered college as first-time, full-time freshmen, and worked on campus during their sophomore year. Regression analyses and factorial ANOVA were used to analyze the data. Results supported much of what has been shown in the literature about first-generation college students: they receive Pell, work more hours, earn lower GPAs and persist at lower rates.

Results with respect to campus employment were inconclusive: type of campus job was not shown to be a significant individual predictor of either success measure, GPA or persistence. Yet, a statistically significant interaction of first-generation student status and type of campus job was found. While caution is recommended in interpreting such results, this interaction may stimulate different thinking for practitioners and researchers alike. Practitioners might consider the extent to which they could structure their campus jobs to include elements of high-impact practices; researchers may be encouraged to design studies of high-impact campus jobs and the extent to which they provide support for first-generation college students.

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DEDICATION

This dissertation is dedicated to my husband, the love of my life, Robert Savoca, whose love has made all the difference in my universe for the last 30 years.

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CHAPTER 1: INTRODUCTION

Background

Rising College Costs and Declining Financial Aid

Ever-rising college costs are front-of-mind for students and their families (Eagan, Lozano, Hurtado, & Case, 2013). The 2013 national survey of more than 100,000 incoming freshman conducted by the Cooperative Institutional Research Program (CIRP) revealed that close to half of incoming freshmen reported that cost (46%) and financial aid (49%) were very important considerations in their decisions to enroll. Among first-generation college students, 54% were very concerned about cost (Eagan et al., 2013).

Moreover, financial aid support has not kept pace with rising costs, widening the gap between a family's real ability to pay and the true cost of a college education (Baum, Ma, & Payea, 2013; Wyer, 2014). Yet the economic advantages enjoyed by college graduates are difficult to ignore: college graduates earn more money and realize faster income growth, enjoy better job satisfaction and social mobility, are less likely to be unemployed, less likely to live in poverty, are healthier, and achieve higher total earnings over their lifetimes than high school graduates (Baum et al., 2013). Enrollments in higher education are higher than they have ever been (National Center for Education Statistics, 2014) and families are shouldering a greater percentage of the financial costs of higher education than ever before (Sallie Mae, 2014).

College Students Are Working More Hours

Thus it follows that for most college students, there is no longer a question about whether or not they should work while attending school; working has become a necessity (Kuh, 2008; Tuttle, McKinney, & Rago, 2005). Several scholars have confirmed that the number of college students working while attending school full-time has steadily increased (Beerens, Magi, &

Lill, 2011; Perna, 2010; Pike, Kuh, & Massa-McKinley, 2008). The 2011 U.S. Census survey reported 14,184,000 college students working while enrolled in undergraduate programs, which accounted for almost three-quarters (72%) of all undergraduate college students at the time of the survey (Davis, 2012). Other studies have reported the percentage of undergraduates who work while attending college is closer to 80% (Riggert, Boyle, Petrosko, Ash, & Rude-Parkins, 2006).

As the number of working college students grows, the number of hours they work is also rising (Perna, 2010). Yet, working more than 15-20 hours per week while attending college full-time has been shown to detract from academic achievement (Astin, 1993; Hawkins, Smith, Hawkins II, & Grant, 2005; King, 2006; Pascarella & Terenzini, 2005; Rochford, Connolly, & Drennan, 2009; Stinebricker & Stinebricker, 2003) and persistence (Ehrenberg & Sherman, 1987; Kuh, 2009; Lens, Lacante, Vansteekiste, & Herrera, 2005; Orozco & Cauthen, 2009; Pascarella & Terenzini, 2005; Perna, 2010). This trend of students having to work more hours to pay for increasing college costs despite work's negative impact on success is alarming.

First-Generation College Students Are At Higher Risk

Risk of attrition is especially high for underserved students, such as first-generation students and those from low-income families (Deffendall, Knutson, & Sacks, 2011; Engle & Tinto, 2008; Finley & McNair, 2013). Low-income college students lack understanding of financial aid policies and are baffled by the financial aid system, viewing increased work hours to pay for school as a more realistic option (Ziskin, Fischer, Torres, Pellicciotti, & Player-Sanders, 2014). First-generation college students tend to work more hours (McCormick, Moore, & Kuh, 2010), make work a priority over school (Billson & Terry, 1982; Engle, Bermeo, & O'Brien, 2006), work off campus (Engle & Tinto, 2008), and are significantly less engaged with

the campus community (Grayson, 1997; Pike & Kuh, 2005) as compared to students with parents who have earned a college degree.

Some researchers, however, have questioned prevailing ideas about the negative impact of working while attending college on success. The literature on this topic is mixed (Pike et al., 2008; McCormick et al., 2010; Riggert et al., 2006; Robotham, 2012; Warren, 2002). Several studies have shown that some work can benefit student academic performance and persistence (Choy, 2001; King, 2006; Orozco & Cauthen 2009; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1998; Perna, 2010; Riggert et al., 2006; Van Der Water, 1992; Wilkie & Jones, 1996), as well as help students acquire transferrable skills, and develop competencies and self-confidence (Empie, 2011; Pascarella & Terenzini, 2005; Shaw & Ogilvie, 2010). Furthermore, working on campus has been cited in the literature as keeping students connected to the campus in ways that enhance student engagement (Derous & Ryan, 2008; Flowers, 2010).

Engagement and High Impact Practices Mitigate Risk of Attrition

Compelling evidence suggests that student engagement is significantly and positively associated with higher grades and persistence (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). In fact, results from the 2008 National Survey of Student Engagement suggest that campus based work is positively associated with several dimensions of student engagement and national benchmarks for effective educational practices (McCormick et al., 2010). However, which aspects of campus employment contribute to student success is less clear.

The gold standard for effective educational practices is the *high-impact practice*, a term coined by Kuh (2008) to describe a set of educational strategies by which the essential learning outcomes of a college education can be achieved. High impact practices include: first-year seminars, common intellectual experiences, learning communities, writing intensive courses,

collaborative assignments, undergraduate research, diversity and global learning, service learning, internships, and senior capstone projects (AACU, 2014). Data from the 2007 administration of the National Survey of Student Engagement (NSSE), revealed that students who participated in at least two of the high impact practices, one during the first year and a second one later in the college years, reported deeper learning and greater personal and practical gains (Kuh et al., 2008). Moreover, students from underrepresented groups such as first-generation college students and ethnic minorities, reported greater gains from participation in high impact practices than majority students. Aspects of these practices that make them high-impact include: significant time invested in an educationally purposeful activity, meaningful interaction and the development of relationships with faculty and peers, experiencing diversity, working as a member of a team to solve problems, the opportunity to apply learning to authentic situations, and feedback on performance (Kuh, 2008).

Three of the high impact practices, service learning, research, and internships, take place outside of the traditional classroom environment. These practices are often referred to in the literature as experiential learning, and are known to positively contribute to student learning, academic achievement, and persistence (Hesser, 2014) as well as employability in the job market beyond university (Mihail, 2006; Hart Research Associates, 2006). Experiential learning, also referred to as applied learning, enables students to apply classroom knowledge to real world situations, gain authentic work experience, hone career-related skills, develop a network of professional contacts, explore career options, and through guided reflection expand self-understanding and clarify career goals (King, 2014; Lewis, 2010). Moreover, applied learning experiences like internships have been positively related to academic achievement (Astin, 1993; Patel, Brinkman, & Coughlan, 2012). If a campus job was intentionally structured like the

aforementioned applied learning experiences, it may also afford similar opportunities and similar benefits to students.

Statement of the Problem

First-generation college students tend to work more hours while attending college and are at higher risk for failure and attrition (Pascarella & Terenzini, 2005; Perna, 2010). High-impact practices have the potential to mitigate the effects of detractors on academic success and persistence, especially for at-risk students like first-generation college students. The problem is that first-generation college students participate in fewer high-impact practices than continuing generation college students (Kuh, 2008). Institutions of higher education may improve the likelihood of success by increasing the number of high impact practices available to these students. This study aims to investigate campus jobs and the likelihood that campus jobs configured like high-impact practices may relate positively to the academic success and persistence of first-generation college students.

Campus jobs represent a potentially untapped source of high-impact practices to improve persistence and academic success of first-generation college students. Campus jobs have the potential to provide similar opportunities for engagement and learning as internships, yet few studies have looked at the substance of campus jobs and no published research was found that has connected campus jobs to high impact practices. Kuh (2009) described campus employment as “a target of opportunity...Working on campus could become a developmentally powerful experience for more students if...professionals who supervise a student in their employ intentionally created some of the same conditions that characterize the high impact activities” (p. 698).

Purpose of the Study

Given that first-generation college students may benefit from participating in more high-impact practices, as well as Kuh's (2008) appeal for institutions to consider how campus employment might provide a high-impact experience, this study aims to investigate the relationship that campus jobs configured as high-impact practices have with the success of first-generation college students. The purpose of this study is to investigate how campus employment impacts the academic success and persistence of first-generation college students, as well as to compare differences in academic success and persistence between first-generation college students whose campus jobs are configured as high impact practices and first-generation college students whose campus jobs are not.

Theoretical Framework

The theoretical framework upon which this study is based is Astin's Input-Environment-Output (I-E-O) model, which was developed to bolster assessment work in higher education (Thurmond & Popkess-Vawter, 2003). The first component of the framework is the Input, which Astin (1993) described as characteristics students bring with them to college. In this study, the primary input variable of concern is the first-generation status of college students. Secondary student input variables in this study are Pell recipient and cumulative credits earned prior to the work period. The second component of the model is the Environment, which represents the experiences students have during college (Astin, 1993). In this study, the primary environmental variable of interest is the campus job, which will be categorized as high-impact or not high-impact. Secondary environmental variables that will be also examined as part of the model include residence on or off campus, number of credits attempted during the work period, total hours worked on campus, and pay rate. The third component, Output, refers to the desired result

(Astin, 1993). Output variables in this study are overall GPA, change in GPA from before the work period to after the work period, and persistence to the next academic term. Figure 1 below depicts the study's theoretical framework.

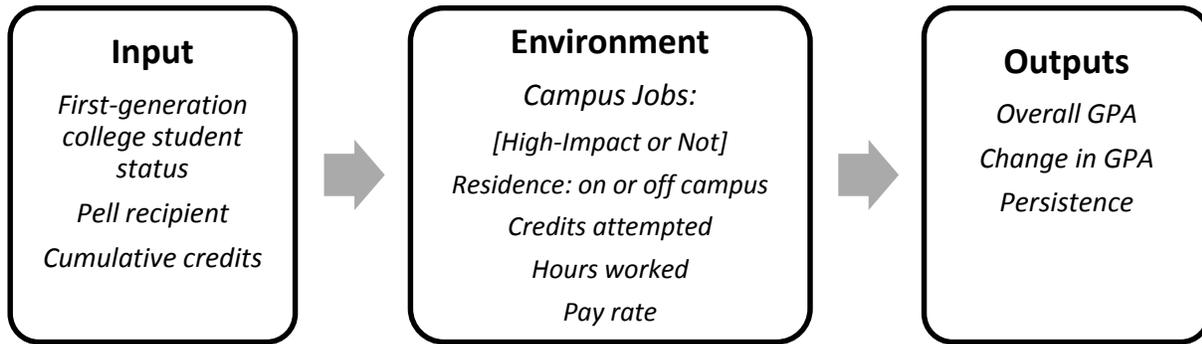


Figure 1 Astin's I-E-O framework as the foundation for this study

Research Questions

This study is guided by six research questions:

1. How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (type of campus job: high impact or not, credits attempted during the work period, total hours worked on campus, and pay rate) predict overall GPA?
2. Are there differences in overall GPA for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on overall GPA?

- a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to overall GPA?
 - b. Is there a statistically significant difference between high-impact campus jobs and non-high-impact campus jobs with regard to overall GPA?
 - c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to overall GPA?
3. How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (type of campus job: high impact or not, credits attempted during the work period, total hours worked on campus, and pay rate) predict change in GPA?
4. Are there differences in change in GPA for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on change in GPA?
 - a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to change in GPA?
 - b. Is there a statistically significant difference between high-impact campus jobs and non-high-impact campus jobs with regard to change in GPA?
 - c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to change in GPA?

5. How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (type of campus job: high impact or not, credits attempted during the work period, total hours worked on campus, and pay rate) predict persistence from sophomore to junior year?
6. Are there differences in persistence from sophomore to junior year for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on persistence from sophomore to junior year?
 - a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to persistence from sophomore to junior year?
 - b. Is there a statistically significant difference between high-impact campus jobs and non-high-impact campus jobs with regard to persistence from sophomore to junior year?
 - c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to persistence from sophomore to junior year?

Definition of Terms

First-generation college students

Scholars vary as to the exact definition, but the rationale for the label is consistent: a first-generation college student is one whose parents possess limited understanding of the differences between the secondary school learning environment and the post-secondary

environment (Choy, 2001; Nunez & Cuccaro-Alamin, 1998). Such differences include faculty expectations, the amount of time that college students think they should dedicate to studying, the importance of campus involvement, and the value of relationships with peers from different backgrounds. First-generation college students do not have the social capital to know what to expect when they arrive, nor how to plan for an effective transition from high school to college (McCarron & Inkelas, 2006; Reid & Moore, 2008; Richardson & Skinner, 1992). In this study, the term first-generation college student refers to students whose parents did not earn a bachelor's degree.

High-impact practices

Educational strategies by which the essential learning outcomes of a college education can be achieved are termed high-impact practices, and include: first-year seminars, common intellectual experiences, learning communities, writing intensive courses, collaborative assignments, undergraduate research, diversity and global learning, service learning, internships, and senior capstone projects (Kuh, 2008). Key for this study are the elements of high-impact practices that make them high-impact: time invested in a task, meaningful interaction with faculty and peers, experiencing diversity, working as a member of a team, the application of learning to authentic situations, and feedback on performance (Kuh, 2008).

Campus Jobs

It may appear simplistic to define the term campus job, but for the purpose of this research project, parameters structure the study. A campus job is defined as any paid, part-time position exclusively for enrolled students that is physically located on the campus, regardless of location within the campus, funding source, title, or level of job.

High Impact Campus Jobs

For the purpose of this study a high impact campus job is one that has been designated by the institution as being purposefully and strategically configured to be a high impact practice. Specifically this includes jobs which are educationally purposeful; encourage students to engage with and reflect upon diversity; enable students to apply knowledge and skills to real world situations; promote skill development in communication, time management, problem solving, and conflict resolution; connect the work to academics and career intentions; as well as involve structured conversations between students and supervisors to discuss the students' reflection of learning and growth, and the connections between their work, their studies, and their future.

Academic Achievement

It is commonly held that GPA is a standard measure for academic achievement in college.

Persistence

Persistence describes a student's continued enrollment, vis-à-vis the student's individual and intentional action to re-enroll (Reason, 2009). Reason (2009) suggests that sometimes this term is conflated with retention, which refers to institutional success in retaining students. For the purpose of this study, persistence refers to students' continued enrollment as measured by their enrollment in the fall semester of the junior year.

Delimitations

The population will be delimited by the following criteria: (1) the sample will be drawn from undergraduates who enrolled as first-time, full-time freshmen in the fall of 2010; (2) among those students, only those who worked on campus during their sophomore year, either fall 2011

and spring 2012 semesters, will be included; (3) Graduate students and part-time students will be excluded from the study.

Limitations

Given that the sample will be drawn from two public research universities, one in the northeast and one in the midwest, each of which primarily enrolls a traditional-aged college student population, the results of this study may not be generalized to all types of institutions, and certainly not to institutions whose population contains a significant number of non-traditional adult students. The researcher acknowledges that this study is limited to campus employment only; the extent to which students were employed off campus during the study period is unknown. Lastly, while each institution from which the sample will be drawn has similar rationale for why campus jobs were designated as high-impact or not, there is no way to guarantee that similar positions at different campuses share exactly the same elements of high impact practices.

Significance of the Study

This study addresses a gap in the literature by focusing on the substance of campus jobs and their relationship to the academic success and persistence of first-generation college students. By identifying the relationship that high-impact campus jobs have to the academic achievement and persistence of first-generation college students, this study also aims to expand the scope of what are presently considered high-impact practices. As Kuh (2009) stated, “Working on campus could become a developmentally powerful experience for more students if...professionals who supervise a student in their employ intentionally created some of the same conditions that characterize the high impact activities” (p.698). Outcomes of this study may be relevant to institutional stakeholders involved in student employment programs and may also

impact policy and placement of first-generation college students in campus employment positions.

Researcher Perspective

Most of my professional life has been spent in career development where I have counseled college students through the process of self-understanding and career exploration. I have coached students applying for internships, co-ops, and other authentic career-relevant work experiences, where they learn, gain skills, develop career focus, and improve their marketability for future employment or further education. As a department director, I oversee a highly successful student paraprofessional program and have witnessed the transformation of our student interns and employees as they gain skills and confidence during their time at work. In the absence of a student employment office, I sought to improve the overall campus job experience for students at my institution, helping to form the Student Employee Learning Outcomes program within our Division of Student Affairs and coaching departmental supervisors in structuring their campus jobs with elements of high-impact practices to benefit both the employer and the student.

I am also personally drawn to the first-generation college student population as I was a member of this population myself and work with so many first-generation college students at my current institution. I recall so well the feeling of not having a clue as to how to prepare for my future and I was lucky enough to stumble upon a campus job that changed my life in many positive ways. My long-term goal is to pursue a research agenda that will guide institutions towards policy and programmatic initiatives that will improve access to valuable campus work experiences that could improve first-generation college students' academic and career success.

Summary

In sum, the double burden of spiraling costs and limited financial aid has prompted more college students to work more hours than ever. Yet, research has clearly shown that working more hours can be detrimental to students' academic success and persistence, and first-generation college students are at higher risk. While institutions cannot control, nor influence, off campus employment students choose, they do have the opportunity to influence campus jobs. Campus jobs purposefully and strategically designed to provide a high-impact experience for students could potentially mitigate the risk and support the success of first-generation college students.

Therefore this study will investigate the relationship of high-impact campus jobs to the success of first-generation college students. The outcomes of this study may be relevant to institutional stakeholders involved in student employment programs and may also impact policy and placement of first-generation college students in campus employment positions.

The organization of this dissertation is as follows: This first chapter provided the reader with a mental map of the study, including the rationale and context of the research problem, the purpose and significance of the study, and the research questions which will guide the study. The second chapter provides a compilation of the literature about first-generation college students, student engagement and high-impact practices, and college student employment. The third chapter describes the quantitative research methodology and design of the study. Chapter four will review results of the statistical analyses. A discussion of the results and implications for practice, as well as some ideas for future research will be presented in the last chapter.

CHAPTER 2: REVIEW OF LITERATURE

This literature review is divided into several sections. First, what is known about first-generation college students will be presented, focusing on pre-college characteristics and in-school experiences that place them at risk for lower grades and attrition. Next, literature on student engagement and high-impact practices will be described, focusing on research that has shown how these practices have impacted first-generation college student success. Following the high-impact practices, the student employment literature will be reviewed; it is robust, yet mixed. Studies summarized include those that demonstrate both negative and positive outcomes of work on the learning, skill development, academic success, and persistence of college students in general, and the impact on first-generation college students specifically.

First-Generation College Students

An extensive body of empirical research examining the first-generation college student experience exists. Literature is replete with studies that look at three major aspects of the first-generation college student experience and the relationship of these factors to first-generation student success: pre-college characteristics and preparation, transition to the college environment, and persistence to degree (Engle et al, 2006; Warburton, Bugarin, & Nunez, 2001). Personal characteristics typical of first-generation college students mirror the characteristics that research studies have shown put all students at higher risk for stopping out or leaving college completely. Engle and Tinto's (2008) study identified the following risk factors which negatively impact a student's ability to earn a college degree: low income, first-generation status, working full-time while in school, being financially independent from parents, and having dependent children. These researchers further noted that these factors are additive, meaning students with more than one of the risk factors are at greater risk. According to a 2008 Pell

Institute report on success factors for low-income first-generation college students, among those who left college without a degree after six years, 43% were either low income or first generation, yet 38% possessed both risk attributes (Engle & Tinto, 2008). In addition, the 46% six-year graduation rate for low income, first-generation students paled in comparison to 83% for more affluent, continuing-generation students (Engle & Tinto, 2008). The level of academic rigor at the high school level also relates to persistence (Reason, 2009), as does student satisfaction with financial support received from the institution (Cabrera, Nora, & Castaneda, 1992).

Pre-College Characteristics and Preparation

A substantial number of research studies have shown that first-generation college students are more likely to come from low socioeconomic backgrounds, be members of underrepresented minority groups, and have lower expectations for educational attainment (Bui, 2002; Choy, 2001; Engle et al., 2006; Engle & Tinto, 2008; Lohfink & Paulsen, 2005; McCarron & Inkelas, 2006; Penrose, 2002; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; Thering, 2010). First-generation college students are less likely to have rigorous high school coursework and good study skills (Terenzini et al., 1996; Warburton et al., 2001), as well as lower test scores and lower high school GPA (Atherton, 2014). They are also more likely to enroll in a two-year college (Choy, 2001; Reid & Moore, 2008). First-generation college students have less parental support (Bui, 2002; Billson & Terry, 1982; Choy, 2001; Dennis, Phinney, & Chuateco, 2005; Engle et al., 2006; Grayson, 1997; Lohfink & Paulsen, 2005; McCarron & Inkelas, 2006; Terenzini et al., 1996) and tend to lack knowledge about the college environment, overall expectations of students, and resources available to support their success (Coffman, 2011; Smith, Miller, & Bermeo, 2009). Motivations of first-generation college students to attend college tend

to be practical, focusing on improving their financial status (Bui, 2002; Dennis et al., 2005; Coffman, 2011; Martinez, Sher, Krull, & Wood, 2009; Thering, 2010).

Jenkins, Miyazaki, and Janosik (2009) reviewed results of an annual freshman survey completed by first year students at an urban university in 2004. The sample included 194 respondents, 63.4% of whom were first-generation. Their comparative analysis confirmed much of what the literature shows: first-generation college students were more likely to have lower family incomes, work more hours, and feel less prepared for the academic rigor of college.

Thering's (2010) narrative exploration of the experiences of 18 first-generation Euro-American college students and what led them to attend college highlighted the practical outcomes these students expected from a college degree, such as access to better paying jobs. Financial security was paramount for students in this study, who saw their working class parents struggle and miss career opportunities they may have had with a college degree. To these students, college was a path to economic security that they had not previously experienced, and the degree was a credential to give them a competitive advantage in the global economy. This means-to-an-end view of college by first-generation students is supported by several research studies (Nunez & Cuccaro-Alamin, 1998; Snell, 2008; Terenzini, Pascarella, & Blimling, 1999).

Terenzini et al.'s (1999) longitudinal study of 2685 undergraduates from 23 universities using data from the National Study of Student Learning showed significant differences between first and continuing-generation college students on several pre-college characteristics. Results of the regression analyses showed that first-generation college students had significantly lower family income and family encouragement to attend college than continuing-generation students, as well as lower overall educational aspirations.

These findings are consistent with other published research on first-generation and low-income students, which document their need for developmental and remedial coursework (Smith et al., 2009, Warburton et al., 2001). In addition to inadequate academic preparation in high school, first-generation college students have been purported to possess lower academic self-efficacy than their continuing generation counterparts (Cruce, Kinzie, Williams, Morelon, & Yu, 2005). A 2014 study by Atherton, however, which analyzed data from the Cooperative Institutional Research Program (CIRP) survey, found different results. He compared self-ratings of overall academic preparedness between first-generation and continuing generation students. Among the 6280 students in the sample, 39% identified as first-generation. Contrary to previous studies, no statistically significant differences were found between first-generation and continuing-generation students relative to their self-rated academic preparedness. The researcher in this study suggested that first-generation college students lacked knowledge about the relationship between high school performance and college success, and therefore did not perceive that they were disadvantaged (Atherton, 2014).

Motivations, Apprehensions, and Conflicts

Bui (2002) compared first-generation freshman students in a specialized support program at a public research university in the west to their second-generation counterparts, and found significant differences in reasons for attending college. First-generation students cited career and financial concerns more frequently. The need to gain status and respect for the family was a key consideration for first-generation students. He also found that first-generation students felt less prepared for college overall, were less knowledgeable about the college environment, worried more about finances, and feared failure.

Luna de la Rosa (2006) surveyed 3609 high school 11th and 12th graders in inner city Los Angeles. Like in Bui's (2002) study, these students were apprehensive about college admission and more than half, 54.2%, were concerned about the complexity of the financial aid process. In this study, fewer than 18% of parents had completed a college degree and fewer than 16% of parents had completed some college. Aspirations for college degree attainment were higher for students in this study whose parents had completed some college or earned a degree (Luna de la Rosa, 2006).

Two qualitative studies (Leyva, 2011; Lowery-Hart & Pacheco, 2011) underscored the difficulty first-generation college students have in reconciling the identities and cultural expectations they bring with them to college with the emerging professional identities they develop during college. Lowery-Hart and Pacheco's (2011) study of 12 students enrolled in a special program for first-generation college students at a university in the southwest, found that students struggled with the desire to fit in to their new college environs while simultaneously wanting to distance themselves from it. They expressed fear of exposing their backgrounds and true selves to their continuing-generation classmates. This tension between family and college was also revealed by Leyva's (2011) in-depth interviews of six Latinas in a social work graduate program. These women struggled to integrate their new professional identity as social workers, an identity which expected them to be assertive leaders, with their familial identity, where their parents and relatives expected them to be docile and subservient.

Like the previous two qualitative explorations of student perceptions, Stieha's (2010) phenomenological study of one first-generation college student's experience also gave voice to the internal conflict experienced when trying to navigate expectations of family while managing different expectations of professors and advisors. This study illuminated the struggle between

the student's desire to maintain strong family connections by being home as often as possible after working 20 to 25 hours per week, with her desire to get more involved in the academic and social life of the campus.

Concern for meeting parental expectations was also found by London (1989) whose narrative study of 15 students attending different colleges from a northeastern city examined the social histories and psychodynamics of families and their effects on students. Some participants described the challenges of separating from family and becoming independent; others questioned their own motives as to whether they were attending college for themselves or their parents. Most participants in this study emphasized the strong need not to disappoint the family. In a subsequent article about this same population, London (1992) described the challenges of balancing the new knowledge; new ways of thinking; new music, styles, clothes; and perhaps new politics brought on by the college experience, with family and cultural practices left behind.

Before they even step foot on campus, first-generation college students bring attributes with them that may negatively impact success. These attributes vary from less rigorous academic preparation and knowledge about college, to family characteristics and expectations, to motivations for education, lower family income, less family support to attend college, and lower academic self-efficacy.

In-School Experiences

In addition to differences prior to college entry, first-generation college students as a group spend time in college differently and view aspects of the college experience differently than continuing-generation students. Compared to their continuing-generation counterparts, first-generation college students are more likely to live off campus (Engle & Tinto, 2008; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Pike & Kuh, 2005), take remedial courses

(Engle & Tinto, 2008) complete fewer credit hours (Pascarella et al., 2004; Terenzini et al., 1996), and work off campus (Engle & Tinto, 2008). First-generation students tend to make work a priority over school (Billson & Terry, 1982; Engle et al., 2006), work more hours (Martinez et al., 2009, McCormick et al., 2010; Terenzini et al., 1996), work full-time (Martinez et al., 2009; Pascarella et al., 2004), spend less time on campus (Engle & Tinto, 2008; Grayson, 1997; Pike & Kuh, 2005), spend fewer hours studying (Terenzini et al., 1996), and are less involved in campus life (Billson & Terry, 1982; Engle & Tinto, 2008) than continuing-generation students. They experience stress while they attempt to straddle two worlds (Dennis et al., 2005; Engle et al., 2006; Engle & Tinto, 2008; London, 1989; Lowery-Hart & Pacheco, 2011) and tend to view the campus as isolating and unsupportive (Engle et al., 2006; Pike & Kuh, 2005).

Academic Achievement and Persistence

First-generation college students have been found to have lower GPAs and a higher risk for attrition than their continuing-generation student counterparts (Deffendall et al., 2011; Engle & Tinto, 2008; Finley & McNair, 2013; Martinez et al., 2009).

Martinez et al. (2009) surveyed 3290 students over four years and examined their official academic records to understand factors that may have mediated the effect of first-generation college student status on attrition. Among their findings was a statistically significant difference in GPAs between first-generation college students and continuing generation college students; first-generation college students had significantly lower GPAs than continuing generation college students. Two other research studies found similar results when comparing GPAs of first-generation college students with continuing generation students. Riehl (1994) looked at first-term GPAs of 2190 freshmen, 35% of whom identified as first generation, at a public university in the midwest. His comparison of first term GPA showed that first-generation

college students had significantly lower GPAs than continuing generation students. Grayson (1997) examined records of 1849 first year students at a university in Canada and also found that first-generation college students had lower first term GPAs than continuing education students.

Ishitani (2006) used event history modeling to examine attrition behavior for a national sample of 4427 college students in the National Educational Longitudinal Study 1988-2000 and the Postsecondary Education Transcript Study. His findings indicated that first-generation college students were at significantly higher risk for leaving college each year than continuing-generation college students. The risk for leaving college was greatest for these students between the sophomore and junior year. First-generation students in the sample who did graduate took more time to complete their degrees. There was a significant negative effect of first-generation college student status on graduation rates at the fourth, fifth, and sixth year (Ishitani, 2006).

Persistence studies have also been conducted at the institutional level. Deffendall et al. (2011) compared persistence of first and second generation students entering as first-time, full-timers over five years at a university in the south. Their sample of 4111 students included 718, or 17%, first-generation college students. Entering high school GPAs, first fall term GPAs, and first year GPA were all lower for first-generation college students. Year to year retention rates were also lower for first-generation college students, as was the overall four year graduation rate, 20.5% for first-generation college students versus 29.2% for continuing generation students (Deffendall et al., 2011). Riehl's (1994) study of 2190 freshmen at a midwestern university found that first-generation college students in this sample persisted at significantly lower rates from first to second semester as well as from first year to second year than continuing-generation students. Another institutional level study that employed more complex statistics was conducted by Wohlgemuth, Whalen, Sullivan, Nading, Shelley, and Wang (2007). In this study, inferential

statistics were used to analyze year-to-year persistence rates of college students entering a midwestern research university in the fall of 1996. Contrary to Riehl's (1994) study, results of the logistic regression revealed that first-generation college student status at this institution had no significant negative effect on persistence from first year to second year. In fact, in this study, the only statistically significant difference in persistence between first-generation college students and continuing generation college students was found for the third to fourth year (Wohlgemuth et al., 2007).

Collectively these studies suggest that first-generation college students are indeed at risk for lower academic achievement and persistence as compared to their non-first generation counterparts based on pre-college characteristics, differences in motivation for study, and in-school experiences. It was noted earlier that first-generation college students tend to spend less time on campus and more time working than non-first generation college students. Research studies on student engagement and employment will be presented in the forthcoming sections.

Student Engagement

Student engagement is a term used throughout the U.S. educational system, from K-12 through post-secondary, and refers to the degree to which students are invested in and connected to their school experiences (Kuh et al., 2008; Kuh, 2009; Reason, 2009; Skinner & Belmont, 1993). It is rooted in Astin's (1994) theory of student involvement, which posited that student development is directly proportional to the time and effort they devote to their academics and campus activities. Conversely, activities that divert student energy away from the campus, such as living and working off campus, have a negative impact on development.

College student engagement involves two parties: the students and the institution. According to the National Survey of Student Engagement (NSSE) for students, engagement is

about the “time and effort students put into their studies and other educationally purposeful activities” (NSSE, 2014). Some of the responsibility of student engagement therefore, rests upon the students themselves; they need to be motivated and invested. However the institution also bears responsibility for creating conditions for students to become engaged. In this respect, engagement refers to “how the institution deploys its resources and organizes the curriculum and other learning opportunities to get students to participate in activities that decades of research studies show are linked to student learning” (NSSE, 2014).

The NSSE was launched in 2000 at 275 colleges to survey undergraduates about their college experiences and since then has become a widely used national dataset; in 2014, 716 institutions participated and more than 470,000 students completed it (NSSE, 2014). NSSE staff generates reports so institutions can use data to improve student engagement, thereby increasing success. A number of research articles have been published using NSSE data. In one study led by Kuh et al. (2008), a two-stage regression analysis of NSSE data involving 6193 first year students at 18 colleges over a three-year period, 2000-2003, found that “student engagement in educationally purposeful activities has a small but statistically significant effect on first-year grades” (Kuh et al., 2008, p. 547).

Researchers have used other national data sets to understand student engagement. For example, Flynn (2014) looked at student engagement across institutions using data from the 2004/2009 Beginning Postsecondary Longitudinal Study. After controlling for student level and institutional level factors, results of logistic regression analysis revealed a statistically significant positive effect of academic and student engagement on six-year graduation rates, yet first year engagement in particular was not statistically significant (Flynn, 2014).

Pike and Kuh (2005) sought to compare the engagement of first-generation students with the engagement of non-first-generation students. They analyzed a national sample of 1146 first year undergraduates who completed the College Student Experiences Questionnaire (CSEQ) and looked at self-reported responses to questions about interactions with faculty, active learning experiences, and social integration with peers. They found that first-generation college students reported significantly lower levels of engagement with the campus, lower levels of perceived support provided by the campus, and lower levels of intellectual development than continuing-generation students. These investigators determined mitigating effects of pre-college educational aspirations and living off campus, suggesting that universities could design programs to improve the engagement of first-generation students and provide more supportive developmental environments (Pike & Kuh, 2005).

Engagement Outside the Classroom

Engagement is not limited to classroom learning. Out-of-class experiences sometimes referred to as “the other curriculum,” (Kuh, 1995, p. 124) have been shown over many decades to provide meaningful engagement opportunities for students (Kuh, 1995). The student affairs’ profession is built upon this very idea. In a qualitative study designed by Kuh (1995) to understand the impact of out of class experiences on student development, 149 seniors at 12 institutions were interviewed. Interview transcripts were analyzed using both qualitative and quantitative methods, including a multiple phase, inductive analysis of transcripts by four researchers and a factor analysis of themes emerging from the qualitative review. Participants in this study noted that leadership and work experiences helped them clarify career goals, apply knowledge to real-work situations, and develop practical, career-relevant skills (Kuh, 1995).

Another qualitative study of students' out of class experiences was conducted by Baxter-Magolda (1992), who interviewed 101 randomly selected college students from one university in the Midwest each fall semester for a period of four years, 1986-1989. She sought to understand the impact that students' out of class experiences had on their development. To establish trustworthiness, two independent readers coded each interview, reviewed and discussed themes that emerged for each coder until consistency was reached. Member checks, along with triangulation of findings, were incorporated into the interpretation. Out of class experiences which had a positive impact on student development included internships and employment. Participants in this study reported that work allowed them to acquire useful skills, despite the diversity of campus jobs held by students in this study. Work in food service, tutoring, and the residence halls also contributed to their career exploration (Baxter-Magolda, 1992).

Engagement and Educational Outcomes

Taken together, student engagement and student involvement are different terms that have evolved over time to represent behavior: students taking active steps to participate in educationally purposeful activities. In the 1980s and 1990s, research studies looked at these behaviors as contributing to development, grades, and persistence. In the 2000s, these outcomes were further deconstructed. In an unprecedented national research initiative, the Association of American Colleges and Universities (AACU) sought to clarify the specific outcomes of a liberal education, regardless of institutional type or mission. Its research initiative was launched in 2005 and called LEAP – Liberal Education and America's Promise - defining a liberal education as “an approach to learning that empowers individuals and prepares them to deal with complexity, diversity, and change” (AACU, 2014). Conceptually they sought to dismantle the prevailing assumption that a college education must either be liberal or vocational. Several years

of dialogue with hundreds of leaders from higher education, civic organizations, and the business community resulted in the articulation of four essential learning outcomes for all students enrolled in all types of institutions. The essential learning outcomes are: (1) knowledge of human cultures and the physical and natural world, (2) intellectual and practical skills, (3) personal and social responsibility, and (4) integrative and applied learning (AACU, 2014a). These essential learning outcomes have become the fundamental goals of higher education in the 21st Century. If these outcomes will best prepare graduates for a productive future in work, citizenship, and life, educators must consider the difficult question of how these outcomes can be achieved:

“If our goal is to help students achieve the essential learning outcomes that both educators and employers endorse, then the long-term challenge is to transparently connect these intended outcomes with students’ successful engagement in a thoughtfully planned sequence of high-impact practices” (Schneider, 2008, p. 8).

High Impact Practices

High impact practices are a set of educational strategies through which the essential learning outcomes, previously outlined, can be achieved (Kuh, 2008). The high impact practices are: first-year seminars, common intellectual experiences, learning communities, writing intensive courses, collaborative assignments, undergraduate research, diversity/global learning, service/community based learning, internships, and senior capstone projects (Kuh, 2008). Essentially the high impact practices are the institution’s commitment to student engagement. What makes these practices so high impact? According to Kuh (2008), aspects of these practices that make them high impact include: (1) students investing significant time and effort in an educationally purposeful activity, often referred to as time on task; (2) students having meaningful interactions with faculty and peers over time; (3) the expectation that students will

experience diversity; (4) structured opportunities for students to work as a member of a team to solve real problems; (5) the expectation that students will apply learning to different real world situations; and (6) regular feedback about performance (Kuh, 2008). High impact practices seem to be an extension, or perhaps refinement of, engaging students in educationally purposeful activities. They share elements of student involvement, which had been described by Astin (1994) as time investment, student-faculty interaction, and connections with peers.

In a retrospective article written for student affairs' professionals about student engagement, involvement, and educationally purposeful activities, Kuh (2009) connected decades of research about different dimensions of student engagement to the AACU's high impact practices. He concluded that student engagement and high impact practices shared key elements: student-faculty contact, high expectations, active learning, time on task, teamwork, diversity, and regular feedback on performance. Kuh (2008) acknowledged that the specifics of how high impact practices are structured varies by institution, yet also noted that NSSE data has shown time and again that student participation in high impact practices leads to better student engagement and ultimately better outcomes. Yet, as the NSSE only surveys students in their first and senior years, Kuh called for more research on students in "the invisible majority" (Kuh, 2008, p. 697), namely sophomores and juniors. He recommended that future research be undertaken to examine the value of campus employment, presently not considered a high impact practice. "Working on campus could become a developmentally powerful experience for more students if student affairs professionals who supervise students in their employ intentionally created some of the same conditions that characterize the high impact activities" (Kuh, 2008, p. 698).

High Impact Practices and First Generation College Students

Using Kuh's high impact practices as a framework, Finley and McNair (2013) conducted a mixed methods study of underserved college students, including first-generation students. They examined NSSE data from 25,336 students across 38 institutions in three state systems, looking for rates of participation in high impact practices and self-reported gains in deep learning, general education, practical competence, and personal and social development. Their analysis yielded statistically significant results for differences in participation rates between first-generation students and continuing generation students. First-generation students were noted to have participated in significantly fewer high-impact practices, yet as participation in high-impact practices increased, self-reported gains in deep learning also increased. In this study, first-generation college students reported higher gains from their participation than did continuing generation college students. In fact, first-generation students reported higher gains than their continuing generation peers in all aspects of learning measured by the researchers – deep learning, general education, practical competence, and personal and social responsibility. The second part of the study was a qualitative analysis of student perceptions gained through 15 focus groups of randomly selected students from a stratified sample of underserved populations on nine campuses. Results of the focus groups extended the quantitative findings in that students were very interested in experiences that would allow them to apply knowledge learned in class to solving problems with practical relevance to their lives. They wanted involvement with peers and feedback from faculty and mentors (Finley & McNair, 2013).

High Impact Practices Outside the Classroom

Among the six noted high-impact practices, three take place outside of the classroom: service learning, research, and internships. These practices are commonly known and referred to

in the literature as experiential education. Decades of research have demonstrated that experiential education positively contributes to student learning, academic achievement, and persistence (Astin, 1994; Hesser, 2014; Patel et al., 2010). Learning experientially gives students a chance to apply classroom knowledge to real world situations, gain authentic work experience, hone career-related skills, develop a network of professional contacts, explore career options, and through guided reflection, expand self-understanding and clarify career goals (Hart Research Associates, 2006; King, 2014; Lewis, 2010;).

Quality of High Impact Practices

Quality of high impact practices is an important consideration. O'Neill (2010) expressed concern about how quality is measured in high impact practices, critiquing internships in particular, and cautioned that the tremendous variety of institutional definitions and parameters regarding internships could obscure valuable outcomes. Many research studies investigating student involvement, student engagement, and student participation in experiential learning activities have provided a foundation upon which the essential learning outcomes and their affiliated high impacts were developed (Astin, 1994; Kuh, 1995; Kuh, 2009; Pike & Kuh, 2005). While researchers were looking at NSSE data for quantitative trends and generalizable findings using complex statistical analyses about student engagement and educationally purposeful activities, the AACU was qualitatively developing the essential learning outcomes, and Kuh was constructing their affiliated high impact practices. Moreover, Kuh's (2008) description of the attributes of high impact practices that makes them so effective are things that had been previously described as educationally purposeful activities relative to student engagement. In-classroom and out-of-classroom activities that are powerfully engaging for students share attributes of high impact practices: significant investment of time and effort in the learning

activity; group assignments, experiencing diversity; challenging assignments that prompt students to integrate and apply knowledge and solve problems from different viewpoints; and feedback on performance (Kuh, 2008).

Given what is known about the positive influence of high-impact practices on student academic success and persistence, along with the fact that first-generation college students participate in fewer high-impact practices than continuing-generation students, it follows that institutions should actively create more high-impact opportunities for first-generation students. Kuh's (2008) call for research into the value of campus jobs as potentially high impact has been a driving force in this study.

Student Employment

A large body of literature exists which has looked at the effects of various aspects of employment on students' overall college experience, such as location of employment (on-campus versus off campus), intensity (number of hours per week), needs-based (Federal Work Study), and career-relevance (internships, co-op, and work-integrated learning). Yet researchers have discovered that the relationship between student employment and outcomes is not simple, nor consistent (Pike et al., 2008; Riggert et al., 2006). Pike et al. (2008) suggested, "research has failed to find a consistent relationship between work and grades" (p. 561). In a synthesis of dozens of articles in peer-reviewed journals and national datasets, Riggert et al. (2006) summarized the debate surrounding the impact of student employment on achievement: "Overall, the empirical literature on student employment is marked by diversity and contradiction...these studies have done little to create a systematic understanding of work and higher education relationships" (p. 69). Despite contradictory evidence with respect to the relationship between

student employment during college and successful outcomes, researchers agree on some aspects of student employment, which will be detailed in the following sections.

Who Works and How Much

It is commonly held that college students work while attending school (Beerkens et al., 2011; Pascarella et al., 1998; Perna, 2010; Pike et al., 2008; Stern & Nakata, 1991), with some studies reporting a range of 72% to 80% of all undergraduates working while attending college (Riggert et al., 2006; Tuttle et al., 2005). King (2006) analyzed data from the National Center for Education Statistics (NCES) 2003-2004 National Post-Secondary Student Aid Study and found that students attending community colleges and for-profit institutions were more likely to work full-time and attend school part-time, while students who attended school full-time were more likely to work fewer than 20 hours per week. According to the NCES data, affluent students were just as likely as low-income students to work. Working students identified themselves as either students who work (66%), or employees who study (34%). Essentially these students had different motivations for attending college: students who identified themselves as employees who studied as well as low income students were more likely to work to pay living and educational expenses, whereas students who considered themselves students first, were more likely to report working for the purpose of gaining experience or earning spending money (King, 2006; Miller, Smith, & Nichols, 2011). First-generation college students are more likely to work overall, and work more hours than non-first-generation college students (McCormick et al., 2010).

Working during college is not just a phenomenon that occurs in the United States. Robotham (2012) looked at characteristics of English college students who worked. His survey of 1827 students found that 67% worked part-time, an average of 13 hours per week, with 12%

holding more than one job. In this study, 40% of the students reported that they were working more hours per week than they were in class. Manthei and Gilmore (2005) looked at work patterns of college students in New Zealand and although their sample was small (N= 83), 81% of students reported having at least one job and 57% conceded that working was a financial necessity. Holmes (2008) found that 83% of students worked an average of 13 to 14 hours per week while attending college in Ireland. In this study, 22% worked to live, and another 36% worked to supplement their living expenses (Holmes, 2008). Metcalf (2003) surveyed 782 third-year students at four universities in England and found that 46% of students worked while attending college.

It is difficult to dispute the fact that work has become an expected part of life for the majority of college students in the United States and abroad, and for some, such as community college students and first-generation college students, work is a larger part of the overall college experience. Next, the extent to which work has negative or positive impacts on college students will be reviewed.

Negative Impact of Work

Work has been shown to negatively affect student motivation for study (Derous & Ryan, 2008; Hawkins et al., 2005; Lens et al., 2005; Metcalf, 2003) grades (Astin, 1993; Blair & Millea, 2004; Callender, 2008; Furr & Elling, 2000; Rochford et al., 2009; Scott-Clayton, 2011; Stinebricker & Stinebricker, 2003), persistence (Avenoso & Totoro, 1994; Ehrenberg & Sherman, 1987; Gleason, 1993; Kulm & Cramer, 2006; Lens et al., 2005; Mamiseishvili, 2010), and time to degree (Beerkens et al., 2011; Ehrenberg & Sherman, 1987; Kulm & Cramer, 2006; Orozco & Cauthen, 2009). Off campus work in particular has often been noted in the literature

as a detractor (Astin, 1993; Ehrenberg & Sherman, 1987; Kuh, 2009; Pascarella & Terenzini, 2005; Pike et al., 2008).

Work Intensity

Trends show that college students are working more hours than ever during school (Orozco & Cauthen, 2009; Perna, 2010; Stern & Nakata, 1991), and yet the research on the impact of work intensity, or hours worked per week, is mixed, making broad, generalizable conclusions challenging. As McCormick et al. (2010) contend, studies are too different to make comparisons; some studies use national datasets and others focus on one or a few institutions. Differences in study design, what variables are included, excluded, or controlled for in data analysis models, as well as differences in the aspects of work that are examined in each study create complications when one attempts to identify themes, trends, and generalizable findings.

Despite these cautionary obstacles, research confirms the trend of increased work intensity. In their review of the 2008 NSSE data, McCormick et al. (2010) found 46% of full time freshmen and 74% of full time seniors working during the school year, and among those 13% of freshmen and 30.7% of seniors worked more than 21 hours per weekly. Of those working more than 21 hours per week, approximately two-thirds of freshmen and almost three-quarters of seniors worked off campus. Work intensity was higher among first-generation college students in the sample, with 19.6% of freshmen and 38.7% of seniors working more than 21 hours per week. Students, regardless of class year, working more than 20 hours per week reported slightly lower grades than those who worked up to 10 hours per week (McCormick et al., 2010).

Another study which used a national data set was conducted by Orozco and Cauthen (2009), who looked at data from the U.S. Department of Education's National Postsecondary Student Aid Study 2008, focusing on work intensity and community college students. Students

working more than 15 hours per week were at higher risk for stopping out or dropping out.

Sixty-six percent of students worked more than 21 hours per week, and more than half of those students believed that work negatively impacted their studies.

Work intensity has also been studied by researchers using data from single institutions. In an oft-cited study, Furr and Elling (2000) conducted telephone interviews of a stratified sample of 505 students at one university to understand the impact of work on involvement in academic and extracurricular activities. Students working more than 30 hours and those who worked off campus experienced greater stress, which they reported negatively impacted their grades. Students in this study with strong faculty relationships did not work, suggesting that work prevented students from greater engagement on campus. Researchers noted, however, that actual GPAs did not align with students' self-report that grades suffered as a result of their financial worries (Furr & Elling, 2000).

The assertion that greater number of hours worked negatively impacts grades was also found by Stinebricker and Stinebricker (2003), who looked at one institution's mandatory work-study program's impact on the academic performance of first year students. Statistically significant results confirmed the negative relationship between work intensity and grades at this institution. Kulm and Cramer (2006) found similar results. They analyzed survey data from approximately 500 undergraduates attending one university in the Midwest to determine the impact work had on the student experience. Pearson correlations showed a significant positive relationship between work intensity and interference with study time and a significantly negative relationship between work intensity and GPA (Kulm & Cramer, 2006).

International Perspectives on Work Intensity

Negative influence of work on academics is not unique to the United States. Callender (2008) tested the impact of working on final year grades of 1012 college students from six universities in the United Kingdom. Regression models revealed that even after controlling for the differences in the type of institution and prior academic achievement, a statistically significant negative relationship was found between hours worked and grades (Callender, 2008). Robotham (2009) surveyed 270 undergraduates at one university in the United Kingdom to understand the impact of work on academics. Students reported that working negatively affected the time they spent on academics and their ability to concentrate on academic work (Robotham, 2009). However, the findings in this study also revealed that students perceived work as positively contributing to their skill and professional development, ability to communicate, and self-confidence.

In a small study of full-time nursing students (N=79) at one university in Ireland, more hours worked per week were found to negatively impact students' perceptions of their grades, involvement, and overall college experience (Rochford et al., 2009). Lastly, a qualitative study of nine full-time freshmen at one university in the United Kingdom revealed similar findings that working more than 20 hours per week negatively affected study time and participation in extracurricular activities (Watts & Pickering, 2000), however, like the Robotham study, students in this study acknowledged the positive outcomes of work, such as improving time management, development of workplace skills, and increased employability.

Work and Persistence

Work intensity has been shown to be detrimental to persistence as well, yet contradictory evidence has been presented by several studies. Some studies have demonstrated a negative

linear relationship between work intensity and persistence. Others have noted a more curvilinear relationship, where some work has been shown to contribute positively to student persistence while no work or too much work detracted from student persistence.

“Quantitative studies consistently show that retention rates are higher for students who work at modest number of hours per week (10 to 15) than they are for students who do not work at all or those who work more than 15 hours per week” (Perna, 2010, p. 1).

Gleason (1993) examined data from the 1980-86 High School and Beyond survey funded by the U.S. Department of Education. He analyzed term-by-term employment of college students attending four-year institutions and found that risk for stopping out and dropping out was higher among students who were always employed throughout their college terms. Among those students who worked more than 31 hours per week while in school, graduation was delayed by approximately one semester.

“Although work does not hurt students’ grades, there appears to be a small group of students for whom the burden of employment and study becomes excessive. These students manage to work and study successfully for a semester or two, but eventually the burden becomes too great and they drop out” (Gleason, 1993, p.13).

Mamiseishvili (2010) looked at work’s impact on persistence of low-income, first-generation college students using a sample of 1,140 responders from the Beginning Postsecondary Students Longitudinal Study (BPS: 04/06) who were classified as both low income and first-generation. Logistic regression modeling was used to identify predictors of first to second year persistence for this sample. Among predictors found to have a statistically significant positive relationship with persistence were first-year GPA, living on campus, and role orientation, which was defined as student perceptions of their primary role, student or employee. In this study, students who considered their primary role as student, and not employee, persisted at significantly higher rates from first to second year than students who considered themselves employees first (Mamiseishvili, 2010). This finding is similar to King’s (2006) findings

described earlier; in her analysis of NCES data, students whose primary role orientation was student had significantly higher GPAs than students whose primary role was employee.

A unique classification of student paid work experience called co-op has been shown to contribute positively to persistence (Avenoso & Totoro, 1994; Jaeger, Eagan, & Wirt, 2010). A co-op position is traditionally a paid off campus job that is also overseen by a faculty sponsor, similar to a paid internship. One might argue that in a co-op, a student's role orientation would be balanced between employee and student. Jaeger et al. (2010) investigated the relationship between work and two outcomes: persistence and GPA. They examined records of 4311 students from a large public university in the southeast, hypothesizing that off campus work directly related to students' academic and career goals would positively relate to retention and final GPA. The sample in this study was delimited to those in academic programs related to science, math, or engineering. The work experience was delimited to full-time co-op positions, where students would be working full time off campus and not attend classes beyond their co-op class. Regression modeling supported the contention that students who worked in a co-op job would persist at higher rates. Results were statistically significant, showing a five-fold increase in the likelihood of a co-op student to persist compared to students who did not co-op.

Location of Work

In their seminal analysis of more than 2000 research studies, Pascarella and Terenzini (2005) discerned that employment off campus more often negatively affected persistence and graduation rates. King's (2006) 2003-2004 NCES National Post-Secondary Student Aid Study found that 70-80% of undergraduates worked while enrolled, and among those working, 91.1% worked off campus. The relationship between working and GPA in this study seemed to be curvilinear as GPAs of all undergraduates who worked between 1-20 hours per week were higher

than those working 21-34 hours per week, yet for those working more than 35 hours per week, the GPAs actually increased. This report could not provide conclusive evidence that off campus employment across-the-board was detrimental to grades.

McCormick et al. (2010) also used a national data set for their study, which included 380,000 respondents from campuses around the United States to the 2008 NSSE. They separated first-year respondents from senior-year respondents and employed multivariate analyses to examine the effects of several variables on student engagement, including gender, ethnicity, first-generation status, residence, and hours worked. Off campus work was more common for full time first year students and full time seniors, and students working off campus worked more hours. First-generation students tended to work off campus more often and work more hours than continuing generation students. Their analyses revealed a statistically significant negative relationship for both first years and seniors working more than 11 hours per week off campus and GPA, and a significant positive relationship between working on campus up to 20 hours per week and GPA for freshmen. Effect sizes in these studies were small.

Another study using data from the 2008 administration of the NSSE was conducted by Lang (2012), who investigated the relationship between work, grades, and participation in activities for 794 randomly selected subjects drawn from a single university. A comparison of students working on campus to students working off campus yielded small differences in GPA, yet not at statistically significant levels. This means that there was no significant difference in grades between students who worked on campus and students who worked off campus. The only statistically significant result was that students who worked off campus spent significantly less time participating in social activities than students who worked on campus (Lang, 2012).

Lundberg (2004) was interested in how employment impacted student's self-reported involvement and learning. She looked at a random sample of 3744 undergraduates who completed the national survey, College Student Experiences Questionnaire (CSEQ) in 1998-1999 and compared students who worked less than 20 hours off campus, students who worked more than 21 hours off campus, and students who did not work off campus using multivariate analysis of variance. Students working more than 21 hours per week reported significantly less faculty interaction, fewer interactions with peers, and lower quality peer relationships than students who worked fewer than 20 hours or did not at all. These results suggest that student engagement with faculty and peers was indeed lacking for students working more than 20 hours per week off campus. However, these results did not show statistically significant differences among the groups for quality of relationships with faculty or self-reported learning. One explanation the author put forward for this seemingly contradictory result was the idea that those students working more than 21 hours per week off campus may have been engaged in learning through their work site. Indeed her conclusion called for more research on the work environment, on and off campus, as a learning opportunity for students.

Mixed Findings

Pike et al. (2008) analyzed the 2004 NSSE dataset for the purpose of “untangling the relationship between work and grades” (p. 560). Their findings uncovered a statistically significant, albeit complex, relationship between working and grades. Working 20 hours or more, either on or off campus, directly and negatively impacted grades, however, working 20 hours or less on campus had a significant and positive indirect relationship with grades. Correlations showed statistically significant and positive relationships between working 20 hours or less on campus and all five measures of student engagement, which included academic

challenge, collaborative learning, interaction with faculty, enriching educational experiences, and a supportive campus environment.

A different study yielding mixed results was conducted by Cheng and Alcantara (2004), who designed a mixed methods study of the impact of work on students' college experience. The quantitative phase involved a survey of all undergraduates at a private university in the northeast. Of the 2638 student respondents, 38% reported having worked during the fall 2002 semester. Statistically significant differences were found in self-reported GPA between students who worked and students who did not; working students' GPAs were lower than non-working students. From the respondent group, 500 were randomly selected and invited to participate in two focus groups. Fourteen students participated, and in contrast to the quantitative results, none of these students expressed concern that their job was negatively impacting their grades. To the contrary, students in the focus groups expressed very positive outcomes derived from work in terms of skill building and career development. The investigators explored these perceptions more deeply through the focus groups, and concluded that students were actively seeking work opportunities that would benefit their professional and career development.

Returning to McCormick et al.'s (2010) analysis of the 2008 NSSE data, it was noted earlier that students who worked on campus enjoyed greater benefits than students who worked off campus in terms of GPA. However, this study also found that first years and seniors who worked off campus more than 11 hours per week showed gains in practical competence and personal and social development. First years working on campus more than 20 hours per week made significant gains in practical competence. The authors noted that this finding was inconsistent with previous research that concluded that working more than 15 to 20 hours per week was detrimental to academic performance as measured by GPA (King, 2006; Pascarella &

Terenzini, 2005). They speculated that students whose campus jobs afforded more opportunities for learning realized gains, yet they cautioned that this was simply speculation, and called for more research in this area.

Positive Outcomes of Work

As seen in the previous section, there can be positive outcomes for students who work and other researchers have questioned the prevailing ideas about work's negative impact on student success. Several studies have noted the positive benefits students reap from working while in school, such as improved academic performance (Orozco & Cauthen, 2009; Pascarella et al., 1998; Perna, 2010; Van Der Water, 1996; Wilkie & Jones, 1996), skill development (Broughton & Otto, 1999; Cheng & Alcantara, 2004; Emslie, 2011; Hayward & Horvath, 2000; Hoy, 2011; Jones, 2007; Kuh, 1995; Kuh, 2008; Lewis & Contreras, 2012; McCurdy & Zegwaard, 2009; Manthei & Gilmore, 2005; Metzger, 2004; Mihail, 2006; Nasr, Pennington & Andres, 2004; Robotham, 2009; Robotham, 2012; Shaw & Ogilvie, 2010; Turos, 2009; Watts & Pickering, 2000) self-confidence (Cheng & Alcantara, 2007; Fletcher, 1991; Jones, 2007; Robotham, 2009; Shaw & Ogilvie, 2012; Smith, 1981), resiliency (Martinez, Bilges, Shabazz, Miller, & Morote, 2012), social integration (Duhon, 2011) and increased employability (Mihail, 2006, Watts & Pickering, 2000).

Work and Skill Development

In a qualitative study of the impact of out-of-class experiences on student learning and personal development of 149 college seniors from 12 institutions, Kuh (1995) found that leadership, internships, and work experiences all positively contributed to practical competence and work relevant skills such as time management and decision making, teamwork, and verbal communication. Participants in this study expressed greater value in their off campus work

experiences if they were relevant to academic and personal goals. Similar findings were made by Watts and Pickering (2000), whose qualitative study of nine full-time freshmen at a university in the United Kingdom demonstrated the positive outcomes of work: improved time management, skill development, and increased employability.

Similarly, Salisbury, Pascarella, Padgett, and Blaich (2012) sought to understand the effect of work on the leadership development of first year students at liberal arts colleges. This study used data from the Wabash National Study of Liberal Arts Education Student Experiences Survey and the National Survey of Student Engagement. Of the 2931 students in the sample, work had significant positive effects on leadership scores, and in fact, effects were larger for students who worked off campus more than 10 hours per week. In this study, on campus work had no statistically significant impact on student leadership development.

The acquisition of work-relevant skills and experiences, communication skills, as well as problem solving skills and personal/ethical responsibility were outcomes described by engineering students participating in a work integrated learning program (Nasr et al., 2004). Additionally, Jones' (2007) interviews of 18 working college students at a Canadian university revealed that students valued the benefits of real-world, authentic work experience; relationships with supervisors and peers; and the skills, confidence, and professional networks they developed as a result of the work placement. Mihail (2006) conducted in-depth interviews with 11 seniors majoring in business at a university in northern Greece who participated in a paid, academic internship program. Without exception, students relayed the importance of the internship to their skill development, confidence, and perceived employability. Skills specifically identified in this study included: specialized knowledge, time management, technical skills, communication skills, ability to prioritize, and teamwork. The researcher also noted that 78% of the students

placed in businesses received offers of full-time employment from their placement site. The researcher concluded that these offers clearly demonstrated that employers also valued the skills those students brought to the workplace (Mihail, 2006).

Meaningful Work

Qualitative researchers have also examined ways in which students make meaning of their work or find meaning in their work. Cheng and Alcantara (2007) used a grounded theory approach to explore students' perceptions of their work experiences. Two focus groups involving a total of 14 students were held, recorded, transcribed, and analyzed. Themes pointed to the value students felt they gained from their work, including the acquisition of real-world experience, an insider's view of professions and organizations, greater clarity about career goals, and confidence. Students were even willing to work more hours if they felt that the work had meaning for their academic and career goals (Cheng & Alcantara, 2007). This study did not distinguish the work experiences as being located on or off campus.

A qualitative study of how students derived meaning from their campus jobs was conducted by Empie (2011), who interviewed undergraduates working in leadership roles within a campus food service. Themes that emerged from the interviews included the importance of relationship development with peers and supervisors on the job, the value of receiving feedback about performance from supervisors in a supportive manner, as well as opportunities to solve real problems and take on higher levels of responsibility. Students in this study had not initially considered their campus food service jobs as ones that would engage them and help them grow; yet these students shared their discovery of skills, patience, and attention to detail, and self-confidence as resulting from their campus jobs.

Work and Learning

Researchers have also looked at the relationship between employment and learning. Smith (1981) surveyed a random sample of 125 students who worked on campus at a university in the west. Students reported that working on campus helped them apply classroom learning to the workplace, improve time management, improve their ability to manage interpersonal conflict in the workplace, and overall, develop self-confidence. Based on these results, Smith suggested that work could be a “learning laboratory” (p.69) where students can develop skills and attitudes that can apply in a variety of work settings. Additionally, Fletcher’s (1991) review of co-operative education and field experience literature confirmed that both co-op and field experiences have been shown to improve self-esteem, vocational maturity, and personal development. Furthermore, Baxter-Magolda’s (1992) four year study of the impact of extracurricular involvement on 100 students at a public university in the Midwest uncovered the benefits of employment and internships, including skill development, self-knowledge, and practical experience.

Lewis & Contreras (2012) sought to understand what students learned on the job by surveying 164 student employees who worked for a college union at one university in the Midwest. Students were asked about opportunities they had for learning on the job, including formal and informal training, observation of co-workers, opportunity to work as a member of a team, feedback from supervisors and peers, relationship with supervisors, task repetition, problem solving, and relationship between their work and their career goals. Responses were correlated with five learning domains: career development, civic engagement, leadership, ethics, and responsible independence. Statistically significant positive relationships were discovered among all learning experiences with the five learning domains. This study clearly demonstrated

the learning value students perceived their campus jobs afforded them, yet no examination of actual GPAs was conducted.

Career-related work experience has been found to positively impact career development. Brooks, Cornelius, Greenfield, and Joseph (1995) surveyed 165 seniors at a public university in North Carolina. Findings indicated that students with career-related work or internship experiences scored significantly higher on self-concept crystallization. Feedback about performance on the job was a significant predictor of self-concept crystallization and self-efficacy. Career-related work experiences have also been positively associated with post-graduation outcomes. For example, Hoy (2011) did an interpretive study over a two-year period of 16 students who interned in a collections institution in Australia. All students expressed the value of transferrable skills and relevant work experience acquired through the internship as well as the fact that the experience helped to reinforce their career goals and helped them acquire a post-graduation position.

Summary of Literature

To summarize this review of literature, it is noted that there is a great deal of empirical research demonstrating the disadvantages first-generation college students face before they even arrive on campus which put them at risk for attrition and lower grades. Literature has shed light, however, on the types of in-school experiences that can help mitigate risk and positively contribute to their academic achievement and persistence, such as activities that keep students connected to, and engaged in, the college experience, both inside and outside the classroom. High-impact practices in particular have been shown to positively impact overall student success, and provide an even greater positive impact on the success of first-generation college students.

Research on college student employment has yielded conflicting results. Until recently, the prevailing notion was that campus work was categorically better for students than off campus work, and that working more than 10 to 20 hours per week was detrimental to student engagement and academic achievement. Recent research, however, has challenged this assumption. Studies in the 2000s and 2010s have shown more positive benefits to working, and even working more hours on campus or off campus.

Lastly, given that more students, and more first-generation college students in particular, are working more hours to pay for spiraling college costs, institutions must consider what opportunities exist to structure the campus work experience so that students derive maximum benefit. Campus employment configured and purposefully structured to simulate high-impact practices which provide multiple opportunities for learning and engagement may be just such an opportunity. This study aims to investigate whether high-impact campus jobs positively relate to the academic success and persistence of first-generation college students.

CHAPTER 3: METHODOLOGY

The purpose of this study was to investigate how campus employment impacts the academic success and persistence of first-generation college students, as well as to compare differences in academic success and persistence between first-generation college students whose campus jobs are configured as high impact practices and first-generation college students whose campus jobs are not. Utilizing Astin's (1993) Input-Environment-Output paradigm, regression modeling will be used to test the significance of the contribution of a set of input and environmental variables that have been shown in the literature to impact academic success and persistence. Six research questions guide the study:

1. How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (type of campus job: high impact or not, residence: on or off campus, credits attempted during the work period, total hours worked on campus, and pay rate) predict overall GPA?
2. Are there differences in overall GPA for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on overall GPA?
 - a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to overall GPA?
 - b. Is there a statistically significant difference between the type of campus job, high-impact and non-high-impact, with regard to overall GPA?

- c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to overall GPA?
3. How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (type of campus job: high impact or not, residence: on or off campus, credits attempted during the work period, total hours worked on campus, and pay rate) predict change in GPA?
4. Are there differences in change in GPA for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on change in GPA?
 - a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to change in GPA?
 - b. Is there a statistically significant difference between the type of campus job, high-impact and non-high-impact, with regard to change in GPA?
 - c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to change in GPA?
5. How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (type of campus job: high impact or not, residence: on or off campus, credits attempted during the work period, total hours worked on campus, and pay rate) predict persistence from sophomore to junior year?

6. Are there differences in persistence from sophomore to junior year for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on persistence from sophomore to junior year?
 - a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to persistence from sophomore to junior year?
 - b. Is there a statistically significant difference between the type of campus job, high-impact and non-high-impact, with regard to persistence from sophomore to junior year?
 - c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to persistence from sophomore to junior year?

Given that first-generation college student status is itself an attribute, and given the practical impossibility of experimentally manipulating a student's actual campus job, the key independent variables in this study, first-generation college student status, and type of campus job: high-impact or non-high-impact, were not active. In addition, the other independent variables added to the model, Pell-recipient, cumulative credits earned, residence: on or off campus, credits attempted, total hours worked, and pay rate, are also considered attribute independent variables. Therefore, this non-experimental study was conducted in the post-positivist tradition utilizing both associational and comparative approaches with a quantitative, multi-factor, ex post facto design (Gliner, Morgan, & Leech, 2009).

Gliner, Morgan, and Leech (2009) caution researchers using attribute independent variables not to predict causation; relationships among variable and differences among groups are all that may be concluded. In a non-experimental study there is a threat to internal validity given the difficulty in controlling for equivalence of groups. One way to assess the equivalence of groups is to use statistical controls. In this study, however, regression modeling was used to measure the impact of several input and environmental factors, not just the primary independent variables of interest, first-generation college student status and type of campus job, on the dependent variables of overall GPA, change in GPA, and persistence from the sophomore to junior year.

Regression modeling has been used in a number of studies examining factors that influence grades and persistence (Beerkins, 2011; Derous & Ryan, 2008; Finley & McNair, 2013; Hawkins et al., 2005; Kuh et al., 2008; Pascarella et al., 1998; Pike et al., 2008; Van der Water, 1996). Research studies not previously described in Chapter 2 include Van de Water's (1996) examination of data from one university's work study program, which used multiple regression analysis to determine the best fit model for the impact of work on GPA. Beerkins (2011) employed multivariate logistic regression to analyze the impact of several factors, including employment, on academic progress, defined in his study as a student's self-reported expectation of graduating. Derous and Ryan's (2008) survey of undergraduates used hierarchical regressions to determine effects of work and activities on GPA.

Empirical research studies that have employed Chi-Square and ANOVA to analyze data include Cheng and Alcantara's (2004) study, which used ANOVA to compare the self-reported GPAs of undergraduate students who worked during the academic term with students who did not work. Mamiseishvili's (2010) research study of the impact of employment on the persistence

of low-income, first-generation college students used logistic regression to analyze data from the Beginning Postsecondary Student Longitudinal Study 04/06.

Sampling Procedures

Student employment and demographic records were gathered from the student information systems of two public research universities in the United States, one in the Midwest and one in the Northeast. The institutions from which the samples were drawn were similar in size, academic offerings, and first-to-second year retention rates. These institutions were selected because both had a student employment program based on the high-impact practices. In an interview with higher education scholar, George Kuh (personal communication, October 16, 2014), the investigator learned that Kuh was unaware of other institutions whose student employment programs were based on high-impact practices. No published research could be found that examined student employment as a high impact practice, however, this is not surprising considering that the high-impact practices schema is less than 10 years old. Institution A created its reflection-focused student employment program in 2009 with a few select departments within the division of student life. The program has since expanded to all departments within the division. Institution B created its student employee learning outcomes program in 2008 with all departments in its division of student affairs. It should be noted that the individual departments which make up the student affairs and student life divisions at these institutions are not identical; it is not uncommon for organizational charts to differ based on institutional history, structure, function, or priority. Despite the fact that each institution created its student employment program separately, they shared several common elements. Both programs required supervisors to attend training and have at least two structured conversations with student employees during the semester, above and beyond meetings to set work

assignments, discuss project progress, or conduct formal performance evaluation. The purpose of these structured meetings at both campuses was to provide students with the opportunity to reflect upon their learning, describe skills developed, and make connections between their work, academics, and career intentions. Both institutions provided training, web-based resources, and support for supervisors.

Upon IRB approval from CSU, requests for records were sent to the Office of Institutional Research at Institution B and to the researcher's primary contact at Institution A, as this institution had no Office of Institutional Research. Data from Institution A was gathered by staff in the registrar and student records' areas. To protect the identity of subjects in the sample, the investigator requested data to be de-identified using synthetic ID numbers. To minimize problems when integrating the two data sets, an Excel template spreadsheet with a listing of each variable and a codebook was provided to both campuses (see Appendix A). Demographic data was reported according to the U.S. Department of Education framework.

The population was delimited by the following criteria: (1) the sample was drawn from undergraduates who enrolled as first-time, full-time freshmen in the fall of 2010; (2) among those students, only those who worked on campus during the sophomore year, fall 2011 or spring 2012 semesters, were included; (3) graduate students, and part-time students were excluded.

Variables and Measures

Two primary independent variables in this study were: first-generation college student status: yes or no, and type of campus job: high-impact or non-high-impact. Both primary independent variables were dichotomous with two levels: first-generation college student status or not; high-impact campus jobs or not. A campus job labeled as high-impact was pre-determined for each institutional dataset; as described earlier, the institutions from which the

datasets were drawn had similar rationale for their designation of which campus jobs were aligned with the high-impact practices model.

Variables noted in the literature to impact persistence and GPA also included Pell-recipient, residence, and cumulative credits earned. In this study these variables were added to the regression model to better understand their effects on the dependent variables.

Three dependent variables, overall GPA, change in GPA, and persistence from sophomore to junior year, were obtained from the student information systems of the institutions participating. While much research has been conducted on first-year students, Kuh (2008) called for more research on sophomores and juniors, classes he described as “the invisible majority” (Kuh, 2008, p. 697). In addition, Ishitani’s (2006) analysis of 1988-2000 NELS data found that first-generation college students were exposed to the greatest risk of attrition between the sophomore and junior year.

GPA’s were measured on a scale of 0.00 – 4.33. Persistence from sophomore to junior year was measured dichotomously as enrollment or non-enrollment of subjects in the fall semester of the junior year, which was Fall of 2012. The third dependent variable, change in GPA from sophomore to junior year, was calculated by the researcher as a new variable in SPSS, by subtracting the GPA at the beginning of the sophomore year from the GPA at the end of the sophomore year.

Data Analysis

Descriptive statistics were generated to build the context and understand the background characteristics of the sample in the study. Inferential statistics were applied to each research question:

Question 1: How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (type of campus job: high impact or not, residence: on or off campus, credits attempted during the work period, total hours worked on campus, and pay rate) predict overall GPA? This associational question involves several independent variables, some of which are continuous, and others categorical /dichotomous. With a continuous dependent variable, overall GPA, the appropriate inferential statistic to use was multiple regression.

Question 2: Are there differences in overall GPA for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on overall GPA? This question has three sub-questions:

- a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to overall GPA?
- b. Is there a statistically significant difference between the type of campus job, high-impact and non-high-impact, with regard to overall GPA?
- c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to overall GPA?

This group of difference questions sought to understand the main effects of two independent variables on a continuous dependent variable as well as any interaction between the two independent variables. A two-way factorial ANOVA was used to answer this question.

Question 3: How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus

environment variables (type of campus job: high impact or not, residence: on or off campus, credits attempted during the work period, total hours worked on campus, and pay rate) predict change in GPA? Similar to Question 1, this associational question involves several independent variables, some of which are continuous, and some of which are categorical / dichotomous. With a continuous dependent variable, change in GPA, the appropriate inferential statistic to use was multiple regression.

Question 4: Are there differences in change in GPA for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on change in GPA? This question has three sub-questions:

- a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to change in GPA?
- b. Is there a statistically significant difference between the type of campus job, high-impact and non-high-impact, with regard to change in GPA?
- c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to change in GPA?

Similar to Question 2, this group of difference questions seeks to understand the main effects of two independent variables on a continuous dependent variable, change in GPA, as well as any interaction between the two independent variables. A two-way factorial ANOVA was used to answer this question.

Question 5: How well does the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus

environment variables (type of campus job: high impact or not, residence: on or off campus, credits attempted during the work period, total hours worked on campus, and pay rate) predict persistence from sophomore to junior year? Similar to Question 1, this associational question involves several independent variables, some of which are continuous, and some of which are categorical / dichotomous. With a dichotomous, categorical dependent variable, persistence from sophomore to junior year, the appropriate inferential statistic to use is logistic regression.

Question 6: Are there differences in persistence from sophomore to junior year for students varying on first-generation college student status and/or the type of campus job, and is there a significant interaction between first-generation college student status and type of campus job on persistence from sophomore to junior year? This question has three sub-questions:

- a. Is there a statistically significant difference between first-generation college student status and non-first-generation college student status with regard to persistence from sophomore to junior year?
- b. Is there a statistically significant difference between the type of campus job, high-impact and non-high-impact, with regard to persistence from sophomore to junior year?
- c. Is there a statistically significant interaction of first-generation college student status and the type of campus job with regard to persistence from sophomore to junior year?

This group of difference questions sought to understand the main effects of two independent variables on a categorical dichotomous variable, persistence from sophomore to junior year, as well as any interaction between the two independent variables. To answer these questions, chi-square and logistic regression were used.

CHAPTER 4: RESULTS

Data Collection

For this study de-identified archival datasets were acquired from the student information systems of two public research universities, one in the Northeast and one in the Midwest. A request form was sent to both institutions via email with a list of variables, their definitions and coding scheme, and a guide for using IPEDS and FAFSA reporting standards (see Appendix A). Prior to sending, the form was reviewed for accuracy by the director of the institutional research office at one of the universities. Data were received in a password-protected Microsoft Excel file. The investigator inspected the raw data to look for coding anomalies, missing data, and errors. All variables in the data sets were checked against the original request; then individual variables were examined more closely. GPAs were modified to show two decimal points (e.g. 3.12, not 3.12224576). It was noted that the initial data set for Institution A had a problem: GPA Fall 2011 and GPA Spring 2012 were exactly the same for all students. Therefore the investigator contacted the institution and received a new report. Upon receipt of the new report, GPAs for 50 randomly selected records were checked to ensure that problem was solved. New variables, Change in GPA from the beginning of Fall 2011 to the end of Fall 2011, from the beginning of Spring 2012 to the end of Spring 2012, and from the beginning of Fall 2011 to the end of Spring 2012, were created for all records by using the subtract command in Excel. For records missing the first-generation college student status variable, the investigator used parent education to fill the missing cells. If either mother's or father's highest level of education earned was a bachelor's degree or higher, that cell was filled with 0=not first-generation. If either mother's or father's highest level of education was an associate's degree earned or less, that cell was filled with 1=first-generation. Unknowns were left blank. For Enrollment, one institution supplied a

column for Enrolled Fall 2011, Enrolled Spring 2012, and Enrolled Fall 2012. The other institution only gave Enrolled Fall 2012. The researcher then reviewed columns for credits attempted and credits earned in each term, filling in enrollments for each semester. New variables, Credits Attempted Year and Credits Earned Year, were created by using the add command in Excel and adding credits from Fall 2011 and Spring 2012. The variable Pay Rate was modified to accounting format with two decimal points: \$X.xx. For students with more than one payroll entry, the mean command in Excel was used to recode the pay rate. New variables, Total Hours Worked, were created for each term and for the entire year, accounting for students who worked in more than one position. New variables, Total Earnings, were created for each term and for the entire year using commands in Excel to multiply pay rates by total hours worked to account for students who worked in more than one position. For Type of Campus Job, each institution pre-determined which departments offered high-impact positions. However, there were several cases in which a student worked in more than one department and was listed on different payrolls. In these cases, all jobs in the same department were combined. For students who worked in a high-impact job during one semester and a non-high-impact job during the other semester, they were coded as high-impact since at least one of their work experiences was a high-impact position. A new variable, HIP2Term, was created for students working in a high-impact job both semesters.

A column was added and new variable created for Institution. The original variable, Major, was a text field. Therefore, a new variable, Major Cluster, was created. All majors were recoded into the following clusters: 0=Engineering/IT, which included all engineering, math, applied math, informatics, information systems, and computer science; 1= Business, which included management, finance, accounting, and marketing; 2=Life & Physical Sciences, which

included biology, chemistry, physics, geosciences, and biochemistry; 3=Health Sciences, which included leisure and recreation, sport studies, health, nursing, speech, physiology, nuclear medicine; 4=Social Sciences, which included psychology, sociology, political science, history, anthropology, economics, public policy, international studies, social work, environmental studies, and education; 5= Humanities & Fine Arts, which included theatre, English, languages, philosophy, journalism, communications, religion, music, dance, fine arts; and 6=Interdisciplinary, which included interdisciplinary and multidisciplinary studies. For students without majors these cells remained empty.

Academic and employment records were then combined and checked to ensure that the records were imported properly using the synthetic ID numbers provided by each institution.

Removal of Records

The following parameters were used to eliminate records from the data set: Subjects not enrolled in either Fall 2011, Spring 2012, or Fall 2012, and had no credits attempted and no GPA (384); subjects enrolled in Fall 2012 but not enrolled in Fall 2011 or Spring 2012 with no credits and no GPA (42); subjects without a starting GPA before Fall 2011 (17); subjects who did not work on campus (2524); and subjects who worked fewer than 10 hours total for the year (44). Any entries with an hourly wage of less than the Federal minimum wage for the 2011-2012 academic year were viewed as errors and excluded. A few duplicate entries were also removed.

Sample

The original sample included 4457 records. The final sample included 1413 records of students who were employed on campus in either the fall 2011 or spring 2012 terms. As mentioned above, data were pulled from two university information systems; there was no instrument, no test, nor self-reported data. The independent variables included: first-generation

college student status, Pell-recipient, residence (on or off campus), cumulative credits earned, hours worked, pay rate, type of campus job (high-impact or not-high-impact). No evidence of measurement reliability or validity for these variables was available. The dependent variables were overall GPA, change in GPA, and persistence from sophomore to junior year. Internal validity for this study was somewhat low as there was no random assignment of students to jobs, however it would be practically impossible to randomly assign students to jobs. In terms of overall measurement reliability, this study involved a large sample, which could impact power; effect sizes were computed for statistically significant findings.

Table 1 shows the frequencies and percentages of students by gender, ethnicity, citizenship, and academic program, as well as if the students resided on campus, were first-generation college students, and received a Pell grant during the 2011-2012 academic year. Almost all of the students (90%) were U.S. citizens, with slightly more than half (58%) females. The majority of students were European/White (65%), followed by Asian (9%), non-resident alien (9%), Hispanic/Latinos (7%) and African/Black (4%), with 4% unknown/unreported. Slightly more than a quarter (26%) of the sample received a Pell grant, and 28% were first-generation college students. Close to two-thirds of the students lived off campus (64.5%), with 35.5% residing on campus. Students majoring in the social sciences comprised 15.9% of the sample, followed by 12.8% in health sciences, 12.7% in engineering and information technology, 12.3% in the humanities and fine arts, 11.1% in the life and physical sciences, and 1.7% interdisciplinary. The remaining had missing data for major.

Table 1

Demographics of 1413 Students Who Worked on Campus During 2011-2012

Characteristic	n	%
Worked on Campus		
Fall 2011	1184	83.8%
Spring 2012	1199	84.9%
First-generation Status		
First-Generation	394	27.9%
Non-first-generation	985	69.7%
Pell Recipient		
Received Pell	365	25.8%
Did Not Receive Pell	1048	74.2%
First-Gen & Pell Recipient	155	11.0%
Gender		
Male	596	42.2%
Female	817	57.8%
Citizenship Status		
US Citizen	1272	90.0%
Permanent Resident	120	8.5%
Other	21	1.5%
Ethnicity		
European/White	916	64.8%
Non-res alien	128	9.1%
Asian	121	8.6%
Hispanic/Latino	101	7.1%
African	52	3.7%
Two or more	33	2.3%
Amer Indian/Alaskan/Hawaiian	4	0.2%
Unknown	58	4.1%
Residence		
On Campus	501	35.5%
Off Campus	912	64.5%
Major Cluster		
Social Sciences	224	15.9%
Health Sciences	181	12.8%
Business	180	12.7%
Humanities/Fine Arts	174	12.3%
Engineering/IT	157	11.1%
Interdisciplinary	24	1.7%
High-Impact Campus Job		
Fall 2011	474	33.5%
Spring 2012	431	30.5%
Either Fall or Spring	568	40.2%
Both Fall and Spring	334	23.6%
Persistence to Junior Year		
Enrolled Fall 2012	1300	92.0%
Not Enrolled Fall 2012	113	8.0%

Means, standard deviations, and skewness of the scale variables are shown in Table 2. Skewness values of <-1.0 or > 1.0 indicate that the frequency distributions are not normal; this had implications for the type of statistical test used in the analysis. Overall GPA and hours worked are approximately normally distributed. However, all other scale variables, credits attempted, credits earned, change in GPA, and pay rate were highly skewed.

Table 2

Means, Standard Deviations, and Skewness for Key Scale Variables

Variable	<i>M</i>	<i>SD</i>	Skewness
Credits Before Fall 2011	34.36	10.09	1.72*
Credits Attempted Year	29.43	4.69	-1.96*
Credits Earned Year	28.20	5.09	-1.69*
GPA Before Fall 2011	3.11	.53	-0.48
Overall GPA after Spring 2012	3.10	.49	-0.32
Overall Change in GPA year	-0.19	.69	-3.46*
Pay Rate Year	\$ 8.46	1.12	2.11*
Hours Worked Year	254.31	181.35	0.96

Note. * Variables <-1.0 or > +1.0 are skewed.

Results from Statistical Analyses

Research Question One

The first research question sought to understand how well the combination of student input variables (first-generation college student status, Pell recipient, and cumulative credits earned), and campus environmental variables (whether the job is high-impact or not, residence, credits attempted, hours worked, and pay rate) predicted overall GPA.

Multiple regression was used to investigate the best predictors of overall GPA at the end of the year. To check assumptions, scatterplots were generated; relationships between the independent variables and the dependent variable were linear. Correlations among scale variables

were also checked to see if there were problems with multicollinearity, that is whether any of the predictor variable were highly correlated with each other; none were. In fact, in Table 3 below, no two variables had a correlation value of greater than .30. Tolerance values were checked; none were low ($<1-R^2$), providing further support that there was no problem of multicollinearity. There were no violations of homoscedasticity, therefore equal variances could be assumed.

Table 3

Means, Standard Deviations, and Intercorrelations for Overall GPA and Predictor Variables (N=1296)

Variable	<i>M</i>	<i>SD</i>	First Gen	Pell Recipient	Resident	Cum Credits	Credits Attempted	Hours Worked	Pay Rate	Job Type
Overall GPA	3.09	.49	-.14**	-.11**	-.02	.28**	.18**	-.10**	.07**	-.05*
Predictor Variables										
First Generation	.28	.45	--	.19**	.11**	.03	-.10**	.09**	-.00	-.01
Pell Recipient***	.26	.44		--	.20**	.02	.01	.10**	.03	-.12**
Residence	.36	.48			--	.07**	.14**	-.08**	-.07**	-.09**
Cum Creds	34.47	10.05				--	.07**	.03	.07**	-.14**
Credits Att	29.75	4.14					--	-.12**	-.04	.01
Hours Wkd	257.61	181.31						--	.12**	-.12**
Pay Rate	8.44	1.10							--	-.29**
Job Type	.41	.49								--

* $p < .05$; ** $p < .01$

Note. *** indicates significant relationship between first-generation status and Pell recipient.

A cross tabulation was conducted to assess the relationship between two categorical independent variables, first-generation college student status and Pell recipient; there was a significant relationship ($\chi^2 = 50.72$, $df=1$, $N=1379$, $p < .001$, effect size Phi = .19, which is considered by Cohen (1988) to be smaller than typical); first generation college students are significantly more likely to receive Pell than non-first generation college students. This relationship could have impacted statistical results and therefore additional statistical analyses were conducted after the original regression model was analyzed.

Using the simultaneous enter method of multiple regression, the combination of variables to predict overall GPA from first-generation college student status, Pell recipient, cumulative credits earned, residence, credits attempted, hours worked, pay rate, and type of campus job was statistically significant, $F(8,1287) = 26.32, p < .001$; the model had explanatory power with all variables but residence significantly contributing to the prediction of overall GPA.

Beta coefficients are presented in Table 4 below. Pay rate approached significance ($p = .052$), but neither type of job nor residence contributed significantly to the equation. First-generation college student status was associated with the largest difference in overall GPA ($\beta = -.12$); in this model, holding all other variables fixed, GPA is .12 points lower for first-generation college students. The model also predicted that for Pell recipients, GPA would decrease by .10 holding other independent variables fixed. Using all predictors simultaneously the correlation coefficient, R , was .38, a typical effect size according to Cohen (1988). The adjusted R^2 value was .135, meaning that 13.5% of the variance in overall GPA was explained by the model.

Table 4

Multiple Regression Analysis Summary for Overall GPA, First-generation Status, Pell Recipient, Residence, Cumulative Credits, Credits Attempted, Hours Worked, Pay Rate, Job Type in Predicting Overall GPA (N=1296)

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
First Generation	-.12	.03	-.11	- 4.04	<.001
Pell Recipient	-.10	.03	-.09	- 3.20	.001
Residence	-.04	.03	-.04	- 1.44	.151
Cum Credits	.01	.00	.27	10.34	<.001
Credits Attempted	.02	.00	.15	5.58	<.001
Hours Worked	.00	.00	-.08	- 3.13	.002
Pay Rate	.02	.01	.05	1.95	.052
Job Type	-.02	.03	-.02	- 0.85	.399
Constant	2.05	.15			

Note. $R^2 = .135; F(8,1287) = 26.32, p < .001$

Additional Results for Research Question One

A backwards multiple regression was then conducted to identify the most parsimonious combination of predictors on overall GPA. Two variables, residence and type of job, dropped out of the model with no reduction in the adjusted $R^2 = .135$, indicating that 13.5% of the variance in overall GPA was explained by this new model, $F(6,1289) = 34.65, p < .001$, with $R = .37$, a medium or typical effect size. This model included first generation college student status, Pell recipient, cumulative credits earned, credits attempted, hours worked, and pay rate, all of which significantly contribute to the model. The equation is $\text{Overall GPA} = 3.09 - .12\text{FG} - .10\text{Pell} + .01\text{CredBef} + .02\text{CredAtt} + .00\text{HrsWorked} + .03\text{PayRate} + e$.

A final regression analysis using the simultaneous enter method was then run with only these predictors, minus Pell recipient, given the concerns about the significant relationship between first-generation college student status and Pell recipient. This final model also showed statistical significance, $F(5, 1290) = 38.85, p < .001, R = .36$ and adjusted $R^2 = .127$. Removing Pell recipient reduced variance explained by .008. Table 5 presents beta weights for the model.

Table 5

Multiple Regression Analysis Summary for Overall GPA, First-generation Status, Cumulative Credits, Credits Attempted, Hours Worked, and Pay Rate in Predicting Overall GPA (N=1296)

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
First Generation	-.14	.03	-.13	- 4.89	<.001
Cum Credits Bef	.01	.01	.27	10.38	<.001
Credits Attempted	.02	.00	.14	5.30	<.001
Hours Worked	.00	.00	-.09	- 3.25	.001
Pay Rate	.03	.01	.06	2.30	.022
Constant	2.01	.14			

Note. $R^2 = .127; F(5,1290) = 38.85, p < .001$

The equation for the final model is $\text{Overall GPA} = 3.09 - .14\text{FG} + .01\text{CredBef} + .02\text{CredAtt} + .00\text{HrsWorked} + .03\text{PayRate} + e$. Holding all other variables fixed, this final model predicted that the overall GPAs of first-generation college students would be .14 lower than overall GPAs of continuing generation students.

Research Question Two

The second research question examined differences in overall GPA for students varying on first-generation college student status and/or the type of campus job (high-impact v. non high-impact), and whether there was a significant interaction between first-generation college student status and type of campus job on overall GPA.

- a. Is there a statistically significant difference between first-generation college students status and non first-generation college student status in regard to overall GPA?
- b. Is there a statistically significant difference between students whose campus job is high-impact and students whose campus job is not high-impact in regard to overall GPA?
- c. Is there a statistically significant interaction of first-generation college student status and type of campus job (HIP v. non-HIP) in regard to overall GPA?

A two-way factorial ANOVA was chosen to assess whether first-generation college student status and type of campus job had an effect on overall GPA, and if the effects of type of campus job on overall GPA depended on whether the student was first-generation college. Levene's test was not significant, therefore the assumption of homogeneity of variances was not violated. Table 6 shows the means and standard deviations for overall GPA for first-generation college student status and the type of campus job. First-generation college students had lower

overall GPAs than continuing generation college students, regardless of type of campus job: $F(1, 1292) = 19.39, p < .001, \eta^2 = .02$.

Table 6

Means, Standard Deviations, and n for Overall GPA as a Function of First-Generation College Student Status and Type of Campus Job

Type of Job	First-Generation			Not First-Generation			Total	
	n	M	SD	n	M	SD	M	SD
High-Impact	143	3.03	.468	384	3.07	.472	3.06	.471
Not H-I	218	2.95	.532	551	3.18	.479	3.12	.505
Total	361	2.98	.509	935	3.14	.479	3.09	.492

Table 7 shows that there was a significant interaction between first-generation college student status and type of campus job on overall GPA, $F(1, 1292) = 9.64, p = .002$. Eta for the interaction was .10, which, according to Cohen (1988) is a smaller than typical effect size.

Table 7

Analysis of Variance for Overall GPA as a Function of Type of Campus Job and First-Generation College Student Status

Variable and source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η^2
First-generation (FG)	1	4.57	19.39	.000	.02
Type of Job	1	.03	.13	.721	.00
FG X Type of Job	1	2.27	9.64	.002	.01
Error	1292	.24			

As seen in Table 7, only first-generation college student status had a significant main effect on overall GPA: $F(1, 1292) = 19.39, p < .001, \eta^2 = .14$, with a smaller than typical effect (Cohen, 1988). No statistically significant main effects were found for type of campus job. The significant F for first-generation college student status means that first-generation college students had lower overall GPAs ($M = 2.98$ vs. 3.14) than continuing-generation students and the difference is statistically significant ($p < .001$). No main effects were found for type of campus job. However, the interaction F is significant, which means that a unique combination of first-generation college student status and type of campus job has an effect on overall GPA. Figure 2 shows the profile plot of the interaction between first-generation college student status and type of campus job.

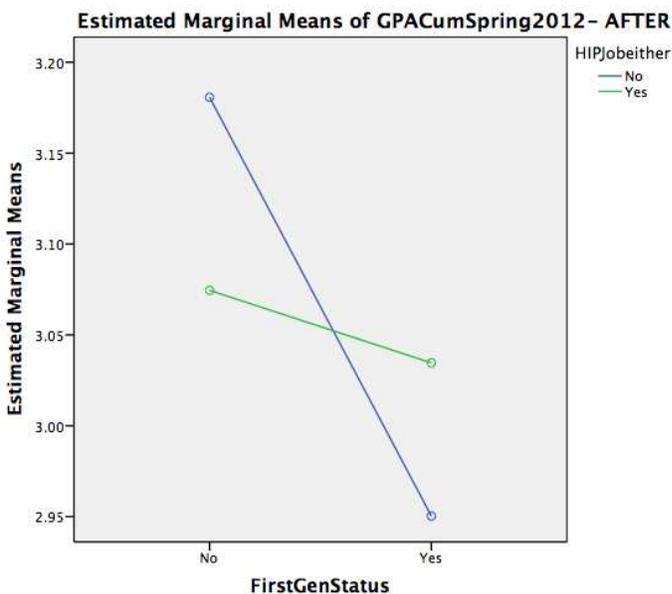


Figure 2. Interaction of First-Generation College Student Status and Type of Job

To break down the interaction effect, a simple effects analysis was conducted. The univariate test was significant only for continuing-generation college students, $F(1, 1292) = 10.84, p = .001$ but not for first-generation college students, $F(1, 1292) = 2.61, p = .107$, meaning that the difference in GPA was statistically significant for continuing generation students.

Research Question Three

The third research question sought to understand how well the combination of student input variables (first-generation college student status, Pell recipient, and cumulative credits earned), and campus environmental variables (whether the type of job is high-impact or not, residence, credits attempted, hours worked, and pay rate) predicted change in GPA. The dependent variable in this case, change in GPA, was skewed. Given there is no non-parametric equivalent for multiple regression, the investigator chose to run the multiple regression first, then run a Spearman-Rho calculation as a post-hoc test. Correlations among scale variables were checked for multicollinearity; no problems were discovered. It should be noted that a statistically significant relationship was discovered between two categorical independent variables, first-generation college student status and Pell recipient: $\chi^2 = 50.72$, $df=1$, $N=1379$, $p < .001$, effect size Phi = .19, which is considered by Cohen (1988) to be smaller than typical. First generation college students were significantly more likely to receive Pell than non-first generation college students.

Means, standard deviations, and intercorrelations can be found in Table 8. The combination of variables, from first-generation college student status, Pell recipient, residence, cumulative credits earned, credits attempted, hours worked, type of campus job, and pay rate, was statistically significant, $F(8,1370) = 15.86$, $p < .001$ in predicting change in GPA. $R = .28$, which, according to Cohen (1988) is between a small and medium effect size.

Table 8

Means, Standard Deviations, and Intercorrelations for Change in GPA and Predictor Variables (N=1379)

Variable	<i>M</i>	<i>SD</i>	First Gen	Pell Recip	Resident	Cum Credits	Credits Attempted	Hours Worked	Pay Rate	Job Type
Change in GPA	-.20	.69	-.05**	-.03	.06**	-.01	.28**	.02	-.02	-.01
Predictor Variables										
First Generation	.29	.45	--	.19	.10	.04	-.09	.09	.00	-.02
Pell Recipient***	.26	.44		--	.20	.01	.01	.10	.02	-.11
Residence	.35	.48			--	.08	.15	-.08	-.07	-.08
Cum Creds	34.33	10.07				--	.08	.02	.06	-.14
Credits Att	29.38	4.68					--	-.08	-.02	-.01
Hours Wkd	256.93	181.86						--	.14	-.13
Pay Rate	8.45	1.11							--	-.29
Job Type	.41	.49								--

* $p < .05$; ** $p < .01$

Note. *** indicates significant relationship between first-generation status and Pell recipient.

Beta coefficients are presented in Table 9. In this model, residence and credits attempted significantly predicted change in GPA when all variables were included. The adjusted R^2 value was .079, indicating that 8% of the variance in change GPA was explained by the model.

Table 9

Multiple Regression Analysis Summary for Change in GPA, First-generation Status, Pell Recipient, Residence, Cumulative Credits, Credits Attempted, Hours Worked, Pay Rate, Type of Job in Predicting Change in GPA (N=1379)

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
First Generation	-.04	.04	-.03	- 0.97	.33
Pell Recipient	-.07	.04	-.05	- 1.68	.09
Residence	.05	.04	.03	1.25	.21
Cum Credits	-.00	.00	-.04	- 1.49	.14
Credits Attempted	.04	.00	.28	10.52	<.001
Hours Worked	.00	.00	.06	2.11	.04
Pay Rate	-.02	.02	-.03	- 0.96	.34
Job Type	-.03	.04	-.02	- 0.71	.48
Constant	-1.20	.20			

Note. $R^2 = .049$; $F(8,1370) = 15.86$, $p < .001$

Spearman correlations were then computed to check associations between change in GPA and the variables in the regression model that showed statistical significance: hours worked and credits attempted. The Spearman Rho statistic was not significant for hours worked, however, for credits attempted, the Spearman Rho statistic was significant, $r(1413) = .07$, $p = .01$. The direction of the correlation is positive, which means that students who attempted more credit hours tended to have a greater change in GPA, yet since the change was negative, that means that students attempting more credit hours saw a slight dip in GPA. Using Cohen's (1988) guidelines, the effect size is much smaller than typical, and R^2 indicating less than 1% of variance in change in GPA predicted by credits attempted.

Research Question Four

The fourth research question sought to identify if there were differences in change in GPA for students varying on first-generation college student status and/or the type of campus

job, and was there a significant interaction between first-generation college student status and type of campus job on change in GPA?

- a. Is there a statistically significant difference between first-generation college students status and non first-generation college student status in regard to change in GPA?
- b. Is there a statistically significant difference between students whose campus job is high-impact and students whose campus job is not high-impact in regard to change in GPA?
- c. Is there a statistically significant interaction of first-generation college student status and type of campus job in regard to change in GPA?

The dependent variable in this question, change in GPA, was skewed and so the investigator chose to run the analysis using a two-way factorial ANOVA first, then conduct a Mann-Whitney U calculation as a post-hoc test. However, results from the ANOVA showed no statistically significant differences in change in GPA; no interaction effects $F(1, 1375) = 2.65$, $p=.10$, and no main effects for either first-generation college student status $F(1, 1375) = .90$, $p=.52$ or type of campus job $F(1, 1375) = .02$, $p=.91$. Given this result, the investigator concluded that a Mann-Whitney U calculation would not be necessary, however, the Mann-Whitney tests were performed anyway as a confirmation. No significant differences were found for either first-generation status (mean ranks were 684.38 for first-generation and 692.25 for non-first-generation, $U=191892.0$, $p=.74$), or for type of campus job (mean ranks were 495.21 for students who had a high-impact job and 481.17 for students who did not have a high-impact job in either semester, $U=103302.5$, $p=.46$).

Research Question Five

The fifth research question sought to understand how well the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environmental variables (whether the campus job is high-impact or not, residence, credits attempted, hours worked, and pay rate) predicted persistence from sophomore to junior year.

Logistic regression was selected to assess whether the eight predictor variables significantly predicted whether or not a student persisted from sophomore to junior year. Correlations between scale variables were checked; none were highly correlated. When all eight variables were taken together, they did predict whether a student persisted from sophomore to junior year, $\chi^2 = 100.57$, $df=8$, $N=1389$, $p < .001$. The classification table reported an overall 91.8% predictive rate for this model, with 9.3% of those who did not persist predicted correctly and 98.8% of those who did persist were predicted correctly. Essentially this means that the model did well in predicting those who persisted, but not so well in predicting attrition. Rough estimates of the variance that can be predicted from the combination of the eight variables were reported by the Cox & Snel R Square = .07 and the Nagelkerke R square = .17, which estimated between 7-17% of the variance explained. According to Cohen (1988), this is a smaller than typical effect. Table 10 presents the odds ratios, which report the effects of each of the individual predictor variables in the model. Negative coefficients indicated an inverse relationship between the predictor variable and persistence. As seen in Table 10, controlling for other variables in the model, there was a statistically significant and positive relationship between credits attempted and persistence. For every additional unit of credit attempted, the odds of persistence increased by 17%. The other individual predictor in the model reaching

statistical significance was Pell recipient, and this relationship was negative. When controlling for other variables in the model, the odds of Pell recipients persisting were 43% lower than for the non-Pell recipients.

Table 10

Binary Logistic Regression Predicting Who Persisted from Sophomore to Junior Year (N=1389)

Variable	<i>B</i>	<i>SE</i>	<i>Odds Ratio</i>	<i>p</i>
First Generation Status	-.34	.23	.71	.134
Pell Recipient	-.57	.24	.57	.016**
Campus Residence	.10	.24	1.11	.679
Cumulative Credits	.00	.01	1.00	.788
Credits Attempted	.16	.02	1.17	.000**
Hours Worked	.00	.00	1.00	.419
Pay Rate	-.14	.09	.87	.120
Type of Campus Job	-.11	.23	.90	.633

* $p < .05$; ** $p < .01$

Research Question Six

The last research question sought to examine if there were differences in persistence from sophomore to junior year for students varying on first-generation college student status and/or the type of campus job, and whether there was a significant interaction between first-generation college student status and type of campus job on persistence from sophomore to junior year.

- a. Is there a statistically significant difference between first-generation college student status and non first-generation college student status on persistence from the sophomore to junior year?
- b. Is there a statistically significant difference between high-impact campus jobs and non high-impact campus jobs in regard to persistence from the sophomore to junior year?

- c. Is there a statistically significant interaction of first-generation college student status and type of campus job in regard to persistence from sophomore to junior year?

A chi-square statistic was computed to investigate whether first-generation college students and non-first-generation college students differed on persistence from sophomore to junior year. Frequencies were checked to ensure that at least 80% of the expected frequencies were greater than five. Assumptions were met. Table 11 shows the Pearson chi-square results, which indicate a statistically significant difference ($\chi^2 = 5.06$, $df = 1$, $N=1379$, $p=.025$). First-generation college students were less likely to persist from sophomore to junior year than non-first-generation college students. The strength of the association, Phi, is -.06, which is smaller than typical (Cohen, 1988).

Table 11

Chi-square Analysis of Persistence from Sophomore to Junior Year Among First-generation and Non First-generation College Students

Variable	n	First-generation (FG) Status		χ^2	p
		FG	non-FG		
Persistence					
Enrolled Fall 12	1271	353	918	5.06	.024
Not Enrolled Fall 12	108	41	67		
Totals	1379	394	985		

To determine whether students working in different types of campus jobs, high-impact v. non-high-impact, differed on persistence from sophomore to junior year, another chi-square statistic was computed. Pearson chi-square results yielded no significant difference in persistence from sophomore to junior year among students whose campus job was high-impact and students whose campus job was not high-impact ($\chi^2 = 0.00$, $df = 1$, $N=1412$, $p= .991$). Students whose

campus job was high-impact were no more or less likely to persist from sophomore to junior year than students whose campus job was not high-impact.

Logistic regression was then used to assess the interaction, whether the two predictor variables, first-generation college student status and type of campus job, significantly predicted whether or not a student persisted from sophomore to junior year. When the two predictor variables were considered together, no significance was found; only first-generation college student status was a significant individual predictor of persistence ($\chi^2 = 5.29, df = 3, N = 1413, p = .033$). It seems therefore that first-generation college students were at higher risk of attrition, irrespective of what type of campus job they held.

Additional Findings

Taking the statistical findings as a whole, it is important to note that the key environmental independent variable in this study, the type of campus job, showed no significant main effects on any of the dependent variables, overall GPA, change in GPA, or persistence. The researcher was curious to learn more about the data set and therefore conducted a few additional statistical tests. Cross tabs were run to examine differences between first-generation college students and non-first generation college students on type of campus job; no statistically significant differences were found. Additionally there were no significant differences on type of campus job for gender, race, citizenship, academic program or residence, however, differences were found with Pell recipients. Cross tabulations between Pell recipient and type of campus job showed that Pell recipients were statistically less likely than non-Pell-recipients to hold a high impact job ($\chi^2 = 15.66, df = 1, N = 1412, p < .001, \text{Phi} = -0.11$). Significant differences were also found between residents and commuters on number of hours worked. Residents worked

significantly fewer hours on campus than commuters $M=234.49$ v. 265.21 , $t=3.174$, $p=.002$, $d=.17$.

Inspection of the means using an independent samples t-test showed statistically significant differences between first-generation college students and non-first-generation college students on total hours worked on campus. First-generation college students worked more hours on campus than non-first-generation college students ($M=283.12$ v. 246.45 , $t=-3.24$, $p=.001$). The difference between the means is 36.67 hours over the course of one academic year and the effect size $d=.20$, according to Cohen (1988) is smaller than typical. A Mann-Whitney U test was conducted to compare mean ranks for pay rate, a skewed variable, between first-generation college students and non-first generation college students, yet no statistically significant differences were found. However, there were significant differences between first-generation college students and non-first generation college students on credits attempted. First-generation college students attempted fewer credits than non-first-generation college students ($M= 28.74$ v. 29.63). The difference in means $=.89$, $t=3.19$, $p=.001$, $d= -.20$.

The investigator was also interested in additional checks for equivalency of groups and conducted several statistical tests to determine if there were differences between institutions supplying the data for the study. This post-study check for equivalence of groups uncovered some differences that could not have been anticipated prior to the start of the research. There were statistically significant differences between institutions on several of the variables in the study; these are represented in Table 12.

Table 12

Post-Study Differences Between Institutions on Key Variables in the Study

Variable	Institution		Test	Sig	Effect Size	Note
	School A	School B				
First-Generation (FG)	317 (339)	77(55)	Chi-Sq	$p<.001$	Phi = .10	School B has significantly more FG students
Pell Recipient	261 (305)	103 (59)	Chi-Sq	$p<.001$	Phi = .20	School B has significantly more Pell recipients
Cum Credits	M=34.30	M=35.22	<i>t</i> -test	NO		No differences in cum credits
Residence On Campus	310 (420)	191 (80)	Chi-Sq	$p<.001$	Phi =.45	School B has significantly more campus residents
Hours Worked	M=264.23	M=201.62	<i>t</i> -test	$p<.001$		School A students worked significantly more hours on campus
Pay Rate	M= \$8.47	M=\$8.43	<i>t</i> -test	NO		No differences in pay rate
Credits Attempted	M=29.09	M=31.20	<i>t</i> -test	$p<.001$		School B students attempted significantly more credits
Job Type High-Impact	545 (477)	23 (91)	Chi-Sq	$p<.001$	Phi = -.27	School A has significantly more HIP jobs
Overall GPA	M=3.11	M=3.02	<i>t</i> -test	$p=.01$		School A has significantly higher overall GPAs
Change in GPA	M=-.22	M=-.02	MWU	$p<.001$		School A has significantly higher changes in GPA (neg)
Persistence	1090 (1091)	209 (208)	Chi-Sq	NO		No significant differences in persistence

Summary of Results

In summary, this study sought to examine the relationship between the type of campus job and the success of first-generation college students. Table 13 presents an overall summary of the statistical analyses, results, and effect sizes from the research questions and additional findings.

Table 13

About First-Generation (FG) College Students

Characteristic	FG	non-FG	Test	Sig	Effect Size
Pell Recipient	155	239	Chi-Sq	.000	Phi =.19
Residence					
On Campus	166	315	Chi-Sq	.001	Phi =.10
Off Campus	228	670			
Gender					
Male	146	439	Chi-Sq	.011	Phi=.07
Female	248	546			
Race/Ethnicity					
White	260	653	Chi-Sq	NO	
Non-White	117	293			
Cum Credits Bef Soph Yr	35.01	34.06	<i>t</i> -test	NO	
Credits Attempted*					
Fall 2011*	14.72	15.04	MWU	.001	
Spring 2012*	14.13	14.69	MWU	.000	
Year Total*	28.74	29.63	MWU	.000	
Credits Earned*					
Fall 2011*	13.96	14.41	MWU	.000	
Spring 2012*	13.48	14.11	MWU	.000	
Year Total*	27.34	28.49	MWU	.000	
Campus Employment					
Worked Fall 2011	336	822	<i>t</i> -test	NO	
Worked Spring 2012	430	750	<i>t</i> -test	NO	
Worked 2 terms	278	681	<i>t</i> -test	NO	
Type of Job					
High-Impact 1 term	154	411	Chi-Sq	NO	
Not High-Impact	240	574	Chi-Sq	NO	
High-Impact 2 terms	96	238	Chi-Sq	NO	
Not High-Impact	182	443	Chi-Sq	NO	
Pay Rate	\$8.46	\$8.45	<i>t</i> -test	NO	
Hours Worked	283	246	<i>t</i> -test	.001	<i>d</i> =.20
Grades					
ACT comps	24.79	26.32	<i>t</i> -test	.000	<i>d</i> =-.43
GPA before	2.95	3.11	<i>t</i> -test	.000	<i>d</i> =-.30
GPA after	2.98	3.14	<i>t</i> -test	.000	<i>d</i> =-.32
Persistence to Junior Year	353	918	Chi-Sq. .024	Phi=-.06	

* Note: Skewed variables required non-parametric tests

What has been learned about campus jobs in terms of statistical analyses, results, and effect sizes from this study is presented in Table 14.

Table 14

About Campus Jobs

Characteristic	HIP	non-HIP	Test	Sig	Effect	Comments
Campus Jobs (descriptives)						
Fall 2011	474	684	N/A			
Spring 2012	431	749	N/A			
FG students in						
Fall 2011	130	341	Chi-Sq	NO		No differences in type of job for FG students
Spring 2012	121	215	Chi-Sq	NO		
Pell recipient in						
Either term	115	250	Chi-Sq	$p < .001$	Phi = -.11	Pells are less likely to hold a HIP job.
Both terms	72	203	Chi-Sq	$p = .001$	Phi = -.11	
Residence						
On Campus	172	329	Chi-Sq	$p = .001$	Phi = -.09	Commuters are more likely to hold a HIP job.
Commuter	396	515	Chi-Sq	$p = .030$	Phi = -.07	
GPA						
Term Fall 2011*	2.90	2.96	MWU	NO		This finding indicates that HIP-job holders have lower overall GPAs than non-HIP.
Term Spring 2012*	2.93	2.99	MWU	NO		
Overall Year	3.06	3.12	<i>t</i> -test	$p = .05$	$d = .12$	
GPA Change*						
During Fall 2011	-0.04	-0.06	MWU	NO		
During Spring 2012	-0.12	-0.12	MWU	NO		
Overall Year	-0.21	-0.17	MWU	NO		
Persistence						
Either term	523	523	Chi-Sq	NO		No differences in persistence based on type of campus job
Both terms	314	313	Chi-Sq	NO		

* *Note:* Skewed variables required non-parametric tests.

Overall, the results from this study indicated that first-generation college students were more likely to receive Pell, attempt fewer credits, and earn lower GPAs, as well as work significantly more hours and persist at lower rates than their continuing-generation counterparts. No significant differences in the type of campus jobs held were found, nor were there any

significant differences in grades or persistence outcomes based on the type of campus job. In the final chapter, these results will be further discussed in light of previous research findings.

CHAPTER 5: DISCUSSION

The purpose of this study was to investigate how campus employment impacted the academic success and persistence of first-generation college students, and compare differences in academic success and persistence of first-generation college students whose campus jobs were configured as high impact practices with first-generation college students whose campus jobs were not. Previous research has shown that high-impact practices have both a cumulative and compensatory effect on first-generation college student success, yet first-generation college students participate in fewer high-impact practices than their continuing generation peers (Finley & McNair, 2013). Such deficits have compelled institutions of higher education to provide more high-impact opportunities for students, and campus employment has been cited as just such an opportunity (Kuh, 2008). By identifying the relationship that high-impact campus jobs have with the academic achievement and persistence of first-generation college students, this study also aimed to expand the scope of what are presently considered high-impact practices. Six research questions were posed; archival data from two institutions whose campus jobs were specifically configured to be high-impact were analyzed.

Research Question One

The first research question asked how well the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environment variables (residence, type of campus job: high-impact or not, credits attempted during the work period, total hours worked on campus, and pay rate) predicted overall GPA. Results from the regression analysis showed that the model was significant, $F(8,1287)=26.32, p<.001, R = .38, R^2=.135$. Individual predictors showing significance were first-generation college student status, Pell recipient, cumulative credits, credits attempted, and

hours worked. Pay rate approached significance ($p=.052$), however neither type of campus job nor residence contributed significantly to the equation. With $R^2 = .135$, 13.5% of the variance in overall GPA was explained by the model.

Additional Findings for Research Question One

A backwards regression analysis revealed that two variables, residence, and type of job, dropped out of the model with no reduction in adjusted R^2 . Given the statistically significant relationship between first-generation college student status and Pell recipient, a final simultaneous enter regression model was re-run without type of campus job, residence, or Pell. The final model showed significance, $F(5,1290) = 38.85$, $p < .001$ with $R = .36$, and adjusted $R^2 = .127$, meaning that 12.7% of the variance in overall GPA was explained. Taken together, results from the two models suggest a range of 12.7% - 13.5% of the variance in overall GPA explained by the predictor variables. Figure 3 depicts the regression model using Astin's theoretical framework, highlighting the variables showing statistical significance in bold.

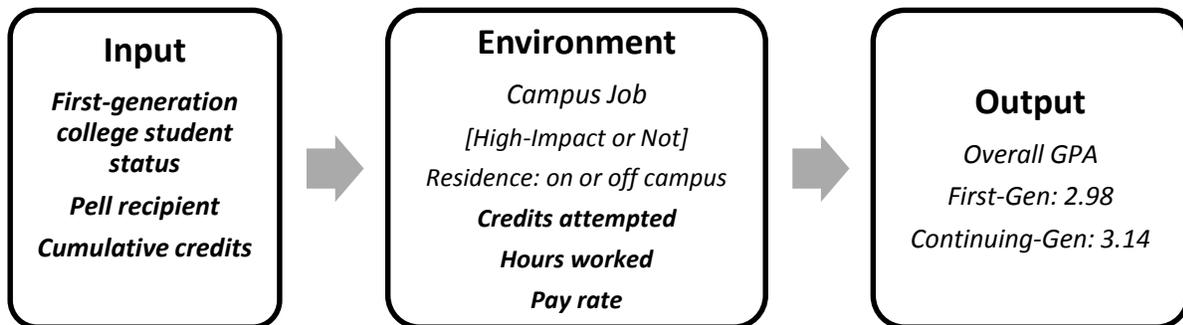


Figure 3. Astin's I-E-O Framework with significant independent variables bolded.

When examining the Beta coefficients for both of these models, a lower overall GPA for first-generation college students was predicted. The original model predicted that first-generation college students would have an overall GPA that was .16 lower than continuing-

generation college students, and in the second model, which excluded Pell, first-generation college students were predicted to have a GPA that was .12 lower than continuing-generation college students. Not only are these results statistically significant, but there is also practical significance to these results, as a GPA difference of .12 or .16 could mean exclusion from internships, fellowships, scholarships, or leadership opportunities whose GPA threshold is 3.0.

These results are consistent with previous empirical studies showing that first-generation college students are more likely to receive Pell, attempt and earn fewer credits, have lower GPAs, and persist at lower rates (Defendall et al., 2011; Engle & Tinto, 2008; Pascarella et al., 2004). The key independent variable of interest in this study however, the high-impact campus job, was not found to be an individual contributor to overall GPA in either model. A full discussion of possible reasons why the high-impact campus job had no predictive relationship to the outcomes in this study is introduced later in this chapter.

Research Question Two

The second research question sought to identify differences in overall GPA for students varying on first-generation college student status and/or the type of campus job, and whether there was significant interaction between first-generation college student status and type of campus job on overall GPA. Results of the two-way factorial ANOVA showed a significant interaction between first-generation college student status and type of campus job on overall GPA, $F(1, 1292) = 9.64, p = .002, \eta^2 = .01$. The significant F for first-generation college student status means that first-generation college students had lower overall GPAs ($M = 2.98$ vs. 3.14) than continuing-generation students and the difference is statistically significant ($p < .001$). The type of campus job had an effect when combined with first-generation college student status; the

unique combination of first-generation college student status with the type of campus job was significant. Figure 4 depicts the interaction.

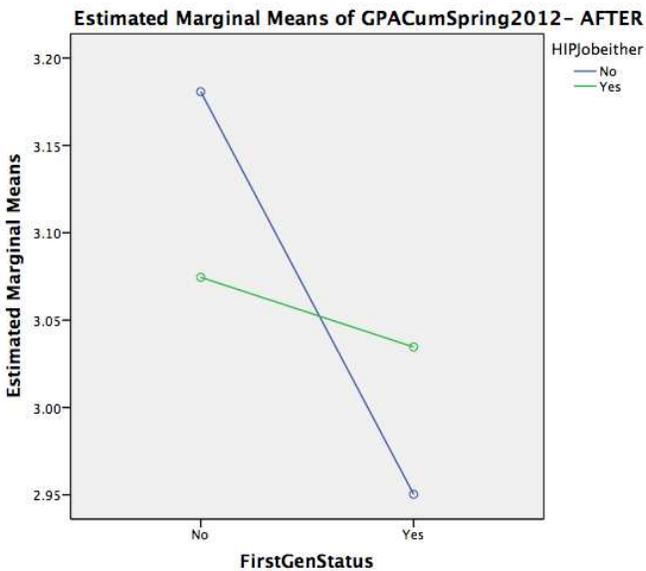


Figure 4. Interaction of first-generation college student status and type of campus job.

As depicted in Figure 4, overall GPAs of first-generation college students were higher for students who worked in a high-impact campus job ($M=3.03$ v. 2.95) than first-generation college students working in a non-high-impact campus job. Overall GPAs for continuing-generation students in high-impact jobs were lower than continuing-generation students whose campus job was not high-impact ($M=3.07$ v. 3.18). No main effects were found for type of campus job; significant main effects were found only for first-generation college student status: $F(1, 1292) = 19.39, p < .001, \eta^2 = .02$. Given the small effect size of the interaction, these results should be viewed with caution, however, they are still interesting and should not be considered inconsequential. Overall GPAs of first-generation college students were higher when students worked in high-impact campus jobs. Note that in this study, first-generation college students worked more hours on campus than continuing-generation students at a statistically significant

level ($M=283.12$ v. 246.45 , $t=-3.24$, $p=.001$), yet first-generation college students in high-impact campus jobs earned higher GPAs than those who worked in a non-high-impact campus job. Given these results, we must consider what it was about the high-impact campus jobs that seemed to benefit first-generation college students despite their working more hours. One potential explanation is that this result provides some evidence of a compensatory effect, i.e. high-impact practices have been shown to benefit first-generation college students more than they benefit continuing-generation college students (Finley & McNair, 2013).

It is also interesting to note that in this sample the highest overall GPAs were earned by continuing-generation students who held non high-impact campus jobs. Results from the simple effects analysis indicated that there were statistically significant differences in overall GPA among continuing-generation college students; continuing-generation college students holding high-impact jobs had lower overall GPAs than those in non-high-impact jobs ($M=3.07$ v. 3.18). According to Kuh (2008), high-impact practices benefit all students, yet in this study of campus jobs configured as high-impact, the opposite seems to be true for continuing-generation students. One possible explanation for this result could be socio-economics. In this sample, continuing-generation college students worked significantly fewer hours than first-generation students, and were less likely to receive a Pell grant. It is possible that for this sample, continuing-education students worked fewer hours for spending money alone, and did not need the extra support a high-impact job was purported to provide. Another possible explanation could be differences in content of the positions. Perhaps high-impact campus jobs involved more and were more complex, requiring students to invest more of their brain power into those jobs. Perhaps the non-high-impact campus jobs were not as complex, did not require much exposure to diversity, opportunity to work with faculty and peers, challenges of solving real world problems and so

forth. It is possible that for continuing-generation students, the campus job that required less of them actually helped them focus more on schoolwork. King's (2006) analysis of the 2003-04 National Postsecondary Student Aid Study differentiated working students into two self-identified groups: students who worked and employees who studied. She noted that while affluent students worked while in college, their reasons for working differed from those of lower income students. Affluent students in her sample were more likely to report working for extra spending money or to gain experience than lower income students who worked to support themselves and pay for college.

Research Question Three

The third research question sought to understand how well the combination of input variables (first-generation college student status, Pell recipient, and cumulative credits earned), and campus environmental variables (type of campus job, residence, credits attempted, hours worked, and pay rate) predicted change in GPA. The regression model was significant $F(8,1370) = 15.86, p < .001, R = .28, R^2 = .08$, with a medium effect size, yet in this sample, change in GPA was a skewed variable, requiring a Spearman Rho post-hoc correlation. Only credits attempted significantly predicted change in GPA, $r(1411) = .07, p = .007$, meaning students who attempted more credit hours had a greater change in GPA, yet the mean change in GPA was negative $-.20$. Therefore this result suggests that students who enrolled in more credit hours could expect a slight decrease in GPA. The effect size reminds us to interpret these results cautiously. This result is somewhat surprising, given the statistical significance of the regression model for the same input and environmental variables on overall GPA. However, in practical terms, this result may have meaning, for the same reason offered in research question one: a

decrease in GPA of -.20 could potentially disqualify students from competitive career building internships, leadership, or research opportunities which require a GPA threshold, commonly 3.0.

Research Question Four

The fourth research question sought to identify differences in change in GPA for students varying on first-generation college student status and/or the type of campus job, and any significant interaction between first-generation college student status and type of campus job on change in GPA. Results yielded no statistically significant differences, no interaction effects, nor main effects for either first-generation college student status or type of campus job. This result is also somewhat surprising, given that first-generation college student status was found to be a significant individual predictor of overall GPA.

Pairing this result with that of research question three, it appears that students in this sample enrolling in more credit hours could expect a slight decrease in GPA, -.20, regardless of their first-generation college student status, or type of campus job. From a practical point of view, a student enrolling in more credit hours could likely expect more hours of class time, more homework, and more study time, and as a result, it would not be unexpected to see a dip in GPA at the end of the term. Yet in this sample, despite the fact that first-generation college students enrolled in fewer credits ($M=28.74$ v $M=29.63$) and worked more hours ($M=283$ v $M=246$) than continuing-generation college students, both at statistically significant levels, there is no statistically significant difference in their change in GPA. First-generation college students enrolling in fewer credits and working more hours is supported by previous empirical research (McCormick et al., 2010; Pascarella et al., 2004; Terenzini et al., 1996).

Research Question Five

The fifth research question sought to understand whether the combination of student input variables (first-generation college student status or not, Pell recipient or not, and cumulative credits earned), and campus environmental variables (whether the campus job is high-impact or not, residence, credits attempted, hours worked, and pay rate) predicted persistence from sophomore to junior year. Binary logistic regression modeling showed significance: $\chi^2 = 100.57$, $df=8$, $N=1389$, $p < .001$ but with a smaller than typical effect size. The only individual predictors that contributed significantly to the model were credits attempted and Pell. For every additional credit attempted, the odds of persisting from sophomore to junior year increased by 17%. On the other hand, the odds of persisting for Pell recipients were actually 43% lower than the odds for students who did not receive Pell. These results do not align with previous research on first-generation college students, which has shown that first-generation college students are at risk for attrition every year in college, and from sophomore to junior year in particular (Ishitani, 2006).

The investigator compared these results with the results from research question one, which looked at the effect of the same combination of independent variables on a different outcome variable, overall GPA. Results from research question one yielded a regression model which was statistically significant in predicting overall GPA, and in that model, more of the independent variables were significant individual predictors of overall GPA: first-generation college student status, cumulative credits earned, hours worked, as well as Pell recipient and credits attempted. Yet for research question five, which used logistic regression modeling, first-generation college student status, cumulative credits earned, and hours worked were not individual predictors of persistence from sophomore to junior year. Previous research on the

relationship between work intensity, in other words, hours worked, and student success has been mixed (Pike et al., 2008; Riggert et al., 2006). Studies have shown that increased work intensity is related to decrease in likelihood of persistence (Gleason, 1993; Kulm & Cramer, 2006; Lens et al., 2005; Orozco & Cauthen, 2009) and that first-generation college students work more hours than continuing generation students (McCormick et al., 2010).

When results from this study are considered together, results suggest that as credits attempted increased, overall GPAs were likely to decrease, while the odds of persisting from sophomore to junior year increased. Perhaps students who enrolled in more credit hours were more committed to college completion and less concerned about a dip in GPA. Additionally, Pell recipient was not a significant individual predictor of overall GPA, but was a significant individual predictor of persistence. Pell recipients in this study were less likely to persist, and yet in this sample, first-generation college students were significantly more likely to receive Pell. These findings are consistent with the literature on first-generation college students (Engle & Tinto, 2008; Terenzini et al, 1999). The effect sizes of both models were small to medium, suggesting that caution be used in interpretation, however, these findings may hold practical significance. In this study, academic success was defined by GPA, yet GPA is perhaps not the only measure of success for first-generation college students. In this study, it seems that persistence might be more important, in that a dip in GPA is sacrificed to stay in school.

These results also sound an alarm – Pell recipients were 43% less likely to persist than non-Pell recipients. While this research study did not focus on Pell as a key independent variable, the findings relative to the high risk of attrition for Pell recipients are compelling and should be further investigated.

Research Question Six

The last research question sought to examine differences in persistence from sophomore to junior year for students varying on first-generation college student status and/or the type of campus job, and whether there was a significant interaction between first-generation college student status and type of campus job on persistence from sophomore to junior year. Results of the Chi-Square analysis were significant, $\chi^2 = 5.06$, $df = 1$, $N=1379$, $p=.025$, however with a smaller than typical effect size, $\Phi=.06$, and should therefore be interpreted cautiously. Main effects were found only for first-generation college students ($\chi^2 = 5.29$, $df=3$, $N =1413$, $p =.033$), who were less likely than expected to persist from sophomore to junior year than non-first-generation college students. There were no statistically significant differences in persistence based on the type of campus job ($\chi^2 = 0.00$, $df = 1$, $N=1412$, $p= .991$).

When the two predictor variables were considered together, no significance was found. Despite the fact that first-generation college students in high-impact jobs had higher overall GPAs at the end of their sophomore year than first-generation college students in non-high-impact jobs, there were no differences in persistence to the junior year. This is surprising and seems to indicate that the risk of attrition for first-generation college students simply outweighs any benefit that a high-impact campus job might provide to overall GPA. Consistent with previous empirical research, first-generation college students in this study were at higher risk of attrition overall (Defendall et al., 2011; Engle & Tinto, 2008; Ishitani, 2006; Pascarella et al., 2004).

Summary

To summarize thus far, this study investigated the impact of input and environmental factors on the outcomes of grades and persistence for first-generation college students.

Regression models have shown that the combination of input and environmental variables did predict overall GPA at end of the sophomore year as well as predicted persistence to junior year at statistically significant levels, albeit with smaller than typical effect sizes. No statistically significant results were found for change in GPA. Results also showed an interaction effect between first-generation college students and type of campus job on overall GPA; first-generation college students holding high-impact campus jobs had higher overall GPAs than first-generation college students in non high-impact campus jobs; continuing generation students in non-high impact jobs has significantly higher GPAs than continuing-generation students in high-impact jobs. Figure 5 shows a graphical representation of the combined models using Astin’s I-E-O framework.

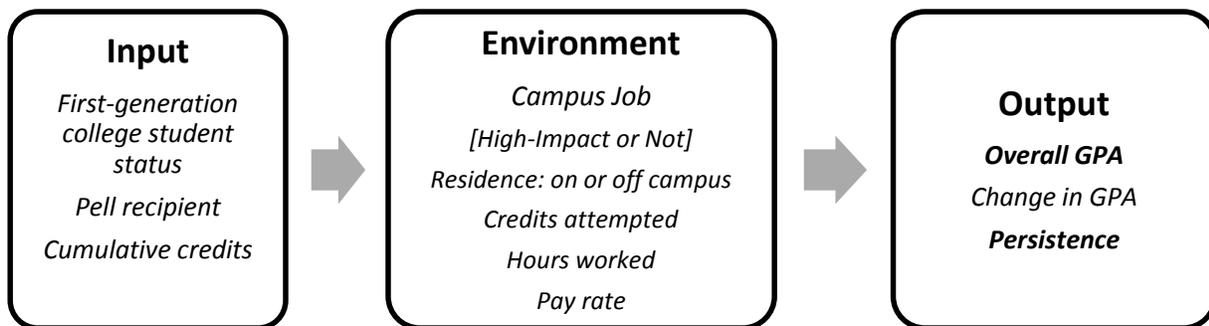


Figure 5. Regression models with statistically significant outcomes in bold.

In the next section, the overall results of this study will be compared with previous research on first-generation college students and high-impact practices.

First-Generation College Students

Several findings from this study confirm what is known from the literature: first-generation college students are more likely to receive Pell, attempt fewer credits, and earn lower GPAs than their continuing-generation peers (Engle & Tinto, 2008; Pascarella et al., 2004).

They also work significantly more hours and persist at lower rates (Defendall et al., 2011; Finley & McNair, 2013; Ishitani, 2006; McCormick et al., 2010; Terenzini et al., 1996).

Some of the findings from the present study, however, are inconsistent with previously published studies. For example, research has shown that first-generation college students attempt and earn fewer credits (Pascarella et al., 2004), yet in this study there were no significant differences between first-generation college students and continuing generation college students in terms of cumulative credits earned before the start of the sophomore year. Recalling that the sample for this study was delimited to sophomore students, perhaps results from this study are an anomaly, or perhaps something happens in the sophomore year at these two institutions that dissuades first-generation college students from enrolling in more credit hours.

Kennedy and Upcraft (2010) reviewed the empirical literature on what is commonly known as the sophomore slump, which they described as a “multidimensional phenomenon” (p. 39) when sophomores may experience academic disengagement and deficiency, indecision about major and career, and identity confusion. In other words, sophomores may be questioning their purpose and goals for college without the extensive support that is often provided for first year students. Perhaps sophomores in the present study experienced this slump, impacting their GPAs. In the present study, the investigator did not examine goal orientation of students, nor commitment to an academic major or career plan, yet it is noted that among the 1413 students in the sample, 396 had not declared a major by the end of their sophomore year.

High-Impact Campus Jobs

Recalling Kuh’s (2008) suggestion that campus employment has the potential to contribute to student success, the researcher in this study looked at two institutions whose campus jobs were purposefully configured as high-impact. Results showed that the type of

campus job was not a significant individual predictor of any of the three outcome variables: overall GPA, change in GPA, or persistence. There are several plausible explanations for these results. Let us review the high-impact designation. The institutions from which the data were drawn each had developed a structured student employment program. On both campuses, departments designated as having high-impact campus jobs required staff to attend training where theory and elements of high-impact practices were reviewed. Supervisors were expected to have at least two conversations each term with their supervisees about their overall learning and development, not strictly limited to learning on the job. The goal of these conversations was to situate the job within the context of the overall student experience in college. Both institutions had previously conducted program assessment with positive outcomes.

Despite such careful structure, there are several uncertainties that could have impacted the results of this study. The extent to which every supervisor during the 2011-2012 academic year attended training, felt comfortable putting the high-impact elements into practice, or developed competence in doing so, is unknown. In addition, there could have been individual supervisors or departments within each institution's high-impact structure that did not follow the program, by choice or by neglect. Conversely, there were also unknowns about departments that did not participate in the high-impact programs. Perhaps supervisors in these departments provided high-impact type experiences without formal training or without being officially a part of the high-impact departments. Lastly, the Resident Assistant positions, well-known leadership roles within residential life on both campuses, were not included in the data set, as these jobs were compensated with room waivers, not through payroll.

There were other unknowns relative to campus jobs. Whether the students had worked in the same job before, had worked at all on campus previously, or were familiar with their

supervisors was unknown. A recent qualitative study described the value that positive relationships with supervisors have on students. Watson (2013) interviewed student employees in the student affairs' division of one university to understand what value students derived from their campus jobs. She delimited her study to eleven students who had returned to their same job for a second year and who had been recommended for the study by their supervisors. Several of the themes that emerged from her study resemble the elements of high-impact practices, such as communication with peers and faculty, teamwork, feedback from supervisors, and connections made for students between their jobs and their academics. In the Watson (2013) study, students placed high importance on the flexibility their campus jobs afforded them, especially during exam time.

Another qualitative study of how graduates made meaning of their campus jobs was conducted by Empie (2012), who invited alumni between one and five years out of college to reflect on their college work experience after that they had professional work experience after graduation. She delimited her study to students who had held managerial roles in campus dining services. Similar to the Watson (2013) study, alumni in this study recalled that scheduling flexibility was very important to their ability to fulfill other campus commitments, either academic or out-of-class activities, and to reducing their stress. Participants in this study described their campus jobs as giving them transferrable skills of time management, patience, and confidence. Participants also asserted that teamwork, social connections, and feedback from supervisors were supportive factors.

These qualitative studies that discovered the value and meaning students derived from their campus jobs did not examine quantitative outcomes like GPA or persistence, yet they have

demonstrated the complexity of the campus job environment. Such complexity could not have been ascertained from a statistical analysis of quantitative outcomes, as was done in this study.

Study Limitations

Limitations of this study that were identified during the planning stage included the inability to control for employment off campus and the potential for the campuses to differ in terms of the specific elements of high-impact practices included in their student employment programs. After the study was completed, however, additional limitations surfaced. The post-study check of equivalence of groups uncovered significant differences in the populations of the two institutions that could not have been anticipated; this may have impacted internal validity of the study. In addition, RAs are compensated with bed waivers and did not appear in payroll records, and thus were excluded from the data set. This is a limitation to this study because these positions were designated as high-impact, and their inclusion might have influenced the results. In addition, questions have arisen about the potential impact prior experience with the same campus job and supervisor might have had on the outcomes. Historical employment data was not requested for this study, and is now also considered a limitation. Lastly, the extent to which high-impact elements might have been included in campus jobs not formally designated as such is now considered a limitation as well. Given these newly identified limitations, results from this study must be viewed cautiously and should not be generalized.

Theoretical Implications

Astin's Input-Environment-Output framework was used to scaffold this study that investigated the impact campus jobs configured as high-impact practices had on the success of first-generation college students. Research conducted by Finley and McNair (2013) showed that high-impact practices had a positive and compensatory effect on students at risk, such as first-

generation college students. In the present study, while the type of campus job was not an individual predictor of academic success or persistence for first-generation college students, there was a statistically significant interaction between first-generation college student status and type of campus job as related to overall GPA. In this study, first-generation college students whose campus jobs were configured as high-impact had higher overall GPAs than first-generation college students whose campus jobs were not. This finding may provide an example of the compensatory effect that high-impact practices have on first-generation college students (Finley & McNair, 2013). As such, results may have implications for the theory of high-impact practices, and stimulate additional research that could potentially lead to the inclusion of campus employment as a high-impact practice. More research must be conducted, however, to further test these ideas.

Practical Implications

The purpose of this study was to investigate the relationship between campus employment and the academic success and persistence of first-generation college students, as well as to compare differences in academic success and persistence between first-generation college students whose campus jobs are configured as high impact practices and first-generation college students whose campus jobs are not. Results of the study support some of what is known about first generation college students: they enter college with deficits, they work more hours while in school, earn lower GPAs, and persist at lower rates. Yet this study also found something inconsistent with previously published studies: first-generation college students in this sample entered their sophomore year with no differences in cumulative credits earned from the freshman year. The statistically significant difference in credits attempted between first-generation and continuing-generation students only appeared during the sophomore year in this study. Given

these findings, academic advisors of first-generation college students might be more attentive to course selection during the sophomore year to ensure that they are enrolling in enough credits to stay on track to graduation.

Findings related to the campus jobs themselves were surprising. Type of campus job was not found to be an individually significant predictor in the regression models, however, the interaction effect between first-generation college student status and type of campus job is noted as having potential practical value. In this study, first-generation college students whose campus jobs were configured as high-impact earned higher GPAs than first-generation college students whose campus jobs were not.

Practitioners may use these results to evaluate the structure of their campus jobs, and identify ways to incorporate elements of high-impact practices into these positions. Elements of high-impact practices include: time on task, meaningful interactions with faculty and peers, experiencing diversity, opportunities to work as a member of a team to solve real world problems, an expectation that students will apply learning to real world situations, and regular feedback on performance (Kuh, 2008). Student employment coordinators could also share the research about first-generation college students with department supervisors, helping them understand more about the risk factors these students face. Supervisors could be prompted to consider ways they can structure their student employment jobs as high-impact and provide high-impact types of work experiences for the first-generation college students they employ, positioning them, and all students, for success.

Results of this study might also inspire advisors and career counselors to coach students to be more intentional about their choices with respect to campus jobs. Students could be coached to look for campus jobs that clearly and purposefully provide opportunities for learning

and skill development. Student employment coordinators might also be inspired to teach departments about the elements of high-impact practices and coach supervisors in structuring purposeful and developmental work experiences.

In addition, while the results of this research were inconclusive relative to the impact of high-impact campus jobs on the success of first-generation college students, that should not preclude institutions of higher education from thinking about campus employment as an opportunity to expand high-impact practices as Kuh (2008) suggested. Institutions might be inspired to engage in assessment of campus employment to understand where jobs exist for students, what these jobs consist of, who are the students working on campus and how these students benefit, if at all, from their work experience. A campus wide assessment of student employment might then help institutional decision makers determine unmet needs and consider how their student employment programs could be configured as high-impact.

Future Research

Results from the study have demonstrated a clear need for additional research into campus employment. Two recent qualitative studies of the value students derived from their campus jobs (Empie, 2012; Watson, 2013) are promising. As a follow up to this study, perhaps a single-institution quantitative study of students and their supervisors could be designed to understand the extent to which elements of high-impact practices are present in these positions and the extent to which students perceive them as contributing to their learning, development, academic success, and persistence. A more extensive mixed methods study could also be designed, where a quantitative analysis of the high-impact elements of campus jobs could be followed up by a focus group of supervisors who could share their experiences in designing these jobs and supervising students in their employ. Other potential lines of inquiry could involve the

investigation of the influence that supervisors have on the campus work experience of first-generation college students.

In addition, results from this study prompt questions about sophomore students. In this study, the sample was delimited to sophomores who had enrolled as first-time full time freshmen the year before, yet whether these students had worked in the same department as they had during their first year in college was unknown. Future research might look at outcomes from students who return to their campus jobs for a second year to determine if prior experience makes a difference in academic outcomes. No empirical research was found that examined GPAs of students who worked on campus for the same department for more than one year. In addition, it was noted that in this study there were no statistically significant differences between first-generation college students and continuing-generation college students relative to credits earned before beginning sophomore year. Future studies could examine what is happening during the sophomore year specifically that might relate to reasons why first-generation students seem to fall behind their continuing-generation peers in credits attempted.

Lastly, a study that investigates the differences in outcomes for student employees whose campus job is related to their academic program or career intentions might also help direct institutional policy about placement of first-generation college students into campus jobs.

Conclusion

This study investigated how campus employment impacted academic success and persistence of first-generation college students, and compared differences in academic success and persistence of first-generation college students whose campus jobs were configured as high-impact practices with first-generation college students whose campus jobs were not. Overall the results from this study supported what has been shown in the literature about first-generation

college students: they receive Pell, attempt fewer credits, and earn lower GPAs. They also work more hours and persist at lower rates. One puzzling finding that was inconsistent with previous empirical research was that in this study, there were no significant differences between first-generation college students and their continuing-generation peers on cumulative credits earned before the sophomore year.

Results with respect to campus employment were inconclusive: type of campus job was not shown to be a significant individual predictor of any of the success measures in this study, overall GPA, change in GPA, or persistence from sophomore to junior year. Yet, a statistically significant interaction of first-generation student status and type of campus job was found. While caution is recommended in interpreting such results, this interaction may stimulate different thinking for practitioners and researchers alike. Practitioners might consider the extent to which they could structure their campus jobs to include elements of high-impact practices; researchers may be encouraged to design studies of high-impact campus jobs and the extent to which they provide support for first-generation college students.

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APPENDIX A: DATA REQUEST

VARIABLES

Please follow IPEDS reporting standards, unless specified.

Use null values (blank cells) for students for whom data are missing or are not enrolled for one of the two semesters.

Provide a separate table for academic data about each student (unduplicated) and a different table for jobs held (multiple records per student is acceptable).

For questions, please contact Marianna Savoca: 631-278-4265 or marianna.savoca@colostate.edu

Parameters:

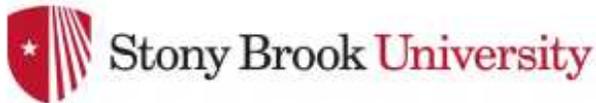
Students who enrolled as first-time, full time freshmen in Fall 2010 AND were enrolled in Fall 2011 and Spring 2012.

VAR	VARIABLE EXPLAINED	VARIABLE DEFINED
ID	ID unique to each student	Please use a synthetic ID # so the dataset is de-identifiable
ParentEdMot	Highest Level of Parent Education - Mother	Highest level of education: 0=high school graduate or less; 1= some college but no degree; 2=associates' degree earned; 3= bachelor's degree or higher earned; 4=unknown
ParentEdFat	Highest Level of Parent Education - Father	Highest level of education: 0=high school graduate or less; 1= some college but no degree; 2=associates' degree earned; 3= bachelor's degree or higher earned; 4=unknown
Gen	Gender	0= Male; 1=Female
Race	Race	Follow the U.S. Department of Education framework: 1=Hispanic/Latino; 2 = American Indian /Alaska Native; 3 = Asian; 4=Black/African American; 5= Native Hawaiian/ Pacific Islander; 6 = White; 7= Two or More; 8 = Non-resident alien; 9=Race & ethnicity unknown.
Citizen	Citizenship Status	0= USCitizen; 1= Resident Alien; 2= Other
Pell	Pell Recipient	Received a Pell grant in Academic Year 2011-2012? 0=No; 1=Yes
Resid	Residence	Resided on campus in Academic Year 2011-2012? 0=No; 1=Yes
CumCred	Cumulative Credits earned	Cumulative Credits earned before Fall 2011 (numeric 0.0)
CrAttF11	Credits Attempted in Fall 2011	Credits Attempted in Fall 2011 (numeric 0.0)
CrEarnF11	Credits Earned in Fall 2011	Credits Earned in Fall 2011 (numeric 0.0)
CrAttS12	Credits Attempted in Spring 2012	Credits Attempted in Spring 2012 (numeric 0.0)
CrEarnS12	Credits Earned in Spring 2012	Credits Earned in Spring 2012 (numeric 0.0)
CumGPABef	Cumulative GPA beginning	Cumulative GPA from all sources before Fall 2011 (numeric 0.00)
GPATermF11	GPA for the Fall 2011 term	Fall 2011 Term GPA at the end of Fall 2011 (numeric 0.00)
CumGPAF11	Cumulative GPA end of Fall 2011	Cumulative GPA at the end of Fall 2011 (numeric 0.00)
GPATermS12	GPA for the Spring 2012 term	Spring 2012 Term GPA at the end of Spring 2012 (numeric 0.00)
CumGPAS12	Cumulative GPA end of Spring 2012	Cumulative GPA at the end of Spring 2012 (numeric 0.00)
EnrollF12	Enrolled in Classes in Fall 2012 term	Enrolled in Fall 2012 ? 0=No; 1=Yes
GradDate	Graduation Date	Semester bachelor's degree was awarded. Values formatted as: 0=Spring 2013; 1=Fall 2013; 2=Spring 2014; 3=Fall 2014; 4=still enrolled; 5=not enrolled/no degree
Major	Academic major	Academic major at the time degree was awarded. Use text description of major used by institution (eg. Biology, English, Sociology, Electrical Engineering)
HSGPA	High School GPA	High School GPA as used by the Admissions Office for Admissions' decisions (numeric 00.00)
ACTComp	ACT Composite	ACT Composite score used for admission (numeric)
SATMath	SAT Math	SAT Math score if used for admission (numeric)
SATRead	SAT Critical Reading	SAT Critical Reading score if used for admission (numeric)

FOR EACH JOB HELD: (multiple records per student are acceptable)

DeptF11	Department	Name of the Department where the student worked in Fall 11 (text)
SAF11	Student Affairs Position for HIP Fall 2011	Is this a department part of the Division of Student Affairs in Fall 11? 0=No; 1=Yes
TitleF11	Job Title during Fall 2011	Title of student's job during Fall 2011 (text)
FWSF11	FWS funded position?	FWS payroll for Fall 2011? 0=No; 1=Yes
PayF11	Hourly Pay Rate during Fall 2011	Hourly Pay Rate during Fall 2011 in dollars (currency \$00.00)
HrsWorkF11	Total # of Hours Worked during Fall 2011	Total # of Hours Worked during Fall 2011 (numeric)
DeptS12	Department	Name of the Department where the student worked in Spring 12 (text)
SAF12	Student Affairs Position for HIP Spring 2012	Is this a department part of the Division of Student Affairs in Spring 12? 0=No; 1=Yes
TitleS12	Job Title during Spring 2012	Title of student's job during Spring 2012 (text)
FWSS12	FWS funded position?	FWS payroll for Spring 2012? 0=No; 1=Yes
PayS12	Hourly Pay Rate during Spring 2012	Hourly Pay Rate during Spring 2012 in dollars (currency \$00.00)
HrsWorkS12	Total # of Hours Worked during Spring 2012	Total # of Hours Worked during Spring 2012 (numeric)

APPENDIX B: SUPPORT LETTER



April 9, 2015

Marianna Savoca, Director
Career Center
Stony Brook University
Stony Brook, NY 11794

Dear Ms. Savoca:

This letter confirms that the Office of Institutional Research, Planning & Effectiveness at Stony Brook University will assist you in data collection and matching for your dissertation proposal, "Campus Employment As a High-Impact Practice: Relationship to Academic Success and Persistence Among First-Generation College Students."

This assistance includes:

- Receiving student employment records from the SBU Career Center and matching them to educational records, as specified in your proposal
- Removing personally identifiable information from records and attaching a synthetic identifier
- Receiving de-identified records from the University of Iowa
- Securely transmitting all de-identified records to you for analysis

These protocols conform with relevant statutes and regulations, including the Family Education Records Privacy Act (20 U.S.C. § 1232g; 34 CFR Part 99), the New York Privacy Protection Law (Public Officers Law 6A(91-99)), and Stony Brook IT Policy D100: Access to Institutional Data.

Please note that as a researcher, you are required to following Stony Brook Policy P202R: Research Involving Human Subjects as well as all applicable laws and statutes.

Please do not hesitate to contact me with any questions, and I wish you success in your research endeavors.

Sincerely,

A handwritten signature in black ink that reads "Braden J. Hosch".

Braden J. Hosch, Ph.D.
Assistant Vice President
Office of Institutional Research, Planning & Effectiveness

APPENDIX C: IRB LETTER



Research Integrity & Compliance Review Office
Office of Vice President for Research
Fort Collins, CO 80523-2011
(970) 491-1553
FAX (970) 491-2293

Date: April 20, 2015

To: Jackie Peila-Shuster, Ph.D., Assistant Professor
School of Education

Marianna Savoca, Doctoral Student
School of Education

From: Evelyn Swiss, CIP, IRB Coordinator 

Re: Campus Employment As a High-Impact Practice: Relationship to
Academic Success and Persistence Among First-Generation
College Students

After review of information regarding the secondary anonymous data that you will receive from Stony Brook University and the University of Iowa, it was determined that the data do not meet the requirements of the federal definition of human subjects' research. "Human subject means a living individual about whom an investigator conducting research obtains data through intervention or interaction with the individual, or identifiable private information" (45CFR46.102(f)).

Living individual – Y
About Whom – Y
Intervention/Interaction – N
Identifiable Private Information – N

Thank you for submitting this information. If you have more projects that are similar, please contact us prior to submission. The IRB must determine whether a project needs to have IRB approval.