ABSTRACT

WIRT, LESLEY GRIECO. Exploring Predictors of Faculty-Student Interaction for Community College Students. (Under the direction of Audrey J. Jaeger, Ph.D., Chair and Duane Akroyd, Ph.D., Co-chair.)

One fundamental aspect of engagement in higher education is faculty-student interaction. Faculty-student interaction has been associated with student success and persistence in both four- and two-year higher education institutions. Due to a lack of research concerning community college students, understanding student engagement in higher education is based on White, traditional-age students who attend four-year institutions. However, community colleges enroll almost half of US undergraduates.

Community college students' primary involvement or interaction typically occurs inside the classroom due to their part-time status, employment responsibilities, lack of involvement in student activities, and attendance at non-residential campuses. Increasing faculty-student interaction does seem to be a possible approach to assist students in their educational endeavors while enrolled at community colleges. Only a limited number of researchers have examined faculty-student interaction in a community college setting.

The purpose of this study was to explore the variables that predict faculty-student interaction of community college students. This research project was guided by two theories that examine student engagement and faculty-student interaction: Astin’s (1985) student involvement theory and Pace’s (1979) student development and college impress model. Descriptive and inferential statistics examined the data
and answered three research questions. Of the 15 independent variables, multiple regression revealed that five (age, grants/scholarships, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for full-time community college students and four (first-generation status, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for part-time community college students. Both models had three of the same significant independent variables (GPA, orientation program/course, and learning community). Participation in a learning community was the strongest predictor and had the largest uniqueness index for both full- and part-time community college students. Implications and recommendations for future research are included.
Exploring Predictors of Faculty-Student Interaction for Community College Students

by
Lesley Grieco Wirt

A dissertation submitted to the Graduate Faculty of North Carolina State University in partial fulfillment of the requirements for the Degree of Doctor of Education

Higher Education Administration
Raleigh, North Carolina
2010

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Leila Gonzalez Sullivan                Joy Gaston Gayles
DEDICATION

This dissertation is dedicated to the author’s husband, Jonathan Allen Wirt, who has been supportive and encouraging of her doctoral studies for the past five years, their entire married life.
BIOGRAPHY

The author, Lesley Grieco Wirt, was born in 1976 to Ralph and Donna Grieco. She has an older brother, Jeffrey Grieco. Her parents raised her in Colonial Heights, VA. After graduating from high school, Lesley attended James Madison University and graduated Summa Cum Laude in 1998 with a Bachelor of Science degree in Psychology and a minor in Early Childhood Education. Lesley earned a Collegiate Professional Licensure and taught third and first grade in VA. After teaching for two years, she decided to begin a new career in higher education.

After moving to Raleigh, NC, she began working at North Carolina State University (NCSU) as a student recruiter in the Department of Wood and Paper Science. She realized she needed to obtain another degree that pertained to her new career. She enrolled in the Higher Education degree program at NCSU and earned a Master degree in December 2004. She continued her studies and enrolled in the Doctoral program. After leaving NCSU, she became the Career Counselor and Recruiter at Edgecombe Community College, still her current position.

She happily married Jonathan Wirt on June 11, 2005 in Raleigh, NC. They now reside in Tarboro, NC. She is a proud mother of Michael Joseph Wirt who will be 21 ½ months at the time of graduation. She also has two Doberman Pinschers, Surry and Duke, that she loves.

She will proudly be the first member in her family to earn a Doctoral degree.
ACKNOWLEDGEMENTS

The author would like to thank her committee members, Dr. Audrey Jaeger, Dr. Duane Akroyd, Dr. Leila Gonzalez Sullivan, and Dr. Joy Gaston Gayles. She enjoyed having Dr. Jaeger as a professor and considers her an outstanding role model. She thoroughly enjoyed working with her through both her master and doctoral programs. She appreciated Dr. Akroyd’s guidance, time, and assistance with statistics. She also enjoyed having Dr. Sullivan as a professor and appreciated her editing abilities. She was thankful to Dr. Gayles for the student engagement perspective she contributed and her willingness to serve on the committee.

The author would also like to thank Jennifer Hill for her help and encouragement concerning statistics.

Finally, the author would like to thank Michael Jordan, her supervisor at Edgecombe Community College, and Dr. Deborah Lamm, president of Edgecombe Community College. Both were encouraging and supportive of the author in pursuing her degree. They allowed a flexible schedule so she could attend class and dissertation meetings.
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CHAPTER I.

Introduction

Background of the Problem

The United States (US) higher education system has changed during the past several decades regarding student characteristics, attendance patterns, teaching and learning methods, instructional technology, competition, and financial assistance (Blimling & Whitt, 1998; Kuh & Hu, 2001). A higher education report of the 1980s, Involvement in Learning (The Study Group on the Conditions of Excellence in American Higher Education, 1984), suggested educational excellence occurred by student learning and development gains, not by the accepted view of institutional resources and reputation (Koljatic & Kuh, 2001). Other reports, The Student Learning Imperative (American College Personnel Association, 1994) and The Seven Principles of Good Practice for Student Affairs (American College Personnel Association and National Association of Student Personnel Administrators, 1997), advocated that student learning become the focus of student affairs policies, programs, and services and offered guidelines to accomplish that objective. Due to these changes in views and trends, higher education scholarship has addressed numerous topics that impact student success in postsecondary education, such as effective educational practices (Chickering & Reisser, 1993; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005); persistence and retention (Bean & Eaton, 2004; Braxton, Hirschy, & McClendon, 2004; Tierney, 2004; Tinto, 2004), student development (Chickering, 1995; Engberg, 2007; Engberg & Mayhew, 2007; Reason, Terenzini, &

One topic that has garnered attention in the student success literature more recently is engagement. Current research on student engagement highlights the role of the student as a participant in the creation of his or her learning experiences. Student engagement is defined in this study as the amount of time and effort students invest in meaningful academic and extra-curricular opportunities and activities during college. This definition combines Astin’s (1985, 1993) and Pace’s (1979) work and acknowledges students’ time and effort, as well as academic and extra-curricular experiences. Students’ engagement during their four years of college enhances almost all aspects of students’ cognitive and affective development (Astin, 1999a). Important forms of engagement include involvement in academics with both faculty and student peer groups (Astin, 1999a). Student engagement is also linked to student learning and persistence outcomes (Astin, 1985; Cohen & Brawer, 2003; Cole, 2007; DeMulder & Eby, 1999; Lundberg & Schreiner, 2004; McClenney, 2004; Sax, Bryant, & Harper, 2005; Trautmann & Boes, 2000). In fact, students are more likely to persist and achieve at higher levels if they are more actively engaged with faculty and staff, other students, and the academic material (Andrade, 2007-2008; Cohen & Brawer, 2003; Fries-Britt, 2000; Oates & Leavitt, 2003).

One fundamental aspect of engagement is faculty-student interaction. This interaction occurs when faculty members and students communicate both inside and
outside of a classroom setting. Faculty-student interaction is an important factor in college life because faculty members are valuable resources for students and can serve as role models and mentors (Chang, 2005; Cotten & Wilson, 2006; Greenwald & Grant, 1999; Kuh et al., 2005; McClenny, 2004; Meléndez & Suárez, 2001). In fact, “many students are unaware of the importance of interactions with faculty, but once they become involved with a faculty member they clearly perceive that the relationship is beneficial” (Cotten & Wilson, 2006, p. 499). This study acknowledges that advisors and other institutional agents can serve as resources for students but intentionally focuses on faculty. About 90% of a faculty member’s time is devoted to teaching at a community college (NCES, 2010a), thus they are likely in more frequent contact with students than other college personnel. Astin (1985, 1993) and Pace (1979), along with other researchers, have studied faculty-student interaction. Eight main areas of literature related to faculty-student interaction exist in the research describing four-year institutions. Table 1 lists these key concepts and supporting literature.

Faculty-student interaction has been examined in the research literature for several decades and has been connected most frequently with four-year higher education institutions. To reiterate, the studies included in Table 1, among others, focus only on four-year students. Although the concentration is on four-year institutions, the studies vary in types of samples, research designs, and operational definition of faculty-student interaction. Community college students are often
missing from this conversation and scant literature exists regarding faculty-student interaction for students who attend community colleges.

Community college students’ primary involvement or interaction typically occurs inside the classroom due to their part-time status, employment responsibilities, lack of involvement in student activities, and attendance at non-residential campuses (Braxton et al., 2004; Cohen & Brawer, 2003; Hagedorn, Maxwell, Rodriguez, Hocevar, & Fillpot, 2000; McClennen, 2004). Research has shown that community colleges are less able to academically and socially integrate their students into campus life (Braxton et al., 2004; Dougherty, 2002). An estimated 1,177 community colleges exist in the US (American Association of Community Colleges, 2010b). Enrolling almost half of US undergraduates, an estimated 46%, these community colleges serve 11.7 million students - 6.7 million credit students and 5 million non-credit students (AACC, 2010c). Further, a staggering increase in community college enrollment occurred in 2009 due to the US economic recession. Across the US, the number of students enrolled in credit courses at community colleges in fall 2009 increased by 11.4% from fall 2008 and 16.9% from fall 2007 (AACC, 2010a).
Table 1  
*Faculty-Student Interaction Literature Regarding Four-year Institutions*

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<th>Key concepts</th>
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<td>Interactions positively correlated to student development and achievement</td>
<td>Astin, 1993; Cotten &amp; Wilson, 2006; Lamport, 1993; Plecha, 2002; Zhang &amp; RiCharde, 1999</td>
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<td>Students’ communication with faculty outside of class</td>
<td>Cotten &amp; Wilson, 2006; Jaasma &amp; Koper, 1999, 2001, 2002; Nadler &amp; Nadler, 2001; Terenzini, Pascarella, &amp; Blimling, 1999</td>
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<td>Race and gender differences</td>
<td>Cole, 2007; Eimers, 2001; Lundberg &amp; Schreiner, 2004; Santos &amp; Reigadas, 2000; Sax, Bryant &amp; Harper, 2005</td>
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<td>Impact on non-traditional students</td>
<td>Greenwald &amp; Grant, 1999; Medved &amp; Heisler, 2002</td>
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<td>Participation in learning communities</td>
<td>Astin, 1985; Beginning College Survey of Student Engagement, 2008; DeMulder &amp; Eby, 1999; Pastors, 2006</td>
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<td>As an example of a key educational practice</td>
<td>Koljatic &amp; Kuh, 2001; Kuh &amp; Hu, 2001; Kuh, Kinzie, Schuh, Whitt, &amp; Associates, 2005</td>
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Most community college students are unlike their four-year counterparts. Community college students are considered non-traditional, meaning that they are older, financially independent, do not live at school, and attend school part-time (AACC, 2007). Most of these students would not have the opportunity for higher education if it were not for the existence of community colleges (Cohen & Brawer, 2003). These students often work harder to achieve their academic goals; thus, colleges must consider more effective enrollment management strategies to help students overcome challenges and remain in college (CCSSE, 2006b). Faculty-student interaction has been shown to be important for community college students, but the literature is limited. These few studies have demonstrated that engaging community college students through faculty-student interaction can lead to improved outcomes for students, including increased persistence. Higher education policy makers, administrators, educators, and practitioners would be well served to learn more about how to engage community college students and how to increase faculty-student interaction.

Students seek opportunities to gain the necessary knowledge, skills, and abilities needed for a global multicultural society. Institutions of higher education, particularly community colleges, play an important role in providing opportunities for students to gain diverse perspectives and leadership skills that are needed by college graduates to increase the United States’ competitiveness and to sustain its preeminence in the global marketplace (Slaughter & Rhoades, 2004). Engaging students through increased faculty-student interaction, thereby enhancing learning
and persistence (Astin, 1985; Cohen & Brawer, 2003; Cole, 2007; DeMulder & Eby, 1999; Lundberg & Schreiner, 2004; Sax, et al., 2005; Trautmann & Boes, 2000), can assist students in obtaining the knowledge, skills, and abilities needed for success in the workplace. Historically, community colleges have been responsible for preparing much of the skilled workforce that has fostered the nation’s economic growth and they will continue to do so in the future (AACC, 2001); thus, it is critical that community college students remain engaged and successfully complete their education.

**Statement of the Problem**

Approximately 45% of community college students leave during their first year (Braxton et al., 2004; Rode, 2004). Student entry characteristics such as family background and academic ability, external forces such as family, work, and community obligations, lack of finances, and campus environments with limited opportunities to interact with others all contribute to student departure in commuter colleges (Braxton et al., 2004). However, the classroom offers opportunities to interact with others, especially faculty. Faculty-student interaction seems to be an important factor of student success and persistence for four-year students (Astin, 1985). For instance, the four-year studies consistently demonstrate that interactions between faculty members and students are positively correlated to student development and achievement (Astin, 1993; Cotten & Wilson, 2006; Lamport, 1993; Plecha, 2002; Zhang & RiCharde, 1999). However, due to a lack of research concerning community college students, studying student engagement in higher
education is “biased towards an understanding of student engagement at four-year institutions” (Marti, 2006, p. 16). Of an estimated 2300 articles published between 1990 and 2003 in five major higher education journals, only 8% mentioned community colleges (Townsend, Donaldson, & Wilson, 2004). Cofer and Somers (2000) searched the ERIC database and found 1,886 college persistence studies from January 1966 to January 2000, and only 198 studies referred to two-year institutions. Pascarella and Terenzini (2005) admit in their seminal work in 1991 that from the higher education literature, they were able to find only about 5 to 10% of studies that focused on community college students. However, researchers are conducting an increasing number of community college studies. Pascarella and Terenzini included these studies, which were mainly conducted in the 1990s, in their 2005 review. Nevertheless, few educational researchers choose to examine community college issues and students, primarily because the community college has been unnoticed and ignored by higher education researchers during most of its history (Cohen & Brawer, 2003; Pascarella & Terenzini, 2005).

Compared to the prominent four-year colleges and universities, many consider community colleges as low prestige and “have-not” institutions (Levin, 2007, p. 2). Research regarding students’ undergraduate experiences and academic, intellectual, or cognitive development is dominated by studies examining White, traditional-age students who are full-time and attend four-year, residential colleges (Grubb, Badway, & Bell, 2002; Terenzini et al., 1999). Also, few researchers have investigated populations such as adults, commuter students, and
non-White students that are common in community colleges (Hernandez, Hogan, Hathaway, & Lovell, 1999). For example, only 41 (1.27%) out of 3,219 articles in seven peer-reviewed higher education journals between 1990 and 2003 focused on adult undergraduate students (Donaldson & Townsend, 2007). Additional research is needed to examine non-traditional, minority, or low-income students who are most likely to attend community colleges (Grubb et al., 2002; Terenzini et al., 1999). Differences may exist between two- and four-year students regarding faculty-student interaction.

Only a limited number of researchers (Cejda & Rhodes, 2004; Chang, 2005; Hagedorn et al., 2000; Hagedorn, Perrakis, & Maxwell, 2002; Thompson, 2001; Trautmann & Boes, 2000; Wilmer, 2009) have examined faculty-student interaction in a community college setting. These studies address the relationship of race or gender and faculty-student interaction (Chang, 2005; Hagedorn et al., 2000), how faculty-student interaction impacts student success (Cejda & Rhodes, 2004; Hagedorn et al., 2002; Thompson, 2001), and how learning communities can be utilized to increase faculty-student interaction (Trautmann & Boes, 2000; Wilmer, 2009). These researchers are contributing valuable information to the higher education literature because they are reporting findings that demonstrate that faculty-student interaction can also be helpful to community college students.

These few studies that address two-year students collectively serve as a starting point, but the research investigating community college students and faculty-student interaction needs to be expanded. In fact, more community colleges and
their students need to be included in the higher education literature in general. As a result, additional research is needed to examine the variables that impact faculty-student interaction.

**Significance of the Problem**

Given the current interest in retention and persistence in US higher education, investigating engagement and faculty-student interaction is necessary to learn more about how these changes in higher education have affected student success. A better understanding of faculty-student interaction may assist community colleges in identifying more effective strategies to increase academic performance and retention. As a result, this study’s findings will inform community college administrators, faculty, and staff, along with higher education policy makers, about the significant variables that predict faculty-student interaction for community college students. The results will allow these individuals to create policies and implement practices that will assist students with becoming more engaged with the institution, as well as suggesting ways to increase faculty-student interaction.

The few recent studies that have examined faculty-student interaction in two-year colleges typically focus on one institution or a set of institutions by region in a state (Chang, 2005; Hagedorn et al., 2000; Hagedorn, et al., 2002; Trautmann & Boes, 2000; Wilmer, 2009). Thus, a need exists for a national perspective. Examining multiple institutions across the country could allow researchers and policymakers to view issues that reflect national educational trends and to learn how historical events (ex. natural disasters) and policies (ex. federal government financial
aid policies) may affect these students. Also, students differ because of their cultures, geographic region of the country, and employment opportunities. Assessing faculty-student interaction from a national perspective acknowledges these differences and allows for better understanding of community college students in general. Further, most of the available research regarding faculty-student interaction in community colleges uses data from the 1990s and early 2000s, thus more current research is warranted. Moreover, the survey instruments and conceptual frameworks are different from the current study. As a result, research is needed that provides a more comprehensive view of the multiple factors that predict faculty-student interaction.

**Purpose**

Community colleges differ considerably from four-year institutions and serve a critical role in educating underserved populations. Therefore, the purpose of this study is to explore the variables that predict faculty-student interaction of community college students.

**Research Questions**

1. Is there a significant difference between full- and part-time community college students regarding their faculty-student interaction?

2. What is the predictive value of demographic (gender, race, marital status, age, if children live with student, first-generation status), financial (income/savings, parent or spouse/significant other's income/savings, grants and scholarships, student loans, and hours of work per week), academic
(GPA and type of major), and organizational (college orientation program/course and organized learning community) variables on faculty-student interaction of full-time community college students?

3. What is the predictive value of demographic (gender, race, marital status, age, if children live with student, first-generation status), financial (income/savings, parent or spouse/significant other’s income/savings, grants and scholarships, student loans, and hours of work per week), academic (GPA and type of major), and organizational (college orientation program/course and organized learning community) variables on faculty-student interaction of part-time community college students?

Conceptual Framework

This research project was guided by two theories that examine student engagement and faculty-student interaction: Astin’s (1985) student involvement theory and Pace’s (1979) student development and college impress model. The basic tenet of Astin’s student involvement theory states that students learn by becoming involved. Astin defines student involvement as the “amount of physical and psychological energy that the student devotes to the academic experience” (Astin, 1985, p. 134). This theory discusses the behavioral approaches or processes that promote student development. Astin asserts that involvement invokes a behavioral meaning which is critical in understanding student involvement. He also emphasizes “the best” way to involve students in learning and in college life is to increase personal contact between faculty and students (p. 162). Variables that
relate to Astin’s (1985, 1993) theory include gender, race, financial sources, hours of work per week, GPA, type of major, participation in college or orientation program/course, and participation in organized learning communities.

The second concept that supports this work comes from Pace (1979). Pace’s student development and college impress model is similar to Astin’s model in that both theorists hypothesize that student time and effort are key factors that correlate with college success outcomes. Furthermore, both theorists posit that the extent to which students expend their time and effort in the institutions’ educational opportunities and activities directly affects their development. Pace extends this idea and claims the key variable that impacts student development is the quality of engagement, not just participation in an activity. Pace asserts the quality of effort consists both of the opportunities that an institution offers and the degree to which students participate in those opportunities in their academic, intellectual, personal, and interpersonal experiences. Ethington and Horn (2007) operationalize Pace’s model and include student background and personal characteristics. Age, if children live with student, and hours of work per week are variables that represent Pace’s theory in the present study using Ethington and Horn’s operationalization (see Figures 3 and 4).

Astin and Pace’s theories contribute to the present study. Student engagement is a fundamental aspect in both of these perspectives, and they both argue the importance of faculty-student interaction. In addition, the research organization that created the instrument used in this study conceptually based the
instrument on Astin’s and Pace’s ideas. As a result, the researcher deliberately selects Astin and Pace to conceptually frame this study.

The variables used in this study were chosen because they have been found to be important factors in the faculty-student interaction literature, including both four- and two-year studies. The researcher reviewed the pertinent studies and organized the variables based on logical groupings (demographic, financial, academic, and organizational) so the conceptual model would be clearer for the reader to understand. The majority of these variables come directly from Astin and Pace (refer to Figure 1.). Also, these variables are available in the survey used in this analysis. Thus, the researcher has created a new conceptual model to study faculty-student interaction in community colleges.
**Conceptual Model**

### Independent Variables

**Demographic**
- Gender
  - Astin, 1993; Hagedorn, Maxwell, Rodriguez, Hocevar, & Fillpot, 2000
- Race
  - Astin, 1993; Chang, 2005
- Marital status
  - Braxton, Hirschy, & McClendon, 2004
- Age
  - Ethington & Horn, 2007
- Children who live with student
  - Braxton et al., 2004; Ethington & Horn, 2007
- First-generation status
  - Braxton et al., 2004; Choy, 2001; Horn & Nuñez, 2000

**Financial**
- Major and minor sources of financial support to cover college tuition: income/savings, parent or spouse/significant other’s income/savings, grants and scholarships, and student loans
  - Astin, 1993
- Hours of work per week
  - Astin, 1993; Ethington & Horn, 2007

**Academic**
- GPA
  - Astin, 1993; Thompson, 2001
- Type of major
  - Astin, 1993

**Organizational**
- College orientation program or course
  - Astin, 1985; Chang, 2005
- Organized learning communities
  - Astin, 1985; Nora, 2007; Trautmann & Boes, 2000; Wilmer, 2009

### Dependent Variable

**Faculty-Student Interaction**
- Asked questions in class or contributed to class discussions
- Used e-mail to communicate with instructor
- Discussed grades or assignments with instructor
- Discussed ideas from readings or classes with instructors outside of class
- Received prompt feedback from instructors on your performance
- Worked with instructors on activities other than coursework
- Quality of your relationship with instructors

*Figure 1. Conceptual model of variables that may predict faculty-student interaction of community college students.*

**SOURCE.** Variables represent questions from the CCSR, *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.
Summary

Faculty-student interaction, an example of student engagement, has primarily been examined in four-year higher education contexts. Since community college students represent almost half of all undergraduates in the US, researchers need to investigate faculty-student interaction in two-year colleges as well. The existing literature is incomplete in that most of the studies examine White, traditional-age students who attend four-year institutions. The few existing two-year studies support the value and need to continue studying faculty-student interaction of community college students. However, the present study differs from the two-year studies by utilizing a different survey instrument and conceptual framework, as well as examining more recent data from colleges across the US. Faculty-student interaction is critical in community colleges, and investigating the experiences of these non-traditional students can either corroborate or refute the research findings from the four-year studies.
CHAPTER II.
Review of Literature

Contexts

Societal context.

The world has become global, which affects students pursuing higher education. Students live in the information society where “knowledge is a raw material to be converted to products, processes, or services” and they must be educated to successfully obtain and keep jobs (Slaughter & Rhoades, 2004, p. 15). Globalization, where manufacturing occurs in countries around the world, equates to more competition and forces economic changes in the US (AACC, 2009). A nation’s investment, production, and innovation are no longer confined to national borders (Carnoy, 2000). The increasing “success of competitor countries has turned the United States toward high technology products and services, where it has a global advantage” (Slaughter & Rhoades, 2004, p. 16).

For the US to remain competitive in this global and knowledge-driven society, higher education institutions need to develop the leadership skills, creative abilities, and talents of all students, particularly the 11.7 million community college students who are often not addressed fully in the engagement and retention literature. The US must continue to produce an American workforce that is well-educated, ready to change jobs quickly, capable of advancing products, processes, services, and technology, and has communication skills, problem-solving abilities, and initiative (Carnoy, 2000; Grubb et al., 2002). Employers expect their employees to possess
higher level skills, assume responsibility, follow a flexible schedule, and work longer hours (Carnoy, 2000). In fact, the majority of new jobs created by 2014 will require some postsecondary education (AACC, 2009). Thus, researchers must pay attention to the students in America who currently attend community colleges and who represent nearly half of the college-going population.

**Context of American community colleges.**

Community colleges respond to global, community, and workforce needs. An estimated 1,177 community colleges exist in the US; 988 public institutions, 158 independent institutions, and 31 tribal institutions (AACC, 2010c). These community colleges range in size from fewer than 100 students to more than 30,000 students (Cohen & Brawer, 2003). A community college is “any institution regionally accredited to award the associate in arts or the associate in science as its highest degree” (p. 5). The first community college opened in 1901 as Joliet Junior College in Illinois, the oldest continuously operating public two-year college in America (AACC, 2001).

Community colleges contribute to the social equality and mobility of America, which some believe are enhanced when more people have access to higher education (AACC, 2001; Cohen & Brawer, 2003; Dougherty, 2002; Shaw & London, 2001). Community colleges are known as the open-door colleges, an entry point to higher education for all students, regardless of wealth, family background, or academic credentials (Cohen & Brawer, 2003). Community colleges contribute most by opening higher education to nontraditional students, ethnic minorities, low-income
students, first-generation students, and students whose prior academic performance had been substandard (Cohen & Brawer, 2003). In fact, working class and minority students rely heavily on community colleges for higher education access and opportunity (Dougherty, 2002). Thus, community colleges aid those students who are not being served by traditional higher education:

- those who could not afford the tuition; who could not take the time to attend a college full time; whose ethnic background had constrained them from participating; who had inadequate preparation in the lower schools; whose educational progress had been interrupted by some temporary condition; who had become obsolete in their jobs or had never been trained to work at any job; who needed a connection to obtain a job; who were confined in prisons, physically disabled, or otherwise unable to attend classes on a campus … (Cohen & Brawer, 2003, pp. 28-29).

Due to the dramatic increase in student diversity in American higher education, the importance of two-year colleges has dramatically grown (Pascarella & Terenzini, 2005).

The United States and Canada (Cohen & Brawer, 2003), along with Australia and the United Kingdom, are countries that have formed comprehensive community college systems. In America a student can enroll in a community college within commuting distance in all but a few states (Cohen & Brawer, 2003). For example, North Carolina and Vermont’s comprehensive community college systems have a community college within 30 minutes driving distance of all their residents (Phillippe,
Community colleges enroll almost 50 percent of all first-time college freshmen and are the largest sector of higher education in the US (AACC, 2001).

Community colleges are an integral part of American higher education but differ from four-year colleges and universities in their development and histories, missions, institutional focus, curricular functions, student populations served, research agendas, and services offered. The institutional focus of the American community college is more on social services, educational and vocational assistance and not on the social and development role or in loco parentis role of four-year schools (Levin, 2007). The American community college currently has three curricular functions; academic transfer, vocational, and continuing education (Cohen & Brawer, 2003; Dougherty, 2002; Rhoads & Valadez, 1996). The academic transfer function allows students to obtain an associate’s degree and then transfer to a four-year school. Serving in this role, community colleges became the first point of access for many entering higher education (Cohen & Brawer, 2003). The vocational or technical function prepares individuals for occupational and technical careers. The continuing education function serves local citizens, industry, and businesses.

Recently, the transfer role has been scrutinized and transfer rates have decreased (Nora, 2007; Rhoads & Valadez, 1996; Shaw & London, 2001). Entering a community college instead of a four-year school significantly lowers the probability that the student will realize a bachelor degree (Dougherty, 2002). Long and Kurlaender (2010) found that students in Ohio who initially began their college career at a community college were 14.5 percent less likely to complete a bachelor’s
degree within nine years compared to students who began at a four-year institution. One explanation is the growth, importance, and movement toward vocational education programs in community colleges (Nora, 2007; Rhoads & Valadez, 1996). In fact, the existence of more vocational programs at a community college typically results in a lower transfer rate due to the focus on career preparation (Dougherty, 2002). Another explanation is the reality that community college students typically come from less affluent families, are less prepared academically, and have lower educational and occupational goals (Dougherty, 2002; Nora, 2007).

Related to these three functions, community colleges also provide many types of services to their students. One type of service is developmental education, which consists of remedial, compensatory, preparatory, or basic skills studies. Developmental education offerings have increased in recent years due to the number of students who enroll in community colleges but are unprepared for college-level work (Cohen & Brawer, 2003). Community colleges also typically provide counseling services, child care assistance, placement offices, free tutoring services, and disability services for their students.

These competing functions and services lead some to believe that community colleges lack a clear vision (Rhoads & Valadez, 1996). These researchers assert that this lack of vision causes some critics to believe that community colleges are unable to do any one thing exceptionally well. Others (Cohen & Brawer, 2003) maintain that the community college goal, to serve the people with what they need and want, drives its vision.
A community college education affords individuals more career opportunities and higher earnings. It also reduces the likelihood of unemployment and the likelihood that individuals will be employed in clerical, operative, and unskilled occupations (Grubb, 2001). For instance, many of the 10 million jobs predicted to be created in the near future will demand skills and capabilities that are not taught in high school (Callan, 2000). A community college education also allows individuals to earn more. For example, individuals who earn an associate’s degree will increase their annual earnings by 23 percent above a high school graduate with similar background characteristics (AACC, 2010b). Even a one-year diploma will increase a graduate’s annual earnings by 17 percent above a high school graduate (AACC, 2010b).

**Students Served at American Community Colleges**

American community colleges enroll 11.7 million students – 6.7 million credit students and 5 million non-credit students (AACC, 2010c). Forty-four percent of all US undergraduates attend community colleges (AACC, 2010c). Two words that describe community college students are “*number* and *variety*” (Cohen & Brawer, 2003, p. 37). For most community college students, the choice to attend higher education is not a choice between a two-year school and a four-year school; the choice is between a two-year school or non-attendance (Cohen & Brawer). In other words, community colleges are the only means to access higher education for many people living in America (Nora, 2007).
General overview of students.

Community college students are considered non-traditional. The term non-traditional in this study originates from the Trait Framework and relies mainly on students’ individual traits to identify and define non-traditional status. Levin (2007) states that the Trait Framework “encompasses the largest body of literature and is the dominant one in higher education” (p. 22). Traits include, but are not limited to, age, gender, social and economic status, ethnic or racial identity, citizen or immigrant status, or disability. Different degrees of non-traditional status exist. Minimally non-traditional students display one characteristic of being non-traditional, moderately non-traditional students display two to three characteristics, and highly non-traditional students display several characteristics. An estimated 65% of students in the community college setting can be characterized as non-traditional (Levin, 2007).

Non-traditional students are older. The average community college student age is 29 years old (AACC, 2010c). Due to their age, as well as their life and work experiences, most community college students are considered adult learners. Adult learners are typically 25 years or older, and they learn differently than traditional college students who are 18 to 22 years old. Bash (2003) estimates that 50% of total enrollment in higher education is adult learners. Adult learners are autonomous and self-directed, possess life experiences and knowledge, are goal-oriented, are relevancy-oriented, are practical, need to be shown respect, and are more assertive than younger, traditional classmates (Bash).
Non-traditional students are also often financially independent, do not live at school, and attend school part-time (AACC, 2007). For example, 40 percent of students enroll full-time and 60% enroll part-time (AACC, 2010c). Community colleges have made a concerted effort to accommodate these part-time students and have incorporated creative arrangements such as weekend colleges, night and weekend classes, senior citizen institutes, and off-campus centers (Cohen & Brawer, 2003). Many community college students balance family and work responsibilities. More than 80% of students hold part-time or full-time employment while also attending college (AACC, 2010c). In fact, the amount of time students spend at a job negatively affects the available amount of time they have to interact with faculty outside of class, as well as the quality of effort exhibited in class (Thompson, 2001). When students interact with family, friends, jobs, and other activities, they decrease the time and energy they have available to devote to their educational development (Astin, 1999b).

Other characteristics of non-traditional students who attend community colleges relate to socioeconomic level, gender, and key risk factors. The socioeconomic level of most students who attend community colleges is lower than students who attend four-year institutions (Cohen & Brawer, 2003; Rhoads & Valadez, 1996). A high proportion of these students are working-class, poor, and minority (Shaw & London, 2001). Also, a higher percentage of women attend community colleges than men: 58 percent of community college students are women (AACC, 2010c). Furthermore, community college students are three to four times
more likely than their counterparts in four-year higher education institutions to display four or more of key risk factors. The risk factors include:

- being academically underprepared for college-level work; not entering college directly after high school; attending college part-time; being a single parent; being financially independent …; caring for children at home; working more than 30 hours per week; and being a first-generation college student (Community College Survey of Student Engagement, 2005, p. 2).

**Minority status.**

Although minority students include 32% of all students enrolled in higher education (NCES, 2010c), they represent almost 40% (AACC, 2010c) to 60% (Nora, 2007) of the total enrollment in community colleges. Over half of all Hispanic and African American students who attend college following high school graduation enroll in community colleges. The Hispanic population lives primarily in states that have highly coordinated community college systems such as Arizona, California, Colorado, Florida, New York, and Texas; therefore, Hispanic students are overrepresented in community colleges compared to other minority students.

Regarding full-time/part-time status in college, minority enrollment has increased over the past two decades in community colleges. When describing part-time students, Asian students increased by 357.2%, Hispanic students increased by 262.9%, and African American students increased by 85.3% (Nettles & Millett, 2007). Among full-time students at community colleges, Asian students increased by 250%, Hispanic students increased by 143%, and African American students
increased by 16% (Nettles & Millett). However, attrition rates for minority students in community colleges are about 60% (Nora & Rendón, 1998). When looking into the future, demographic experts are estimating continued increases in minority students in American college enrollments, especially at community colleges (Cole, 2007; Lundberg & Schreiner, 2004). In fact, minority student enrollments are expected to increase nearly 40% over the next two decades, with a large proportion consisting of Hispanic students (Chang, 2005; Harrell & Forney, 2003; Solomon, Solomon, & Schiff, 2002).

Even though a high percentage of minority students enroll in community colleges, these students are underrepresented in earning associate degrees. Sixty percent of associate degrees in occupational fields are awarded to non-minority or White students (Nora, 2007). Even in community colleges where the majority of the student population was minority students, over half of the associate degrees were earned by White students (Nora & Rendón, 1998). Due to this lack of degree attainment, Nettles & Millett (2007) argue the need to aggressively recruit underrepresented students, especially African American and Hispanic students, into science, mathematics, and technical degree tracks.

Minority students typically adopt a different cultural orientation than American higher education espouses. Minority students are more likely to embrace non-Western orientations that conflict with the American higher education system, a dominant, Euro-American, Western cultural orientation (Hirschy & Wilson, 2002). Whereas Western culture includes competition, individual achievement, and a
nuclear family, non-Western culture characteristics include group cooperation and achievement, social orientation, and an extended family. Also, the conflict between family and work obligations and college requirements may be greater for minority students (Braxton et al., 2004). For example, minority students often feel pressure from family members to spend more time with them or to assist with family matters, which limits their time available to engage in college activities and opportunities (Braxton et al.). Due to cultural orientation and lack of degree attainment, minority students, on average, do not seem as successful as White students at community colleges.

*First-generation status.*

Another characteristic of non-traditional students is first-generation status. First-generation students are prevalent at community colleges; 45% of students at public community colleges were first-generation students in 2003 (National Center for Education Statistics, 2005). First-generation is defined as a student whose parents have no postsecondary education experiences; in other words, the parents have a high-school education or less (Pascarella, Pierson, Wolniak, & Terenzini, 2004). Unlike first-generation and minority students, students whose parents have a bachelor’s degree tend to take more rigorous high school coursework and have higher SAT or ACT scores (Harrell & Forney, 2003). These students also have a higher GPA, are usually White, and benefit from a higher family income. They tend to take fewer developmental courses during their first year in postsecondary education, are more likely to remain enrolled, and are less likely to work part- or full-
time (Harrell & Forney, 2003). Furthermore, students who are minority and/or from low-income families seem to be disproportionately represented among those whose parents have minimal education (Choy, 2001).

Compared to their peers whose parents have a college education, first-generation students lack knowledge about higher education, family support and income, educational degree expectations and plans, and academic preparation in high school (Choy, 2001; Horn & Nuñez, 2000; Pascarella et al., 2004; Warburton, Bugarin, & Nuñez, 2001). First-generation students typically complete fewer credit hours during their first year, take fewer humanities courses, study fewer hours and work more hours per week, have lower levels of extracurricular involvement, have lower GPAs, and have lower levels of degree plans (Pascarella et al., 2004). They also tend to enroll in a community college to improve job skills or to obtain an associate degree; on the other hand, students whose parents have high levels of postsecondary education tend to enroll in a community college to transfer to a four-year school (Nomi, 2005). Parents of first-generation community college students exercise less influence on their children’s education decisions than do parents with postsecondary education (Nomi). For example, parental involvement is strongly associated with students’ taking algebra in the eighth grade, taking advanced level mathematics courses in high school, and enrolling in postsecondary education (Horn & Nuñez, 2000). Parents’ education levels are correlated with students’ retention and persistence rates in college even after controlling for measures of academic
preparedness; in other words, first-generation status is negatively associated with students’ academic preparation and persistence (Warburton et al., 2001).

First-generation students comprise about 50% of the enrollment at public American community colleges (NCES, 2005), and this percentage will continue to increase in the near future due to the surge in Hispanic and Asian/Pacific Islander students who are immigrating to the United States (Chang, 2005; Harrell & Forney, 2003). First-generation students have less access to information from family members about matters such as applying to college, registering for classes, completing financial aid forms, and taking appropriate classes. These students, then, are at a disadvantage and may encounter more difficulties navigating the higher education environment. Since faculty can serve as advisors and mentors (Chang, 2005; Greenwald & Grant, 1999; McClenny, 2004; Meléndez & Suárez, 2001), increased levels of faculty-student interaction may possibly alleviate these difficulties and serve as a mitigating factor for first-generation students. Furthermore, faculty-student interaction is a strong predictor for first-generation and low-income students in personal and social development, as well as cognitive and affective growth during college (Filkins & Doyle, 2002).

**Working poor status.**

A high proportion of community college students in America are working-class, poor, and minority (Shaw & London, 2001). However, education is a key variable that persistent low-earners lack, and the probability of being poor declines rapidly as individuals achieve higher educational levels (Carnevale & Rose, 2001;
US Bureau of Labor Statistics, 2005). In fact, “many … of the differences between the earnings and job holdings of blacks, Hispanics, and whites can be attributed to education and age” (Carnevale & Rose, 2001, p. 52). The number of working poor has increased in the US. Working poor is defined as people who spend at least 27 weeks in the labor force either working or looking for work, but their incomes fall below the official poverty level (US Bureau of Labor Statistics, 2005). In 2003, 35.9 million people, 12.5 percent of the US population, lived at or below the official poverty threshold. That same year, 7.4 million were classified as working poor (US Bureau of Labor Statistics). Due to governmental welfare reform in the 1990s, welfare rolls dropped by more than 50 percent across the US, and millions of people left welfare to take low-paying jobs (Acs, Phillips, & McKenzie, 2001; Kazis, 2001). Almost all of the people who left welfare were women (Kazis, 2001). People who still receive welfare and attend college represent a portion of the working poor (Levin, 2007).

Although the working poor have employment, it is not enough to live on and does not include high productivity work and/or skill to warrant enough pay (Grubb, 2001). Many employed people living in America earn far less than they need to survive; over 9 million earn less than the official poverty level (Ehrenreich, 2001; Kazis, 2001). These individuals may have to gain new skills because of changes in the economy, geographic location of employment, and individual preferences (Grubb, 2001). Community colleges are the most comprehensive institutions to offer a second chance where individuals can learn new skills. Grubb defines low-skilled
workers as recent high school graduates, experienced employees seeking formal education for advancement, dislocated workers, workers changing jobs, and special needs populations. The community college serves low-skilled workers well because it provides several advantages over other institutions or options. For instance, community colleges offer a wide selection of programs ranging from short-term courses to associate degrees, offer academic, vocational, or remedial coursework, and are experienced in working with adult learners.

Community colleges and their students vary considerably from their four-year counterparts. The community college differs in its mission, institutional focus, curricular functions, and services. The community college also serves a larger number of non-traditional students, which brings a variety of issues that administrators, faculty, and staff must be cognizant of and provide services to assist these students. Community colleges have a high drop-out rate, and students may not complete a certificate, diploma, or degree (Braxton et al., 2004; Cohen & Brawer, 2003; Dougherty, 2002). Examining variables that predict faculty-student interaction may assist in defining ways faculty can assist these community college students to become more engaged and more successful in their educational endeavors.

**Conceptual Framework Theorists**

Astin (1985, 1993) and Pace (1979) are the main theorists who conceptually guide the present study because engagement and faculty-student interaction are fundamental concepts of their models. Ethington and Horn (2007) operationalize Pace’s model, and their ideas also inform this study.
Alexander Astin.

Astin’s (1985, 1993) theory of student involvement directly relates to faculty-student interaction, an example of involvement. Students’ educational gains are most likely attributable to their involvement in college (Astin, 1985; Cole, 2007). To begin with, Astin’s (1985) theory is based on five basic postulates:

1. Involvement refers to the investment of physical and psychological energy in various ‘objects’. …

2. Regardless of its object, involvement occurs along a continuum. Different students manifest different degrees of involvement in a given object, and the same student manifests different degrees of involvement in different objects at different times.

3. Involvement has both quantitative and qualitative features. …

4. The amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program.

5. The effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement (pp. 135, 136).

He asserts that his theory connects variables in traditional pedagogical theories such as content theory/subject-matter theory, the resources theory, and the individualized (eclectic) theory to learning outcomes desired by the student as well as by the professor. Astin suggests that content theory is typically espoused by faculty
members and hypothesizes that student learning and development occur by exposing students to the correct subject matter. Next, the resources theory is adopted by administrators and assumes that student learning and development occur when adequate resources such as facilities, human resources, and monetary resources are available. Lastly, the individualized theory is supported by developmental and learning psychologists and speculates that student learning and development will occur when curricular content and instructional methods best meet each student’s needs.

Astin (1993) proposes an input-environment-outcome (I-E-O) model as a conceptual guide for studying college student development. Inputs describe the student’s characteristics at the time of initial entry to the postsecondary institution; environment describes the student’s exposure to a variety of programs, policies, faculty, peers, and educational experiences; and outcomes describe the student’s characteristics after exposure to the environment. By comparing outcome characteristics with input characteristics, one can supposedly determine the student change or growth during college. Astin asserts the basic purpose of the I-E-O model is to evaluate the impact of different environmental experiences during college “by determining whether students grow or change differently under varying environmental conditions” (p. 7). He asserts that the I-E-O model provides educators, students, and policy makers with a better understanding to implement a plan to achieve desired educational outcomes.
Since Astin (1999b) believes that involvement is a behavioral term, he focuses on behavioral mechanisms or processes that promote student development and has studied the outcomes of various types of student involvement: housing, honors programs, undergraduate research participation, social fraternities and sororities, academic involvement, student-faculty interaction, athletic involvement, and student government involvement. Student involvement typically includes a broad range of academic and social activities within the college setting and with peers and faculty members. For example, students who talked with faculty outside of class and/or received feedback on their schoolwork from faculty were more likely to report enhanced understanding of a specific field or discipline (Astin, 1993). Although his work focuses more on four-year students, he maintains that the involvement of community college students and faculty appears to be minimal since the students commute and typically attend college part-time, and a large proportion of faculty members are employed part-time (Astin, 1985). Nevertheless, he states that students’ frequent interaction with faculty members is more strongly associated with college satisfaction than any other type of involvement, student characteristic, or institutional characteristic (Astin).

One way to increase student involvement in learning and college life is to increase personal contact between students and faculty (Astin, 1985). A positive relationship exists between faculty-student interaction and student development and satisfaction; as contact between students and faculty inside and outside of the classroom increases, student development and satisfaction also increase (Astin,
Furthermore, Astin emphasizes that high-quality interactions with peers and faculty involving educationally meaningful issues afford the most valuable gains in student outcomes. Astin asserts that faculty-student interaction has significant positive correlations with every academic attainment outcome, every self-reported area of intellectual and personal growth, and a variety of personality and attitudinal outcomes.

Some disagree that Astin’s propositions constitute the true definition of a theory. He does not define a detailed, systematic description of the behaviors or phenomena being predicted (Pascarella & Terenzini, 2005). Nevertheless, his concept of involvement and the I-E-O model is one of the most widely referenced and validated models in the research literature addressing college studies (Guiffrida, 2004; Pascarella & Terenzini, 2005). Researchers typically utilize Astin in two ways. The first way occurs when researchers employ Astin’s theory as a theoretical framework in studies investigating student persistence or retention (Blecher, Michael, & Hagedorn, 2002; Guiffrida, 2004; Hutto, 2002; Metz, 2004-2005), student satisfaction (Brown, 2000; Janes, 1997), student involvement or engagement (Gardner & Barnes, 2007; Hartley, 2006; Schroeder, 2000), student leadership (Cook & Young, 1999), and use of student electronic portfolios (Terheggen, Prabhu, & Lubinescu, 2000). The second way occurs when researchers utilize his input-environment-outcome (I-E-O) model in their conceptual frameworks to evaluate student persistence or satisfaction or both (Campbell & Blakey, 1996; House, 1998; Kelly, 1996), students’ attitudes towards diversity issues (Inkelas, 1998; Meader,
1998), students' academic performance (Zhao, 1999), student change during college (Higher Education Research Institute, 2002a; Sax, Bryant, & Gilmartin, 2002), male students' willingness to prevent rape (Stein, 2007), utility of national databases (Dey, Hurtado, Rhee, Inkelas, Wimsatt, & Guan, 1997), use of large databases for comparative education purposes (Henrickson, 1999), and the effectiveness of existing programs and practices and areas for improvement (Higher Education Research Institute, 2002b).

C. Robert Pace.

Although he is not cited as frequently, another theorist, Pace (1979), has similar ideas as Astin (1985, 1993) and also focuses on involvement/engagement. Ethington and Horn (2007) note that Pace delineates a student development model based on college experience which is as complete as Astin's (1985) input-environment-outcome model. Like Astin, Pace also asserts that student time and effort relate to student outcomes. Moreover, he postulates the amount of time and effort students spend in the institutions’ educational opportunities and activities directly affects their development. Pace emphasizes that the quality of engagement is the key factor to impact student growth and development. He notes students must not merely participate in institutions’ educational opportunities and activities, but they must also actively engage in them in order to develop. Pace explains the quality of effort is twofold; the institution must offer educational opportunities and activities, and the student must participate and actively engage in those opportunities. Furthermore, the more involved and satisfied a student is with the college
experience, the more likely that he or she will be successful, persist, and graduate. The idea of quality of effort is central to his model. He argues that student effort is the most important determinant of academic outcomes. Pace (1979) posits:

All learning and development requires an investment of time and effort by the student. What students can gain from the variety of events depends on the amount, scope, and quality of their engagement. As these encounters broaden and deepen, the student’s capacity for growth is enhanced. To document objectively the scope and quality of students’ effort is crucial for understanding growth and development (p. 127).

Pace’s student development and college impress model is “formulated on a temporal and educational impact sequence” (Ethington & Horn, 2007, p. 185). Pace chooses the word impress instead of impact because he believes college does make a mark or impression on students (Pace, 1979). His model has three propositions. The first proposition states that the student’s college experience includes the events in which he or she encounters. These events occur inside and outside the classroom and may include library use, participation in sports, participation in clubs and organizations, growth in self-understanding, and/or faculty and peer interaction. The second proposition describes how environmental characteristics and the “amount, breadth, and quality” of student effort influences the meaning of these college events and experiences (p. 125). Lastly, the third proposition is that the combination of environment and student effort enhances student development and college impress. Figure 2. shows his model of college impress.
Pace created an instrument in which he applied the constructs from his model. His initial questionnaire is now part of the *College Student Experiences Questionnaire* (CSEQ) (Pace & Kuh, 1998). The CSEQ represents student experiences that occur at four-year higher education institutions. Sections include background information, satisfaction with college, aspects of the college environment, and “students’ ratings of how much gain or progress they feel they have made toward a list of eighteen objectives or outcomes” (Pace, 1979, p. 130). Pace asserts that student background characteristics are important, and this

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**Figure 2.** Pace’s proposed model of student development and college impress

Adapted from (Pace, 1979, p. 126).

<table>
<thead>
<tr>
<th>Entrance</th>
<th>College Experiences and Events</th>
<th>Effort and Environment</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criterion measures at entrance</td>
<td>Salient facilities and opportunities</td>
<td>Amount, scope and quality of effort students invest in using the facilities and opportunities</td>
<td>Student development and college impress as indicated by</td>
</tr>
<tr>
<td>*Knowledge</td>
<td>*Classrooms</td>
<td>*Differences between criterion scores at entrance and exit</td>
<td></td>
</tr>
<tr>
<td>*Critical thinking</td>
<td>*Library</td>
<td>*Self-ratings of progress, benefits, satisfactions</td>
<td></td>
</tr>
<tr>
<td>*Other skills</td>
<td>*Laboratories</td>
<td>*Attitudes toward the college</td>
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*Knowledge: Critical thinking, Other skills, Interests, Values, Personal traits and so on

*Classrooms, Library, Laboratories, Residence units, Student union, Cultural facilities, Athletic and recreational facilities, Clubs and organizations, Student acquaintances, Faculty contacts, Experience in writing, Self-understanding

*Differences between criterion scores at entrance and exit

*Self-ratings of progress, benefits, satisfactions

*Attitudes toward the college

*And, subsequently, evidence from alumni studies of continued interests, continued learning, and so on
questionnaire allows researchers to analyze relationships among “personal characteristics, college experiences, college environment, quality of effort, and progress toward the important outcomes” (p. 130).

Realizing the CSEQ did not capture two-year college students’ experiences, Pace partnered with Friedlander and Lehman, and they developed a similar instrument to assess two-year students, the *Community College Student Experiences Questionnaire* (CCSEQ) (Friedlander, Pace, & Lehman, 1990, revised 1999). The CCSEQ measures the quality of effort that community college students expend on curricular and extra-curricular opportunities and how these opportunities “are being effectively used and enjoyed” (University of Memphis, 2007). Institutions have chosen to administer the CCSEQ to “prepare for self-study and accreditation review; assess institutional effectiveness; evaluate general education, transfer and vocation programs; measure student interest; impressions and satisfaction; discuss methods to improve and increase student involvement; and encourage dialogue between academic and student affairs” (para. 2).

Ethington and Horn (2007) tested Pace’s model using a sample of community college students in 40 community colleges across the country. Ethington and Horn assert that student background characteristics and full-time/part-time status in college are important variables because they impact students’ college activities, their participation, and the effort they exert in these activities. Therefore, age, job responsibility, family responsibility, full- or part-time status and transfer status are important variables to consider, especially with community college students. After
having institutional experiences, students evaluate the educational environment and then perceive their gains or educational progress as a result of their college experience. Figure 3. shows Ethington and Horn’s view of Pace’s path of student development. Ethington and Horn also operationalize Pace’s proposed model of student development and college impress as shown in Figure 4.

Figure 3. Path of student development. SOURCE: Ethington and Horn (2007).

Figure 4. The operationalization of Pace’s proposed model of college impress.

SOURCE: Ethington & Horn, 2007, p. 188.

Similar to Astin (1985, 1993), Pace’s (1979) model is relevant to community college students, and he also discusses the importance of faculty-student
interaction. Based on Pace’s model, Ethington and Horn’s (2007) viewpoint concerning the importance of background characteristics and full-time/part-time status describes community college students. Community college students typically are older, work part- or full-time, and have dependents living at home (AACC 2007). The ‘status in college’ variable is an appropriate factor when discussing community college students since many are part-time students. Full-time/part-time status in college is hypothesized to impact student effort in social activities such as effort with faculty and students, as well as in academic activities such as effort in coursework and writing (Ethington & Horn, 2007). Regarding faculty-student interaction, Pace addresses the effort students spend speaking with faculty inside and outside of the classroom. Therefore, Pace and Astin provide comprehensive models that aid in the examination of faculty-student interaction.

**Other Related Theories**

Two additional theories (Tinto, 1975, 1993; Chickering & Reisser, 1993) inform the present study.

**Vincent Tinto.**

Many studies that examine faculty-student interaction cite Tinto’s (1975, 1993) work. Braxton et al., (2004) describe Tinto’s theory as having paradigmatic status, which signifies substantial consensus exists among scholars regarding the validity of his theory. To further demonstrate his influence, Braxton et al. assert that more than 775 citations of Tinto’s theory existed at the time of publication of their book.
Tinto (1975) claims that students’ academic and social integration, which is similar to engagement, affect commitment to the institution and to the goal of graduation. Tinto (1975, 1993) hypothesizes that students enter higher education with individual characteristics that affect student departure decisions, as well as their initial commitment to the college and to the goal of graduation. Initial commitment to the institution and to the goal of college graduation, in turn, affects academic and social integration. Since higher education institutions encompass both academic and social systems, student experiences in each system may contribute to different reasons for students departing institutions. Integration or membership in one system may not represent the same level of integration in the other system. Further, academic and social integration affect commitment to the institution and to the goal of graduation differently. Braxton, Shaw-Sullivan, and Johnson (1997) best summarize these relationships in Tinto’s theory:

The greater the student’s level of academic integration, the greater the level of subsequent commitment to the goal of college graduation.

Moreover, the greater the student’s level of social integration, the greater the level of subsequent commitment to the focal college or university. …

In turn, the greater the levels of both subsequent institutional commitment and commitment to the goal of college graduation the greater the likelihood the individual will persist in college (p. 111).

Tinto (1975) also asserts that individuals go through rites of passage which occur in three stages: separation, transition, and incorporation. He proposes that
students leave higher education institutions when their rites of passage are incomplete. Tinto defines social integration as interaction outside of the classroom between a student and other campus individuals or groups. Tinto (1997) found that the classroom is the only place for many community college students to experience social and academic integration. Thus, both academic integration and social integration connect to the faculty-student relationship.

A review of Tinto’s 13 propositions found that there are differences in his theory’s applicability to two- and four-year institutions (Braxton et al., 2004). These researchers found that robust empirical evidence supports only one proposition, student-entry characteristics, for two-year higher education institutions. Thus, Tinto’s ideas inform this research but are not central conceptual or theoretical ideas.

**Arthur Chickering and Linda Reisser.**

Other theorists whose ideas relate to the present study are Chickering and Reisser (1993). Chickering and Reisser modified and reordered Chickering’s (1969) original seven *vectors of development* which describe college student development. Chickering and Reisser (1993) attempted to revise the model so it applied to the larger college student population, regardless of age, gender, or background. The degree of movement along the vectors may vary, and changes may be simultaneous on more than one vector. The seven vectors are achieving competence, managing emotions, moving through autonomy toward interdependence, developing mature interpersonal relationships, establishing identity, developing purpose, and developing integrity. Chickering and Reisser hypothesize seven key principles where
colleges and universities can encourage student development along the vectors, two of which address faculty-student interaction and development:

1. When student-faculty interaction is frequent and friendly and when it occurs in diverse situations calling for varied roles and relationships, development of intellectual competence, sense of competence, autonomy and interdependence, purpose, and integrity are encouraged.

2. When teaching calls for active learning, encourages student-faculty contact and cooperation among students, gives prompt feedback, emphasizes time on task and high expectations, and respects diverse talents and ways of knowing, the following qualities are fostered: intellectual and interpersonal competence, sense of competence, mature interpersonal relationships, autonomy, identity, and purpose (pp. 198-199).

Chickering (1969), along with the model revision by Chickering and Reisser (1993), has prompted more research and administrative programming than other psychosocial theories regarding college student development (Pascarella & Terenzini, 2005).

Tinto (1975, 1993) and Chickering and Reisser’s (1993) ideas inform the present study. Although their ideas do not directly guide the conceptual or theoretical framework, they address faculty-student interaction and hypothesize this interaction can be beneficial for student development.
Review of Literature

Research literature regarding faculty-student interaction is typically found in both the education and communications disciplines. Research studies include positive student outcomes, frequency and nature of the interactions, out-of-class communication, race and gender differences, impact on non-traditional students, use of information technology, participation in learning communities, and as an example of this key educational practice. To reiterate, this study intentionally focuses on faculty but acknowledges advisors and other institutional agents serve as resources for students. Students seem to interact more with faculty throughout the semester than other institutional agents since the classroom is the main point of contact due to students’ part-time status, employment responsibilities, lack of involvement in student activities, and attendance at non-residential campuses (Braxton et al., 2004; Cohen & Brawer, 2003; Hagedorn, Maxwell, Rodriguez, Hocevar, & Fillpot, 2000; McClenney, 2004). Furthermore, the majority of a faculty member’s time is devoted to teaching at a community college (NCES, 2010a), thus they are likely in more frequent contact with students than other college personnel.

Student outcomes.

Many researchers investigate the relationship between faculty-student interaction and a variety of student outcomes. Researchers have shown that faculty-student interaction is positively correlated to student development and achievement (Astin, 1993; Cotten & Wilson, 2006; Lamport, 1993; Plecha, 2002; Zhang & RiCharde, 1999). Astin (1993) asserts the degree of student development in college
corresponds with students’ amount of involvement with peers, faculty, and academic programs. Also, interactions with faculty improve students’ satisfaction level and academic performance (Cotten & Wilson, 2006). Lamport (1993) provides an extensive research literature review regarding the informal interaction of college students and faculty. College satisfaction, intellectual development, and personal development are correlated with faculty-student interaction, faculty-student interaction increases student persistence and decreases the likelihood of voluntary departure, and students’ admiration of faculty is positively correlated with higher grade point averages (Lamport, 1993). Although this literature review is dated, the findings augment the research regarding faculty-student interaction and provide other researchers the opportunity to validate or refute prior findings.

Another researcher, Plecha (2002), finds the frequency of faculty-student interaction positively predicts academic self-confidence. Students who talk with faculty outside of class and who receive feedback from faculty about their studies report significantly higher academic self-confidence. Plecha also observes visiting a faculty’s home is not significant, and negative interactions do not significantly affect students’ academic self-confidence. These findings by Plecha need to be examined since her study is not representative of college students overall; it samples only full-time students at 115 predominantly White private four-year higher education institutions.

Another study by Zhang and RiCharde (1999) find that participants in a four-week summer transition program from high school to college, where students
completed a three-credit hour course with intensive faculty-student interaction together with a physical training program, obtain a higher level of academic achievement in both the fall and spring semesters of their freshman year. These students are also better prepared for the college experience than nonparticipants. Although this study adds to the research concerning the relationship between faculty-student interaction and student outcomes, Zhang and RiCharde’s study is not generalizable since it includes a small number of students at one predominantly male institution.

The present study’s conceptual model includes GPA, which is a student outcome, to determine if GPA is related to faculty-student interaction.

**Frequency and nature of interactions.**

In addition to student outcomes, researchers also have examined the frequency and nature of faculty-student interactions (Anaya & Cole, 2001; Cotten & Wilson, 2006; Jaasma & Koper, 1999; Kuh & Hu, 2001; Nadler & Nadler, 1999, 2001). Cotten and Wilson (2006) learn that although most students describe some interaction with faculty, the interactions are infrequent and not a regular part of their academic experience. Typically, students approach faculty when they need assistance with a course or specific assignment unless they are involved in a special group or activity where they interact with faculty more frequently. Further, time constraints and uncertainty about faculty members’ responses hinder students to initiate interaction with faculty. Kuh and Hu (2001) find that students are more likely to describe their interactions with faculty as *occasional*, instead of *never, often, or*
very often, which indicates that students do communicate with faculty, but not often. When surveying Latino students, around 50% of students report interacting with a faculty member regarding course information, but fewer than 20% report interpersonal contact with faculty members (Anaya & Cole, 2001). More interpersonal interaction can benefit students since some studies show that faculty can serve as role models and mentors (Greenwald & Grant, 1999; Kuh et al., 2005; Meléndez & Suárez, 2001).

Jaasma and Koper (1999) find that 50% of students in their study never visit their instructors’ offices. For the students who do visit their instructors’ offices, the average length of the visit is 6-10 minutes. They also find students report that 91.9% of office visits and 66.7% of informal contacts involve coursework discussion; 4.4% of office visits and 4.6% of informal contacts concern personal problems; and, 3.6% of office visits and 28.4% of informal contacts relate to socializing. Nadler and Nadler (2001) discover that most faculty-student interactions center on coursework issues, and only a few interactions involve personal problems or social communications. Their findings are consistent with Anaya and Cole (2001), Cotten and Wilson (2006), and Jaasma and Koper (1999). These studies have shown that students interact infrequently with faculty, and their interactions typically involve coursework issues.

When studying the nature of faculty-student interactions, researchers also examine the expectations and perceptions of the advisor/advisee relationship. Nadler and Nadler (1999) find that advisors perceive themselves more favorably than the advisees do on dimensions of empathy, perspective taking, empathic
concern, and communicative responsiveness, as well as on most of the communication behavior-related items such as reported frequency of visits to one’s advisor, length of advising visits, quality of advising, and frequency of discussing personal matters. Both students and faculty report as perceived empathy increases, perceptions of advisor effectiveness also increase, which may indicate empathy is a beneficial trait of an effective advisor (Nadler & Nadler, 1999). This finding is helpful for faculty members to know so they can serve as better advisors to their students. Lastly, students report that they visited female advisors more than male advisors even though female advisors do not report seeing advisees significantly more than male advisors (Nadler & Nadler, 1999). Depending on a student’s major, he or she may not have access to female advisors since male faculty dominate certain majors.

Many of these studies involving frequency and nature of faculty-student interactions only include one institution in their samples. A national perspective would be helpful to determine the frequency and nature of faculty-student interactions across the US and in multiple kinds of college settings. The studies that address the faculty advisor and student advisee relationship generally only include four-year schools, so one cannot identify the similarities and/or differences between advising at four-year and two-year colleges. Two-year schools typically do not include conducting research as a part of faculty members’ responsibilities; rather, they endorse teaching as the main focus. Two-year schools also employ many part-time instructors who typically do not advise students and who do not have an office on campus.
The present study’s conceptual model includes type of major as an independent variable. Statements such as discussed grades or an assignment with instructor and asked questions in class or contributed to class discussion describe faculty-student interaction, the dependent variable, in the conceptual model.

**Out-of-class communication.**

Students’ out-of-class communication with faculty, where students must make more of an effort to locate and communicate with faculty outside of class, has also been a researched topic in the faculty-student interaction literature (Cotten & Wilson, 2006; Jaasma & Koper, 1999, 2001, 2002; Nadler & Nadler, 2001; Terenzini et al., 1999). Terenzini et al. (1999) synthesize the literature on the effects of students’ out-of-class experiences on academic, intellectual, or cognitive learning development and maintain that most researchers have found positive associations between the nature and frequency of out-of-class faculty-student interactions. Interacting with a professor outside of class increases some students’ comfort level so they are more likely to interact in class (Cotten & Wilson, 2006). However, students perceive faculty to be rushed and rarely see them outside the classroom setting (Cotten & Wilson). Also, structural factors influenced students’ likelihood to interact with faculty outside of the classroom. Students cited large class size and campus locations as hindrances (Cotten & Wilson). For example, on most campuses faculty and students are not in the same places on campus except for classrooms.

After qualitatively analyzing student responses, Jaasma and Koper (2001) define six categories of out-of-class faculty-student interaction content, three more
than previous studies: course-related, self disclosure, small talk, advice, intellectual ideas, and favor requests. Jaasma and Koper (2002) research the relationship between student perceptions of instructor immediacy and out-of-class communication. With regard to faculty-student interaction, students perceive “immediate instructors as accessible, involved, and effective,” and more satisfied students perceive their instructors as more immediate (p. 122). Jaasma and Koper (1999) examine the relationship between instructor nonverbal immediacy and out-of-class communication. These researchers find that instructors’ nonverbal immediacy correlates with the length of time students visit the instructors’ offices and the amount of time students spend socializing in instructors’ offices. Community college students typically do not live on campus, have jobs and families, and may not spend much time visiting and/or socializing in instructors’ offices due to their time constraints and other responsibilities. As a result, these findings may not apply to community college students and instructors.

Nadler and Nadler (2001) investigate the length of out-of-class communications and sex differences. These researchers find no significant sex differences for length of informal out-of-class interactions. However, female students are more likely to discuss personal issues with female instructors rather than with male instructors. Also, student satisfaction with out-of-class communication is positively correlated to instructor verbal immediacy as well as student views of instructor credibility and empathy. Both genders rate male instructors similarly.
However, female students rate female instructors more positively than male students do.

Most of these studies (Jaasma & Koper, 1999, 2001, 2002; Nadler & Nadler, 2001) originate from the communication literature. When addressing faculty-student interaction, the terms, definitions, and research focus in this body of literature may differ from the higher education literature due to different disciplines’ conceptualizations and meanings. Also, many community college instructors are part-time and may not have an office on campus or may not spend much time on campus outside of teaching their classes. Therefore, these findings may not relate to a community college setting. Regarding the conceptual model, the researcher selected survey items that describe types of faculty-student interaction, discussed ideas from readings or classes with instructors outside of class and worked with instructor on activities other than coursework, and that correspond to the out-of-class communication concept in the research literature. Also, the researcher included the independent variable, gender, in the conceptual model to determine how gender impacts the different types of faculty-student interaction.

Race and gender.

Another researched topic is the impact of race and gender on faculty-student interaction (Cole, 2007; Eimers, 2001; Lundberg & Schreiner, 2004; Santos & Reigadas, 2000; Sax et al., 2005). Even though the number of minority students in higher education continues to increase, faculty members are primarily White; thus, minority students interact mostly with faculty members who are of a different race or
ethnicity which can impact student learning (Lundberg & Schreiner, 2004). These researchers examine the quality and frequency of faculty-student interaction as predictors of learning by race/ethnicity. According to Lundberg and Schreiner, only one variable out of 13, the quality of relationships with faculty members, significantly predict learning for all racial and ethnic groups. In addition, the findings reveal that experiences with faculty members are a stronger predictor of student learning than background variables for all racial groups. Faculty-student interaction contributes more to student learning for minority students than it does for White students, “but its contribution to learning for all racial/ethnic groups … was greater than that of background characteristics” (p. 557). Satisfying relationships and frequent interactions with faculty members are strong predictors of learning for the seven racial groups and relates to increased student effort.

Another researcher, Cole (2007), finds that interracial interactions and participation in diversity-related events positively affect the quality and nature of faculty-student interactions. He also finds that students who interact with faculty regarding course-related issues and who develop mentoring relationships with faculty members report gains in intellectual self-concept. When comparing minority and nonminority students, Eimers (2001) finds no statistically significant differences exist regarding faculty-student interaction. He states that, generally, a positive relationship exists between level of satisfaction with faculty-student interaction and the level of progress in the four outcome areas for all students: math and science development, intellectual and skill development, career development, and problem-
solving development. However, intellectual and problem-solving development is significantly greater for minority students than for White students.

Santos and Reigadas (2000) discover that the frequency of faculty-student interaction is positively correlated with Latino students’ college adjustment, perceived mentor helpfulness in fostering their personal and career development, and satisfaction with the mentoring program. Especially in two-year colleges, the number of Hispanic students is expected to significantly increase in the next two decades; thus, this finding is important (Chang, 2005; Harrel & Forney, 2003; Solomon et al., 2002).

The previous researchers (Cole, 2007; Eimers, 2001; Lundberg & Schreiner, 2004; Santos & Reigadas, 2000; Sax et al., 2005) examine how race impacts faculty-student interaction and utilize national databases with predominantly White institutions or survey students at a predominantly White institution. Their results might differ if they examined historically Black colleges and universities or community colleges where many more minority students attend.

Sax et al. (2005) investigate how the quantity and quality of faculty-student interaction differ for women and men. Although females have more frequent and more positive interactions with faculty members than males, these interactions are significantly associated with scholarly self-confidence, leadership ability, degree aspirations, and retention for both men and women. These researchers also find that women increasingly believe that married women should serve in traditional gender roles after participating in research and interacting with faculty members. Men, on
the other hand, hold “more egalitarian views on gender roles” after working with faculty on research (p. 654). Faculty affects women’s physical, emotional, and academic welfare. For example, when women believe that faculty members do not consider their comments seriously, female students report greater than average declines in self-reported physical health, math ability, and degree aspirations. However, when women believe faculty members provide honest feedback, the opposite occurs (Sax et al.).

Like other researchers, Sax et al. (2005) investigate traditional students at four-year colleges. Their sample included 204 four-year colleges and universities, but the majority of their sample (88.2%) was White students. Since many community college students are non-traditional, minority, older, and have families, these findings may not apply to two-year students. Also, community college students do not engage in research with faculty members as in Sax et al.’s study.

The present study includes gender and race as independent variables in the conceptual model to determine if differences exist for community college students compared to four-year students and how gender and race impact faculty-student interaction.

**Non-traditional student.**

Faculty-student interaction impacts the non-traditional student (Greenwald & Grant, 1999; Medved & Heisler, 2002). Since working class students likely lack knowledge about college curriculum and career choices, faculty can assist these students with understanding college expectations and social customs (Greenwald &
Grant, 1999). Through advising, spending extra time with students, being involved in extracurricular activities, and being sensitive to working class student realities, faculty members can ease the adjustment to college and serve as role models and mentors (Greenwald & Grant). Other researchers, Medved and Heisler (2002), investigate one kind of non-traditional student, the student-parent. After exploring the nature of communication in critical interactions between faculty and these students, they discover that child illness is the problem that these students most frequently describe as triggering critical interactions with faculty. Regarding the type of support needed, students most frequently need to alter assignment deadlines or miss class. Faculty members who do not grant the student’s request often refer to rules or fairness rationales when framing their responses, which may indicate they do not see a distinction between traditional and non-traditional student needs (Medved & Heisler).

Although these researchers begin to examine the non-traditional student who has largely been ignored in higher education research, they only address the non-traditional student in four-year colleges. More non-traditional students attend two-year colleges. Also, over half of Medved and Heisler’s sample is White, which may not be representative of non-traditional students. As a result, the present study includes characteristics of non-traditional students such as gender, race, marital status, age, if children live with student, first-generation status, and financial sources to pay for college as independent variables in the conceptual model to clarify if these characteristics impact faculty-student interaction.
Information technology.

As information technology continually advances, faculty and students have more ways to communicate. E-mail has the potential to increase faculty-student interaction (Duran et al., 2005). Kuh et al. (2005) argue that e-mail, electronic group discussions, and Blackboard (a Web-based interface) are effective means for promoting faculty-student interaction and enhancing the learning process. A number of researchers have investigated the relationship between student use of information technology and faculty-student interaction (Duran et al., 2005; Edwards & Halley, 1997; Kelly et al., 2001, 2004; Laird & Kuh, 2005; Waldeck et al., 2001).

Duran et al. (2005) investigate faculty-initiated e-mail to students, their perceptions of students’ reasons for using e-mail, and their views of faculty-student e-mail outcomes. They find that female faculty members receive more e-mails from students than male faculty, and faculty members receive significantly more e-mails than they initiate. However, public and private four-year institutions employ fewer female faculty (40%) than male faculty (60%) nationally (National Center for Education Statistics, 2010b). Also, majors such as science, engineering, and math are dominated by male faculty members; thus, some students do not have an option to communicate with female faculty members. Faculty members primarily initiate e-mail with students to make course announcements, ask students to contact him or her, or make an appointment with a student (Duran et al., 2005). Faculty perceive students predominantly using e-mail to make excuses, inquire about course-related issues, and discuss their grades. Overall, faculty agree that e-mail has positive
benefits for interacting with students and is a useful tool for procedural or instrumental course information but ineffective for more detailed information.

Faculty members perceive that interacting with students is facilitated by e-mail and voicemail (Edwards & Halley, 1997). At the time of the study, faculty who interacted with students regularly through e-mail perceive that this form of interaction is valued more by students than other forms of communication because they are viewed by students as more innovative. Kelly et al. (2001, 2004) research e-mail use by students who have communication avoidance and anxiety problems. In both studies, these researchers find that reticent and non-reticent students do not differ in the frequency of using e-mail with faculty members or in their reasons for using e-mail. However, reticent students prefer e-mail over face-to-face communication with instructors, are more comfortable using e-mail than speaking in class or visiting their instructors, and believe e-mail is an easier way to communicate than using the telephone or visiting a professor’s office.

A strong positive relationship exists “between using information technology for educational purposes and involvement in effective educational practices such as active and collaborative learning and student-faculty interaction” (Laird & Kuh, 2005, p. 211). Three main motives exist for students’ use of e-mail to communicate with faculty members: procedural or clarification matters relating to the course, a more efficient way to communicate, and personal or social issues (Waldeck et al., 2001).

These studies examine faculty and students at four-year institutions. Faculty and students at two-year schools may have different motives for communicating with
each other. Also, community college students and part-time instructors at community colleges may not have e-mail addresses. Using the 1999 National Study of Postsecondary Faculty survey, Akroyd, Jaeger, Jackowski, and Jones (2004) find that 40% of part-time community college instructors do not have Internet access, and a significantly greater percentage of full-time community college instructors use e-mail to communicate with their students than do part-time instructors. The statement, used e-mail to communicate with an instructor, is one of the survey items that describe faculty-student interaction in the present study’s conceptual model.

**Learning communities.**

Researchers have investigated the impact of learning communities on faculty-student interaction (Astin, 1985; BCSSE, 2008; DeMulder & Eby, 1999; Pastors, 2006). A learning community in higher education is a progressive approach to teaching and learning and “emphasizes interdisciplinary and democratic collaboration, reflective practice, relations between theory and practical applications, and a commitment to continuous improvement” (DeMulder & Eby, 1999, p. 892). Advising and mentoring are integral parts of a learning community. Faculty-student interaction that occurs in a learning community environment helps students become more relaxed in the academic environment and integrate with institutional norms and values (Kuh & Hu, 2001). Generally, learning communities contribute to student success and engagement since students are more actively involved with their coursework, other students, and faculty (Kuh et al., 2005).
Astin (1985) advocates learning communities as a way to increase faculty-student interaction. For example, the Beginning College Survey of Student Engagement (BCSSE) find that students who participated in a learning community reported significantly higher levels of engagement in faculty-student interaction when other variables were controlled (2008). The BCSSE, a companion survey to the National Survey of Student Engagement, collects data about first-year students' high school academic and extra-curricular experiences, as well as their expectations for participating in educationally meaningful activities during their first year in college.

DeMulder and Eby (1999) describe two learning community initiatives at their institutions to better meet the needs of students. One critical component of both of these learning community initiatives is intense faculty-student interaction. DeMulder and Eby assert that such interaction increases due to the active and collaborative nature of learning communities, which relates positively to student retention and performance, as well as facilitating student involvement and investment. Furthermore, this increased interaction “personalizes the educational experience for both students and faculty” (p. 897), faculty are more aware of their students’ abilities, and the sense of trust between students and faculty increases. Also, these researchers claim learning communities encourage more student involvement because students must commit more time and effort than traditional classes require. Many learning communities in four-year schools include a residential component where students and/or faculty live together. Most community colleges do not have residential facilities for students. Also, four-year schools may connect four or five
classes in both semesters during students’ first year (DeMulder & Eby, 1999) while community colleges may only pair two classes (Trautmann & Boes, 2000).

Pastors (2006) wanted to determine if the reported benefits of learning communities occurred for students at a university in Illinois. Through a pre/post survey assessment, he finds that the strongly agree response rates on all survey items are higher for students who participated in the learning communities than for students in the non-learning community class sections. Also, students who participated in the learning communities are more likely to report feeling good about the semester, having a better experience at the institution than expected, being challenged in courses, and being likely to recommend the university to others.

The benefits of learning communities may differ between four- and two-year students based on program organization. Organized learning communities along with other institutional programs, such as college orientation programs, are present in this study’s conceptual model to establish if these types of programs impact faculty-student interaction.

**As an example of a key educational practice.**

In addition to the topics that have been reviewed in this chapter, faculty-student interaction is an example of a key educational practice that has been widely researched during the 1980s and 1990s (Koljatic & Kuh, 2001; Kuh & Hu, 2001; Kuh et al., 2005). Koljatic and Kuh (2001) examine whether student engagement in three key educational practices - cooperation among peers, active learning, and faculty-student interaction - increased between 1983 and 1997 due to the appeals for
improving undergraduate education in the US. Disappointingly, the frequency of these educational practices did not change over time.

Kuh & Hu (2001) investigate the impact of faculty-student interaction on student learning and personal development during the 1990s using the College Student Experiences Questionnaire. After analyzing 5,409 student responses, Kuh and Hu report many findings about faculty-student interaction. Students state the most frequent type of contact with faculty members is characterized as general, such as asking questions about course information or visiting after class. The next type is personal or social contact with faculty outside of class. The third type is working with a faculty member on a research project. The researchers find no significant gender differences in faculty-student interaction when they control for student characteristics, institutional characteristics, and college environment factors. Humanities and social sciences majors report more contact with faculty, and faculty-student interaction increases during the four years of college (Kuh & Hu). Also, faculty-student interaction has positive effects on satisfaction and gains (general education, intellectual skills, personal/social development, science and technology, and vocational preparation), but these are mediated through effort that students spend on other activities (Kuh & Hu). Effects from faculty-student interaction are conditional, indicating that students who are better prepared academically and who devote more effort to their schoolwork tend to interact more frequently with faculty members (Kuh & Hu). The researchers claim that the most important finding from
this study is that faculty-student interaction “encourages students to devote greater
effort to other educationally purposeful activities during college” (p. 329).

Kuh et al. (2005) examine roughly 700 four-year higher education institutions
and choose the top 20 that performed well in student engagement and graduation
rates on the National Survey of Student Engagement. With reference to these
schools’ high performance on student engagement measures and graduation rates,
Kuh et al. present many examples of promising educational practices that other
schools can adapt and employ. They summarize effective policies and practices for
many key educational practices. Since faculty-student interaction is the most
relevant for this study, only a few of effective policies and practices concerning
faculty-student interaction are noted:

1. Recruiting and rewarding faculty members who are willing to
   spend time with students outside the classroom
2. Using mentoring and other programs to link students directly
   with a faculty member with similar interests
3. Arranging physical facilities to encourage informal interaction,
   such as setting chairs at the ends of hallways or in other places
   to permit students and faculty members to continue conversations
   started in class (p. 218).

Other research findings support these recommendations and demonstrate the
importance of faculty-student interaction (Astin, 1985; Cotten & Wilson, 2006;
DeMulder & Eby, 1999; Hagedorn et al., 2002).
Summary of four-year studies.

The previous research studies address many topics concerning faculty-student interaction in four-year higher education institutions including: positive student outcomes; the frequency and nature of interactions; students’ out-of-class communication with faculty; race and gender difference; impact on non-traditional students; student use of information technology; learning communities; and interaction as an example of a key educational practice. Although these studies demonstrate the positive impact of faculty-student interaction, they vary in samples, methodology, and operational definitions of faculty-student interaction, which makes it difficult to compare results or replicate studies. Also, the studies only include students attending four-year higher education institutions. Community college students are missing from this research discussion. Again, there are about 11.7 million community college students in the US, 44 percent of all US undergraduates (AACC, 2010c). This student population, which differs considerably from four-year students, must also be represented in the higher education literature on this topic.

Studies about two-year colleges.

Only a limited number of researchers have assessed faculty-student interaction in a community college setting (Cejda & Rhodes, 2004; Chang, 2005; Hagedorn et al., 2000; Hagedorn et al., 2002; Thompson, 2001; Trautmann & Boes, 2000; Wilmer, 2009). Two studies examine the relationship of race or gender and faculty-student interaction (Chang, 2005; Hagedorn et al., 2000). When exploring faculty-student interaction and race, Chang (2005) finds that faculty-student...
interaction is relatively low at community colleges and varies among racial subgroups of students: African American students report interacting with faculty the most, followed by White, Latino, and Asian American/Pacific Islander students. Students most frequently interact with their instructors by “speaking up and engaging during class sessions” (p. 783) as well as asking them questions or speaking with them before or after class. Moreover, older students and educated parents interact with their instructors more often. For African American students, attending orientation at the community college demonstrates a positive significant correlation with faculty interaction. Finally, the two variables that demonstrate the strongest positive correlation with faculty-student interaction are “studying with others and speaking with an academic counselor” (p. 784).

Regarding faculty-student interaction and gender, Hagedorn et al. (2000) examine the differences between male and female community college students regarding peer and faculty-student interactions. These researchers find that, generally, most students in the sample have low rates of contact with faculty outside of the classroom. Although the effect sizes are small, females are significantly more likely to discuss career plans with faculty, develop close relations with faculty members, and report higher levels of satisfaction with faculty-student relations. This finding is notable because a higher number of community college students are women, an estimated 58% (AACC, 2010b).

Researchers also investigate how faculty-student interaction impacts student success (Cejda & Rhodes, 2004; Hagedorn et al., 2002; Thompson, 2001). Cejda
and Rhodes (2004) assess the role of faculty-student interaction in the educational decisions of Hispanic students at a community college in Texas. They conduct a qualitative study and review interviews they had previously completed with Hispanic students. These students overwhelmingly identify faculty members as the primary influence in their decisions to continue their academic programs and complete the certificate or associate degree. They also interview faculty members to determine ways they encourage Hispanic students through the educational pipeline and how they facilitate retention of these students.

Hagedorn et al. (2002) collect qualitative data relating to student success. Through focus groups they speak with administrators, faculty, and students and create a list of the top ten best practices that appear to encourage student success at two-year colleges. Out of the ten best practices, they assert faculty-student interaction is the most important; thus, the first best practice should be: “Encourage faculty-student interaction; recruit instructors who offer time, attention and resources to facilitate student development; include student interaction in the faculty reward system” (p. 4).

Another researcher, Thompson (2001), investigates how informal interaction with faculty contributes to academic success in mathematics and science for community college students. After analyzing a large random sample, Thompson finds that students who have higher perceived levels of informal interaction with faculty members outside of a classroom setting also perceive educational gains in mathematics and science. Furthermore, students who have higher levels of informal
interaction with faculty members report higher effort levels in mathematics and science. Thompson maintains that as the amount of informal faculty-student interaction increases, students place more value on their courses.

Finally, researchers studying faculty-student interaction at community colleges have also analyzed learning communities (Trautmann & Boes, 2000; Wilmer, 2009). At a community college in the northeastern US, faculty and students participate in two distinct paired-course learning communities, a critical reading course paired with principles of sociology and a freshman composition course paired with principles of sociology. Compared to traditional course offerings, faculty-student interaction, course retention, and grades increased in these learning community courses (Trautmann & Boes, 2000). Another study assessed whether a statistically significant difference existed in the level and type of interaction experienced by students who participated in a learning community and those who did not. Wilmer (2009) found that students who participated in a learning community had a statistically significant higher level of peer interaction and faculty-student interaction. She also found that learning communities increased the students’ involvement and satisfaction levels. Nora (2007) asserts that learning communities have been proposed as an additional tool to assist learners in community colleges. Learning communities provide active and collaborative learning experiences in the classroom as a means for achieving student involvement in the academic area of community colleges (Nora, 2007; Wilmer, 2009). Although the results are similar to faculty-
student interaction and learning community findings in four-year schools, student characteristics and learning community structure are different in two-year schools.

The independent variables of gender, race, GPA, orientation program/course, and learning communities, as well as the survey items that describe faculty-student interaction, *asked questions in class or contributed to class discussions* and *quality of your relationship with instructors*, are comparable to the aforementioned community college studies, and, thus, are a part of the present study’s conceptual model.

**Summary of two-year studies.**

Even though the classroom is a main point of contact for community college students, a lack of studies exists regarding the outcomes of faculty-student interaction in community colleges. The few community college researchers limit their samples to one institution or institutions in a small region of a state. Although one researcher did utilize a random sample from 56 two-year institutions from survey data, the data were from 1990 to 1994 so the results are dated. By employing a national database and obtaining a national perspective, one can analyze student data that encompasses the effects of national trends and policies, historical events, and student characteristics from across the entire US. As a result, one may create a more inclusive picture of the variables that predict faculty-student interaction from the community college students who participated across the country, not in just one institution, region, or a state. Moreover, these researchers use other surveys such as the Transfer and Retention of Urban Community College Students (TRUCCS),
the Community College Student Experiences Questionnaire (CCSEQ), and the Institutional Integration Scale (IIS). To date, the CCSR has not been utilized in any quantitative study published in a refereed journal that focuses on faculty-student interaction. A possible reason the CCSR has not been utilized before is because it is relatively new; the first administration was 2001. Therefore, results from using the CCSR data can augment the studies in the research literature and could corroborate or refute findings from studies employing other survey instruments. Also, results from the community college studies are dated. Data from six research studies are from the 1990s and the early 2000s, and only one is from 2005. A study with more recent data is beneficial to reflect community college students today. Finally, these researchers used other conceptual frameworks and theorists than Astin (1985, 1993) and Pace (1979). The current study adds a national perspective by examining recent data through the lens of a different theoretical framework with the use of another survey.

**Summary of Literature Review**

As outlined in the literature review, researchers have demonstrated the significant positive relationships between faculty-student interaction and various student outcomes for postsecondary students in the US. A majority of these studies have examined four-year higher education institutions and their students. Few studies exist that examine faculty-student interaction in community colleges. Although the small number of community college studies investigate some of the same topics as the four-year studies (such as race, gender, student success, and
learning communities) and find similar results, community college students and the
learning environment differ considerably from four-year institutions and their
students. The current study explores and defines these similarities and differences.

Many research areas that have been examined in four-year colleges and
universities regarding faculty-student interaction, such as frequency and nature of
interaction, out-of-class communication, use of information technology, and student
outcomes, have yet to be addressed in the community college context. Also, the few
studies that do involve community college students limit their samples to one
institution or institutions in a small region of a state, have dated results, and employ
survey instruments and conceptual frameworks different from the present study.
Clearly, more research is needed to understand the variables that predict faculty-
student interaction at community colleges. By doing so, higher education
researchers, practitioners, policy makers, and administrators will better understand
this type of contact with nontraditional students and can change or implement
policies and programs to assist community college students. By including community
college students more in higher education research, one can fully understand how
faculty-student interaction impacts all postsecondary students who live in the
information society where globalization affects knowledge, skills, and abilities
needed for successful employment opportunities. The current study is a first step in
addressing this gap in the literature.
CHAPTER III.

Method

Introduction

As stated in previous chapters, limited research exists regarding community college students and faculty-student interaction. The purpose of this study was to explore the variables that predict faculty-student interaction of community college students using the Community College Student Report (CCSR) survey. As a result, this study was designed to augment the existing research literature. This chapter describes the survey instrument, research design, sample, variables, and the statistical analysis.

History and Background of the CCSR

The CCSR was developed by the research organization, The Community College Survey of Student Engagement (CCSSE), which was formed in 2001 as a project of the Community College Leadership Program at the University of Texas at Austin. CCSSE works in partnership with National Survey of Student Engagement (NSSE). NSSE, established in 1998 and located at Indiana University in the Center for Postsecondary Research and Planning, created a survey instrument that is administered to first-year and senior students to assess the quality and performance of four-year higher education institutions. Quickly, NSSE leaders and financial supporters realized that there was a need for another version of the survey designed especially for community and technical colleges due to their unique missions and student populations.
As a result, CCSSE was established to meet this need. CCSSE produces new information about community college quality and performance that will, in turn, assist institutions in improving student learning and retention. In addition, CCSSE provides policymakers and the public with extensive information so they can evaluate the quality of undergraduate education at community colleges. To fulfill these goals, CCSSE developed the CCSR, a survey instrument that measures the processes, institutional practices, and student behaviors related to student engagement at community colleges (McClenney & Marti, 2008). The CCSR contains 55 items that were taken from the NSSE instrument with permission, indicating a 67% overlap between the two instruments (Marti, 2006). Also, new items were added that were more appropriate for community college students and settings.

**Research Design**

This current research employs a nonexperimental quantitative approach using a cross-sectional, predictive research design (Johnson, 2001). Cross-sectional implies that the data are collected from participants (community college students) at a single point in time. Predictive research’s primary objective is to predict the impact of selected independent variables on the dependent variable (faculty-student interaction).

**Population and Sample**

This study utilizes secondary data from the CCSR. Colleges choose to participate in the survey and pay a fee to join. CCSSE establishes sampling numbers from the fall Integrated Postsecondary Education Data System (IPEDS)
enrollment in credit classes (CCSSE, 2007b). CCSSE uses IPEDS enrollment data to ensure consistency and reliability across community colleges that differ in size and geographic location. The 2007 participating colleges demonstrate the breadth of colleges included across the US in any given administration year (see Appendix A for the geographic distribution of colleges). Thus, this study assumes that the data represented the population of interest.

CCSSE publicly reports only the figures for the 2007 cohort which includes the combined data from the 2005, 2006, and 2007 administration years. Since this study uses figures from the 2007 data only, CCSSE research associates provided the population and sample figures for 2007. The population consists of approximately 1,990,347 community college students who were enrolled in credit classes at the community colleges surveyed by CCSSE in the 2007 administration year (C. Cosart, personal communication, October 19, 2007). From this population a random sample of 183,001 students, drawn from 279 colleges in 40 states, plus one college in British Columbia and one college in the Marshall Islands, comprise the data set (C. Cosart, personal communication, October 19, 2007; E. Glaser, personal communication, January 9, 2008; E. Glaser, personal communication, July 23, 2008).

A stratified random cluster sample of credit classes at these participating colleges provides a representative sample within each institution. CCSSE determines “the required number of course sections to be surveyed . . . by the total sample size needed to reduce sampling error and to ensure valid results” (CCSSE
Participating colleges administer the CCSR during class sessions in the spring semester. The in-class administration process increases sample sizes and supports the method of cluster sampling (Marti, 2006). CCSSE collects a list of all credit courses at the institution and bases the stratification upon the time of the day at which the class begins: 11:59 am and earlier, 12:00 pm to 4:59 pm, and 5:00 pm to 12:00 am. Stratification ensures that the number of classes in the sample during those time periods is proportional to the number of classes in the population of classes in the corresponding time periods.

The 2007 CCSSE analysis included 183,001 surveys, 16,699 of which were declared invalid, for a total of 166,302 valid surveys (C. Cosart, personal communication, October 19, 2007; E. Glaser, personal communication, January 9, 2008). CCSSE excluded the 16,699 invalid surveys from analysis if they met one or more of the following criteria: respondents failed to indicate whether they were part- or full-time students; respondents did not reveal if it was the first time they had taken the survey; respondents completed the survey in another class; surveys were blank; the survey form was not returned in the assigned class packet; respondents were under eighteen years of age; or if a student responded very often or never for all of the items in question 4 (Marti, 2006).

The data for this study were obtained from CCSSE by following the Data Use Agreement (see Appendix B). A random sub-sample of 5,000 students (devoid of personal information) was used for the current study, which was obtained from the 2007 database of 166,302 valid surveys. After deleting records for students who did
not have a listed GPA, the sub-sample then contained 4,882 observations. After deleting records for students who chose a major that could not be categorized as occupational or general education/college transfer, the sub-sample then contained 4,221 observations. Following missing-values deletions, the final sub-sample for analysis in this study included 2,820 observations, which was 56% of the original random sub-sample of 5,000 observations. Table 2 shows the number of observations in the original sample and how the number in the final analysis of the sub-sample was derived.

Table 2

*Sample and Sub-sample Numbers*

<table>
<thead>
<tr>
<th>Number of Observations</th>
<th>Explanation of Number of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>166,302</td>
<td>Valid observations included in the 2007 CCSR analysis used by CCSSE</td>
</tr>
<tr>
<td>5,000</td>
<td>Observations included in the random CCSR sub-sample used in study</td>
</tr>
<tr>
<td>4,882</td>
<td>Observations after deleting students who did not have a listed GPA</td>
</tr>
<tr>
<td>4,221</td>
<td>Observations after deleting students who selected a major that could not be categorized as occupational or general education/college transfer</td>
</tr>
<tr>
<td>2,820</td>
<td>Observations for the final sub-sample analysis after deleting missing values</td>
</tr>
</tbody>
</table>

The current study utilized listwise deletion of missing values. Since the frequency distributions were similar between the initial sample (5,000) and the sub-sample (2,820), complex estimation techniques to impute missing values were not
employed. Appendix C shows the frequency distributions of pre- and post-listwise deletion which demonstrate that the data in the final sub-sample were comparable to the original sample.

**Validity of the CCSR**

The validity of the CCSR is substantiated in a fundamental psychometrics paper by Marti (2006) and three validation studies (McClenney & Marti, 2008). Since the CCSR utilizes a large, national sample, the outcomes are relevant for community colleges. The CCSR relies on students' self-reports, which are usually valid if they satisfy three conditions: “(a) when respondents know the information requested, (b) if the questions are phrased unambiguously, and (c) if respondents think the questions merit a serious and thoughtful response” (Kuh & Hu, 2001). The CCSR appears to satisfy these conditions. Furthermore, self-report may be the only functional method to access the desired information for certain variables (Koljatic & Kuh, 2001).

The CCSR's model development included conducting confirmatory factor analysis (CFA) to identify underlying latent constructs. Five underlying constructs emerged (see Table 3). CFA demonstrated that factor analytic models sufficiently represented the 5 underlying constructs (Marti, 2006), thus establishing construct validity. Of the five latent constructs, faculty-student interaction is the construct investigated in the current study. Six questions describing faculty-student interaction loaded on a single factor structure.
Table 3

*Latent Constructs*

<table>
<thead>
<tr>
<th>Latent Constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active and Collaborative Learning</td>
</tr>
<tr>
<td>Student Effort</td>
</tr>
<tr>
<td>Academic Challenge</td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
</tr>
<tr>
<td>Support for Learners</td>
</tr>
</tbody>
</table>


Marti (2006) also established the CCSR’s validity using GPA. Through various trials of hierarchical linear modeling, Marti regressed GPA on each of the latent factors (see Table 3). Marti chose GPA because it was an outcome that did not rely on students’ self-perceptions; therefore, the results cannot be attributed to a positive response bias. Also, GPA is a widely used measure in higher education institutions so it can be assumed to be a logical measure of how much students learn in college. Validity analyses showed that a strong positive relationship existed between latent constructs and students’ GPAs. Thus, the CCSR seems to provide sufficient evidence of construct validity.

In order to further validate and substantiate the CCSR as an effective instrument that measures student engagement for community college students, an independent agency, the Lumina Foundation for Education, funded more validation
research (McClenney & Marti, 2008). The validation studies linked CCSR respondents with three external data sources: data from the Florida Department of Education, data from the Achieving the Dream project, and student record databases maintained at community colleges that have participated in the survey and are either Hispanic-serving institutions or members of the Hispanic Association of Colleges and Universities. A team at the National Center for Higher Education Management Systems analyzed the Florida data, Praxis Associates analyzed the Achieving the Dream data, and an independent consultant analyzed the Hispanic student success data. The three studies focused on different student outcomes and employed different analytic approaches which provided various perspectives for examining and interpreting the data. The general results from these three studies demonstrate:

1. There is strong support for the validity of the use of the CCSR as a measure of institutional processes and student behaviors that impact student outcomes. The strength of the results is derived from strong consistency across three studies using virtually independent samples and analyzed by three different analysts.

2. The studies confirm a long tradition of research findings linking engagement to positive student outcomes. The significance of this research is that it was conducted on community college students who have been markedly understudied relative to students in baccalaureate-granting institutions.
3. There is strong consistency in the relationship between engagement factors and outcome measures across the three studies; however, some outcomes have stronger relationships to engagement than others (McClenney & Marti, 2008, p. 7).

In conclusion, Marti’s psychometrics research and the three validation studies demonstrate that student behaviors and experiences measured by the CCSR are positively related to outcomes. These studies provide evidence of external validity; since the findings are generalizable to reasonably similar samples, settings, and past or future situations (Creswell, 2003).

**Reliability of the CCSR**

Reliability measures whether the same phenomenon, observed at different times and places, yields the same results. Reliability also measures whether survey items belong together, which is called internal consistency. Internal consistency reliability is measured by the statistic, Cronbach’s alpha, on a scale of 0 to 1 where values closer to 1 exhibit better internal consistency. The latent construct of faculty-student interaction as shown in Table 3 has a Cronbach alpha value of .67 (Marti, 2006). Regarding test-retest reliability, Marti assessed respondents who completed the survey more than once during the same academic year. Although the test-retest reliability analysis has not been conducted on the 2007 data, Marti combined data from the 2003, 2004, and 2005 administration years to calculate one test-retest reliability coefficient of .73, indicating a degree of consistency between both survey
administrations for each year. The Cronbach’s alpha value and the test-retest reliability coefficient are sufficient to establish the CCSR as a reliable instrument.

**Data Collection**

This study involves a secondary data analysis. The *Data Use Agreement* (see Appendix B) was followed to obtain the aggregate data devoid of identifiable private subject information from CCSSE (refer to Appendix D to view IRB approval letter). Three key personnel assist in collecting the data each year during class sessions in the spring semester (CCSSE, 2006a). The first key role is that of the CCSSE liaison, a CCSSE staff member who assists the campus coordinator in the survey administration process and reminds the campus coordinator about deadlines and needed materials. The second key role is that of the campus coordinator, selected by the college president to be the official contact between CCSSE and the participating institution. The third key role is that of the survey administrator who is responsible for the administration, collection, and return of surveys. The survey administrator(s) delivers the CCSR during regularly scheduled class times. Additional information regarding CCSR data collection can be found under the *Population and Sample* section.

**Variables and Their Descriptions**

**Dependent variable.**

The dependent variable in this study is the students’ perception of faculty-student interaction, which was created from the sum of Likert-type items on the CCSR that emerged from the factor analysis. Table 4 shows the seven survey items
that were factor analyzed. CCSSE created a faculty-student interaction benchmark using six questions. For this study, five questions from the original six were included and one question from the original six was deleted. The original five questions were—used e-mail to communicate with an instructor, discussed grades or assignments with an instructor, discussed ideas from readings or classes with instructors outside of class, received prompt feedback (written or oral) from instructors on performance, and worked with instructors on activities other than coursework. The one question that was deleted from the original six was—talked about career plans with an instructor or advisor—since advisors at community colleges can be staff members who are not considered faculty. Two additional questions on the CCSR that pertained to faculty-student interaction were included—asked questions in class or contributed to class discussions and the quality of relationship with instructors at this college—since both of these questions logically seem related to how students interact with faculty. These survey items were factor analyzed to examine the factor structure and validity of the dependent variable in this study (see Table 4 for specifics on operationalization).
### Table 4

**Survey Items to be Factor Analyzed**

<table>
<thead>
<tr>
<th>Original Variable Label</th>
<th>CCSSE Item Number and Description</th>
<th>Original Operationalization</th>
<th>New Variable Label</th>
<th>New Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLQUEST</td>
<td>In your experiences at this college during the current school year, about how often have you done each of the following? 4a. asked questions in class or contributed to class discussions</td>
<td>1=Never 2=Sometimes 3=Often 4=Very often</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>EMAIL</td>
<td>4k. used e-mail to communicate with an instructor</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>FACGRADE</td>
<td>4i. discussed grades or assignments with an instructor</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>FACIDEAS</td>
<td>4n. discussed ideas from your readings or classes with instructors outside of class</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>FACFEED</td>
<td>4o. received prompt feedback (written or oral) from instructors on your performance</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>FACOTH</td>
<td>4q. worked with instructors on activities other than coursework</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ENVFAC</td>
<td>Mark the box that best represents the quality of your relationships with people at this college. Your relationship with: 11b. instructors</td>
<td>Responses range from 1 to 7, with scale anchors described as: 1= Unavailable, unhelpful, unsympathetic to 7= Available, helpful, sympathetic</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**SOURCE:** Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.

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**Factor analysis.**

Factor analysis uncovers the latent structure of a set of variables. This study deleted and added survey items to the original latent factor of faculty-student interaction. Therefore, factor analysis was conducted on the survey items related to the dependent variable to provide evidence of construct validity and reliability.
Exploratory factor analysis (EFA) was conducted to determine if the seven survey items described in Table 4 constituted a latent factor of faculty-student interaction (the dependent variable). The EFA analysis used squared multiple correlations as prior communality estimates (Hatcher, 1994). Communality measures the percent of variance in a variable explained by all factors jointly. When a variable has a low communality, the variable should be removed from the model. The principal factor method was used to extract the factor. The data cannot be rotated because a single latent factor was anticipated (Hatcher). For the items to load on the faculty-student interaction factor, they had to have a factor loading of .40 or greater and could not load on more than one factor at that level (.40) (Hatcher).

After conducting EFA, the survey items that loaded on the faculty-student interaction factor were the ones included in the summative score to create the dependent variable used in this study. Factor analysis assumptions include: linear relationships exist between variables, interval or near interval data are being used, proper model specification, and lack of high multicollinearity (Garson, 2007a).

**Independent variables.**

Previous research assisted in the development of the independent variables selected for the model. The conceptual model (see Figure 1.) outlines the independent variables, which are categorized by demographic, financial, academic, and organizational information, and lists the most relevant research that supports these variables regarding faculty-student interaction. Research studies highlighted in
the review of literature included similar variables that are appropriate for community college students.

To determine if any cells were empty or extremely small, crosstabulations were created with the seven faculty-student-interaction survey items and each independent variable to ensure that no problems existed with sample size. Unless otherwise noted, the reference group for the independent variables is modeled under the largest group.

**Demographic variables.**

Tables 5 and 6 list the demographic variables and describe their operationalization. The first demographic variable is SEX_REV which describes a student’s gender. The original operationalization of 1=male and 2=female was changed to 0=Male and 1=Female. Male is the reference group and is not the larger group.

The next demographic variable is MARRY_REV which describes a student’s marital status. The original operationalization of 1=Yes and 2=No was changed to 0=Yes and 1=No. Yes is the reference group and is not the larger group.

Another demographic variable is HAVKID_REV which describes if a student has any children who live with him or her. The original operationalization of 1=Yes and 2=No was changed to 0=Yes and 1=No. Yes is the reference group and is not the larger group.

A fourth demographic variable is GENERATION_REV which describes if a student is a first-generation student or not. The original operationalization of 1=First-
Generation and 2=Non First-Generation was changed to 0=First-Generation and 1=Non First-Generation. First-generation is the reference group and is not the larger group.

Table 5

**Demographic Variables**

<table>
<thead>
<tr>
<th>Original Variable Label</th>
<th>CCSSE Item Number, Variable, and CCSSE Item/Question</th>
<th>Original Operationalization</th>
<th>New Variable Label</th>
<th>New Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEX</td>
<td>30. Gender (Your sex)</td>
<td>1=Male 2=Female</td>
<td>SEX_REV</td>
<td>0=Male 1=Female</td>
</tr>
<tr>
<td>MARRY</td>
<td>31. Marital Status (Are you married?)</td>
<td>1=Yes 2=No</td>
<td>MARRY_REV</td>
<td>0=Yes 1=No</td>
</tr>
<tr>
<td>HAVKID</td>
<td>28. Children (Do you have children who live with you?)</td>
<td>1=Yes 2=No</td>
<td>HAVKID_REV</td>
<td>0=Yes 1=No</td>
</tr>
<tr>
<td>generation</td>
<td>First-generation status (generation – derived CCSSE variable)</td>
<td>1=First-Generation (neither parent attended college) 2=Non First-Generation (at least one parent attended college)</td>
<td>GENERATION_REV</td>
<td>0=First-Generation (neither parent attended college) 1=Non First-Generation (at least one parent attended college)</td>
</tr>
</tbody>
</table>

**SOURCE:** Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.

The race variable originally consisted of 1=American Indian or other Native American, 2=Asian, Asian American or Pacific Islander, 3=Native Hawaiian, 4=Black or African American, Non-Hispanic, 5= White, Non-Hispanic, 6= Hispanic, Latino, Spanish, and 7= Other. The new coding consisted of ASIAN_REV, BLACK_REV, HISPANIC_REV, and OTHER_REV where 0=No and 1=Yes. Regarding students’ race, American Indian and Native Hawaiian were combined with the Other category since the numbers were small, 43 for American Indian and 11 for Native Hawaiian. WHITE_REV is the reference group (refer to Table 6).
Table 6

Variables of Race and Age

<table>
<thead>
<tr>
<th>Original Variable Label</th>
<th>CCSSE Item Number, Variable, and CCSSE Item/Question</th>
<th>Original Operationalization</th>
<th>New Variable Label</th>
<th>New Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>RERACE</td>
<td>34. Race (What is your racial identification? Mark only one)</td>
<td>1=American Indian or other Native American 2=Asian, Asian American or Pacific Islander 3=Native Hawaiian 4=Black or African American, Non-Hispanic 5= White, Non-Hispanic 6= Hispanic, Latino, Spanish 7= Other</td>
<td>ASIAN_REV</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BLACK_REV</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HISPANIC_REV</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OTHER_REV (includes American Indian and Native Hawaiian)</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td>AGENEW</td>
<td>29. Age (Mark your age group.)</td>
<td>1=Under 18 2=18 to 19 3=20 to 21 4=22 to 24 5=25 to 29 6=30 to 39 7=40 to 49 8=50 to 64 9=65+</td>
<td>AGE22to24_b</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AGE25to29_b</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AGE30to39_b</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AGE40to49_b</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AGE50plus_b</td>
<td>0=No, 1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No under 18 existed; 18 to 21 is the reference group</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from The Community College Survey of Student Engagement [2007], The University of Texas at Austin.

For ease and efficiency, the recoded four variables related to race with white students as the reference group were converted a second time to one dummy coded variable (refer to Table 7). The rationale for creating the modified race variable was to compare majority versus minority students. The former variable of WHITE_REV was coded as 0 to represent majority students ($n=1950$) since this race had the highest number of students in the sub-sample. The former variables of ASIAN_REV, BLACK_REV, HISPANIC_REV, and OTHER_REV were combined and coded as 1 to represent minority students ($n=870$). The new variable became RACE_REV. Majority students (White students) is the reference group.
Table 7

Means and Standard Deviations of Race and Age

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Coding</th>
<th>n</th>
<th>%</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACE_REV</td>
<td>0</td>
<td>1950</td>
<td>69</td>
<td>14.00</td>
<td>3.12</td>
</tr>
<tr>
<td></td>
<td>(WHITE_REV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>870</td>
<td>31</td>
<td>14.08</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>(ASIAN_REV, BLACK_REV, HISPANIC_REV, and OTHER_REV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGETRVNON</td>
<td>0</td>
<td>1814</td>
<td>64</td>
<td>13.89</td>
<td>3.13</td>
</tr>
<tr>
<td></td>
<td>(AGE18to21_b and AGE22to24_b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1006</td>
<td>36</td>
<td>14.26</td>
<td>3.16</td>
</tr>
<tr>
<td></td>
<td>(AGE25to29_b, AGE30to39_b, AGE40to49_b, and AGE50plus_b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The last demographic variable is age where the students could mark their age group. The age variable originally consisted of 1=Under 18, 2=18 to 19, 3=20 to 21, 4=22 to 24, 5=25 to 29, 6=30 to 39, 7=40 to 49, 8=50 to 64, and 9=65+. The new coding consisted of AGE22to24_b, AGE25to29_b, AGE30to39_b, AGE40to49_b, and AGE50plus_b where 0=No and 1=Yes. The age variable was modified by collapsing the 18 to 19 and the 20 to 21 categories into one category as well as the 50 to 64 and the 65+ categories into one category. No one under 18 years of age was in the sample since CCSSE excludes these surveys (refer to Table 6).

For ease and efficiency, the recoded five variables related to age with AGE18to21_b as the reference group were converted a second time to one dummy coded variable (refer to Table 7). The rationale for creating the modified age variable was to compare traditional and non-traditional age community college students. The former variables of AGE18to21_b and AGE22to24_b were combined and coded as 0 to represent traditional age college students (n=1814) and the former variables of
AGE25to29_b, AGE30to39_b, AGE40to49_b, and AGE50plus_b were combined and coded as 1 to represent non-traditional age college students (n=1006). The new variable became AGETRVNON (refer to Table 7). Being a traditional age student is the reference group.

**Financial variables.**

Table 8 lists the financial variables. The majority of the financial variables describe the different sources students use to pay for their tuition at their respective community colleges. The first financial variable is OWNINC_REV which is students’ own income or savings. The original operationalization of 1=Not a source, 2=Minor source, and 3=Major source was changed to 0=Not a source and 1=A source. The original operationalization of 1 became 0 and the original operationalizations of 2 and 3 became 1. Not a source is the reference group and is not the larger group.

The second financial variable is PARSPINC_REV which is the students’ parent or spouse/significant other’s income or savings. The original operationalization of 1=Not a source, 2=Minor source, and 3=Major source was changed to 0=Not a source and 1=A source. The original operationalization of 1 became 0 and the original operationalizations of 2 and 3 became 1. Not a source is the reference group and is not the larger group.

The third financial variable is GRANTS_REV which describes students’ grants or scholarships. The original operationalization of 1=Not a source, 2=Minor source, and 3=Major source was changed to 0=Not a source and 1=A source. The original
The operationalization of 1 became 0 and the original operationalizations of 2 and 3 became 1. Not a source is the reference group.

The fourth financial variable is STULOANS_REV which describes if the students have any loans. The original operationalization of 1=Not a source, 2=Minor source, and 3=Major source was changed to 0=Not a source and 1=A source. The original operationalization of 1 became 0 and the original operationalizations of 2 and 3 became 1. Not a source is the reference group.

**Table 8**

Financial Variables

<table>
<thead>
<tr>
<th>Original Variable Label</th>
<th>CCSSE Item Number, Variable, and CCSSE Item/Question</th>
<th>Original Operationalization</th>
<th>New Variable Label</th>
<th>New Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWNINC</td>
<td>18a. Type of Financial Aid (Indicate which of the following are sources you use to pay your tuition at this college? Please respond to each item.) My own income/savings</td>
<td>1=Not a source 2=Minor source 3=Major source</td>
<td>OWNINC_REV</td>
<td>0=Not a source 1=A source</td>
</tr>
<tr>
<td>PARSPINC</td>
<td>18b. Parent or spouse/significant other’s income/savings</td>
<td>1=Not a source 2=Minor source 3=Major source</td>
<td>PARSPINC_REV</td>
<td>0=Not a source 1=A source</td>
</tr>
<tr>
<td>GRANTS</td>
<td>18d. Grants and scholarships</td>
<td>1=Not a source 2=Minor source 3=Major source</td>
<td>GRANTS_REV</td>
<td>0=Not a source 1=A source</td>
</tr>
<tr>
<td>STULOANS</td>
<td>18e. Student loans (bank, etc.)</td>
<td>1=Not a source 2=Minor source 3=Major source</td>
<td>STULOANS_REV</td>
<td>0=Not a source 1=A source</td>
</tr>
<tr>
<td>PAYWORK</td>
<td>10b. Hours of work per week (About how many hours do you spend in a typical 7-day week doing each of the following?) Working for pay</td>
<td>0=None 1=1-5 hours 2=6-10 hours 3=11-20 hours 4=21-30 hours 5=more than 30 hours</td>
<td>WORKNONE WORK1to10 WORK11to20 WORK21to30</td>
<td>0=No, 1=Yes 0=No, 1=Yes 0=No, 1=Yes 0=No, 1=Yes Working more than 30 hours per week is the reference group</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from The Community College Survey of Student Engagement [2007], The University of Texas at Austin.
The last financial variable describes students' hours of work for pay in a typical 7-day week. The work for pay variable originally consisted of 0=None, 1=1-5 hours, 2=6-10 hours, 3=11-20 hours, 4=21-30 hours, and 5=more than 30 hours. The new operationalization consisted of WORKNONE, WORK1TO10, WORK11TO20, and WORK21TO30 where 0=No and 1=Yes. The work for pay variable was modified by collapsing the one to five hours and six to 10 hours of work categories into one category because nine- or 10-hour work increments are sufficient. The variable of WORKplus30 is the reference variable (refer to Table 8).

For ease and efficiency, the recoded four variables related to work with WORKplus30 were converted a second time to one dummy coded variable (refer to Table 9).

Table 9

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Coding</th>
<th>n</th>
<th>%</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORK_REV</td>
<td>0</td>
<td>962</td>
<td>34</td>
<td>13.82</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1858</td>
<td>66</td>
<td>14.13</td>
<td>3.17</td>
</tr>
</tbody>
</table>

The modified work variable described students who worked over 30 hours versus not working or working under 30 hours. The rationale for creating the new work variable was due to the grouping of the means; WORKplus30 had a mean of 13.81 where the other variables had means over 14, thus it was logical to code as 0 or 1. The former variable of WORKplus30 was coded as 0 (n=962) and the former
variables of WORKNONE, WORK1to10, WORK11to20, and WORK21to30 were combined and coded as 1 \((n=1858)\). The new variable became WORK_REV. Working over 30 hours is the reference group and is not the larger group.

**Academic variables.**

Table 10 shows the academic variables.

Table 10

<table>
<thead>
<tr>
<th>Original Variable Label</th>
<th>CCSSE Item Number, Variable, and CCSSE Item/Question</th>
<th>Original Operationalization</th>
<th>New Variable Label</th>
<th>New Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GPA</strong></td>
<td>21. GPA (At this college, in what range is your overall college grade average?)</td>
<td>1=Pass/fail classes only 2=Do not have a GPA at this school 3=C- or lower 4=C 5=B- to C+ 6=B 7=A- to B+ 8=A</td>
<td>GPA_REV</td>
<td>1.5=C- or lower 2=C 2.5=B- to C+ 3=B 3.5=A- to B+ 4=A</td>
</tr>
<tr>
<td><strong>MAJOR</strong></td>
<td>37. Type of Major (Using the list provided, please write the code indicating your major.)</td>
<td>(students choose from a list of majors)</td>
<td>MAJOR_B</td>
<td>0= Occupational 1= General Education/College Transfer</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.

The first academic variable is GPA_REV which is the students’ overall GPA at their respective community colleges. The GPA variable originally consisted of 1=Pass/fail classes only, 2=Do not have a GPA at this school, 3=C- or lower, 4=C, 5=B- to C+, 6=B, 7=A- to B+, and 8=A. The new operationalization consisted of 1.5=C- or lower, 2=C, 2.5=B- to C+, 3=B, 3.5=A- to B+, and 4=A. The CCSR included two categories—pass/fail classes only and do not have a GPA at this school—that did not truly define GPA as 0; therefore, 118 records were deleted. Thus, these categories were not included in the new operationalization.
The second academic variable is students' type of major (refer to Table 11).

Table 11

Major Categories

<table>
<thead>
<tr>
<th>Major Category</th>
<th>Majors</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational</td>
<td>* Agriculture&lt;br&gt;  * Allied Health Professions &amp; Related Sciences (nursing, physical therapy, dental, EMT, veterinary, etc.)&lt;br&gt;  * Architecture &amp; Related Programs (city/urban, community/regional planning, etc.)&lt;br&gt;  * Business Management &amp; Administrative Services (accounting, business admin., marketing, management, real estate, etc.)&lt;br&gt;  * Computer &amp; Information Sciences&lt;br&gt;  * Conservation &amp; Renewable Natural Resources (fishing, forestry, wildlife, etc.)&lt;br&gt;  * Construction Trades (masonry, carpentry, plumbing &amp; pipe fitters, etc.)&lt;br&gt;  * Education&lt;br&gt;  * Engineering Technologies/Technicians&lt;br&gt;  * Law &amp; Legal Studies&lt;br&gt;  * Parks, Recreation, Leisure &amp; Fitness Studies Personal &amp; Miscellaneous Services (gaming &amp; sports, cosmetic, culinary, etc.)&lt;br&gt;  * Precision Production Trades (drafting, graphic, precious metal worker, etc.)&lt;br&gt;  * Protective Services (criminal justice &amp; corrections, fire protection, etc.)&lt;br&gt;  * Public Administration &amp; Services (public policy, social work, etc.)&lt;br&gt;  * Technicians &amp; Repairers (A/C, heating &amp; refrigeration, auto body, electrical/electronic equipment, etc.)&lt;br&gt;  * Transportation &amp; Materials Moving Workers (air, vehicle, &amp; water workers, etc.)&lt;br&gt;  * Vocational Home Economics (child care/guidance worker &amp; manager, clothing, apparel, &amp; textile worker, housekeeping, etc.)</td>
<td>1810</td>
</tr>
<tr>
<td>General Education/College Transfer</td>
<td>* Biological Sciences/Life Sciences (biology, biochemistry, botany, zoology, etc.)&lt;br&gt;  * Communications (advertising, journalism, television/radio, etc.)&lt;br&gt;  * English Language &amp; Literature/Letters (composition, creative writing, etc.)&lt;br&gt;  * Foreign Languages &amp; Literatures (French, Spanish, etc.)&lt;br&gt;  * History&lt;br&gt;  * Liberal Arts &amp; Sciences, General Studies &amp; Humanities&lt;br&gt;  * Mathematics&lt;br&gt;  * Multi/Interdisciplinary Studies (international relations, ecology, environmental studies, etc.)&lt;br&gt;  * Physical Sciences (astronomy, chemistry, geology, physics, etc.)&lt;br&gt;  * Psychology&lt;br&gt;  * Science Technologies (biological technology, nuclear &amp; industrial radiological technology, etc.)&lt;br&gt;  * Social Sciences &amp; History (anthropology, archeology, economics, geography, history, political science, sociology, etc.)&lt;br&gt;  * University transfer&lt;br&gt;  * Visual &amp; Performing Arts (art, music, theater, dance, etc.)</td>
<td>1010</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from The Community College Survey of Student Engagement [2007], The University of Texas at Austin.

The major variable originally consisted of a list where students could select from 35 choices. These majors were revised into two groups: Occupational and General Education/ College Transfer. The new operationalization consisted of MAJOR_B
where 0=Occupational and 1=General Education/College Transfer. If a student selected Undecided, Other, Not Applicable, or a major that was not listed from the 35 choices, observations were deleted (661 cases) since those choices did not represent occupational or college transfer/general education majors. Occupational describes majors where students attend a community college to learn a trade and then typically search for a job. General education/college transfer describes majors where students attend a community college to learn general curricula and then typically transfer to a four-year school. Occupational is the reference group. Table 11 outlines the two major categories and the number of students in each category.

**Organizational variables.**

Table 12 explains the organizational variables.

Table 12

**Organizational Variables**

<table>
<thead>
<tr>
<th>Original Variable Label</th>
<th>CCSSE Item Number, Variable, and CCSSE Item/Question</th>
<th>Original Operationalization</th>
<th>New Variable Label</th>
<th>New Operationalization</th>
</tr>
</thead>
</table>
| ORIEN                   | 8h. College orientation program or course            | 1=I have not done/nor plan to do  
2=I plan to do  
3=I have done | ORIEN_REV         | 0=I have not done  
1=I have done |
| LRNCOMM                 | 8i. Organized learning communities (linked courses/study groups led by faculty or counselors) | 1=I have not done/nor plan to do  
2=I plan to do  
3=I have done | LRNCOMM_REV       | 0=I have not done  
1=I have done |

SOURCE: Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.

The first organizational variable is ORIEN_REV which describes if students have participated, currently are participating during the time of the survey administration, or plan to participate in an orientation program or course while attending their
respective community colleges. The original operationalization of 1=I have not
done/nor plan to do, 2=I plan to do, and 3=I have done was changed to 0=I have not
done and 1=I have done. The original operationalizations of 1 and 2 became 0 and
the original operationalization of 3 became 1. I have not done is the reference group.

The second organizational variable is LRNCOMM_REV which describes if
students have participated, currently are participating during the time of the survey
administration, or plan to participate in an organized learning communities while
attending their respective community colleges. The original operationalization of 1=I
have not done/nor plan to do, 2=I plan to do, and 3=I have done was changed to 0=I
have not done and 1=I have done. The original operationalizations of 1 and 2
became 0 and the original operationalization of 3 became 1. I have not done is the
reference group.

**Statistical Analysis**

Both descriptive and inferential statistics were used to examine the data and
to determine which independent variables predict faculty-student interaction.
Descriptive and inferential statistics were generated using the SAS® System for
Windows version 9.1. A p-value of less than .05 is significant in this study.

**Research questions.**

1. Is there a significant difference between full- and part-time community college
   students regarding their faculty-student interaction?

2. What is the predictive value of demographic (gender, race, marital status,
   age, if children live with student, first-generation status), financial
(income/savings, parent or spouse/significant other’s income/savings, grants and scholarships, student loans, and hours of work per week), academic (GPA and type of major), and organizational (college orientation program/course and organized learning communities) variables on faculty-student interaction of full-time community college students?

3. What is the predictive value of demographic (gender, race, marital status, age, if children live with student, first-generation status), financial (income/savings, parent or spouse/significant other’s income/savings, grants and scholarships, student loans, and hours of work per week), academic (GPA and type of major), and organizational (college orientation program/course and organized learning communities) variables on faculty-student interaction of part-time community college students?

**Inferential statistics.**

**T-test.**

A t-test was used to answer the first research question. The t-test determined if a significant difference existed between the means of full- and part-time community college students regarding their faculty-student interaction.

**Multiple regression.**

Multiple regression was the statistical technique used to answer the second and third research questions. Multiple regression is appropriate to employ when one wants to predict the variance in an interval dependent variable based on linear combinations on interval, dichotomous, or dummy independent variables.
Since 15 independent variables exist in this model, multiple regression determines which variables significantly predict faculty-student interaction, while controlling the other independent variables at fixed levels (Agresti & Finlay, 1997). Moreover, multiple regression describes the linear combinations in the model and the strength of the model. This technique also determines which independent variables are significant. Lastly, multiple regression explains the magnitude of contribution of each variable. The assumptions of multiple regression include: proper specification of the model, same underlying distribution for all variables, linearity of relationships, homoscedasticity, interval or near-interval data, absence of outliers, validity, and data whose range is not truncated (Garson, 2007b).

The linear regression equation below suggests the best possible prediction of the dependent variable, faculty-student interaction (Y), based on the independent variables (X). This equation represents a main effects model; no interaction terms are included.

\[ Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \text{error} \]

Table 13 explains the modified X variables and their corresponding variable names.

The F-test statistic and its associated p-value determine model significance as a whole. First the F-test was examined, and then t-tests were assessed to determine significance of each continuous independent variable. Since the independent variables were categorical, their significance was assessed using
uniqueness indices to better determine their unique contributions (Hatcher & Stepanski, 1994).

Table 13

*Modified X Variables*

<table>
<thead>
<tr>
<th>X Variables Subscripts</th>
<th>Modified Variable Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X_1$</td>
<td>SEX_REV</td>
</tr>
<tr>
<td>$X_2$</td>
<td>RACE_REV (Race)</td>
</tr>
<tr>
<td>$X_3$</td>
<td>MARRY_REV (Marital status)</td>
</tr>
<tr>
<td>$X_4$</td>
<td>AGETRVNON (Age)</td>
</tr>
<tr>
<td>$X_5$</td>
<td>HAVKID_REV (if children live with student)</td>
</tr>
<tr>
<td>$X_6$</td>
<td>GENERATION_REV (First-generation status)</td>
</tr>
<tr>
<td>$X_7$</td>
<td>OWNINC_REV (Own income/savings)</td>
</tr>
<tr>
<td>$X_8$</td>
<td>PARSPINC_REV (Parent or spouse/significant other’s income/savings)</td>
</tr>
<tr>
<td>$X_9$</td>
<td>GRANTS_REV (Grants and scholarships)</td>
</tr>
<tr>
<td>$X_{10}$</td>
<td>STULOANS_REV (Student loans)</td>
</tr>
<tr>
<td>$X_{11}$</td>
<td>WORK_REV (hours of work per week)</td>
</tr>
<tr>
<td>$X_{12}$</td>
<td>GPA_REV</td>
</tr>
<tr>
<td>$X_{13}$</td>
<td>MAJOR_B (Occupational vs. General Education/ College Transfer)</td>
</tr>
<tr>
<td>$X_{14}$</td>
<td>ORIEN_REV (Participation in orientation program or course)</td>
</tr>
<tr>
<td>$X_{15}$</td>
<td>LRNCOMM_REV (Participation in organized learning communities)</td>
</tr>
</tbody>
</table>

**Uniqueness index.**

A uniqueness index displays the percentage of variance in a dependent variable that is accounted for by an independent variable, “above and beyond the variance accounted for by the other” independent variables in the regression equation (p. 407). A uniqueness index was calculated for each independent variable by examining two multiple regression equations. The first regression equation, called the full equation, included all the independent variables. The second multiple
regression equation, called the reduced equation, included all of the independent variables except for the independent variable of interest.

To determine the uniqueness index for each independent variable, the R-squared value for the reduced equation was subtracted from the R-squared value for the full equation. The difference was the uniqueness index for the independent variable of interest. After the uniqueness index was calculated for each independent variable, then a significance test was conducted to determine if the independent variable of interest accounted for a significant amount of variance in the dependent variable, beyond the variance accounted for by the other independent variables (Hatcher & Stepanski, 1994). Thus, one must test the significance of the difference between the R-squared value for the full equation and the R-squared value for the reduced equation. To correctly perform this test, the multiple regression equations must be nested, meaning that they both include the same dependent variable and that the independent variables in the reduced equation are a subset of the independent variables in the full equation. The significance test formula is below.

\[
F = \frac{(R^2_{\text{Full}} - R^2_{\text{Reduced}})}{(K_{\text{Full}} - K_{\text{Reduced}})} \quad \frac{(1 - R^2_{\text{Full}})}{(N - K_{\text{Full}} - 1)}
\]

**Delimitation and Limitations**

This study is delimited to community college students who are enrolled in credit degree programs and who are included in the CCSR sample. Therefore, this
study will not address students who are taking non-credit classes at these community colleges.

A limitation or potential weakness of this research is that the community colleges choose to participate in CCSSE so the data do not represent a true random sample of all community colleges across the US. Nevertheless, CCSSE surveys a large number of community college students nationwide every year so the data is reasonably representative of community colleges across the US (see Appendix A). Also, CCSSE draws a stratified random cluster sample of credit classes at each participating community college which provides a representative sample within each institution.

Another limitation relates to the community colleges that choose to participate. Two colleges are included in the 2007 CCSR analysis from British Columbia and Marshall Islands. Those two colleges represent only about 0.3% of the entire 2007 cohort (183,001 returned surveys) (E. Glaser, personal communication, July 23, 2008). These specific observations are not identifiable by college due to confidentiality so they cannot be deleted from the sample. The assumption is made there likely is not more than .3% of these observations in this study’s sample (2,820). The inclusion of these observations should be noted when generalizing the findings.

Another limitation is this study utilizes secondary source data, thus the CCSR cannot be modified. The variables included in this study are limited to the variables available in the data set. One cannot change questions or survey items to
investigate other variables (Rosenbaum, 2007) or revise the original coding scheme. For example, the variables of age and GPA are continuous but are coded as categorical on the CCSR.

Another limitation is that the surveys are self-reports. Student information such as GPA may be inaccurate. Also, the dependent variable is based on the students’ perception of faculty-student interaction and may be interpreted differently based on students’ experiences and backgrounds.

Finally, the CCSR is administered during the spring semester which impacts the sample: many students who begin college during the fall do not return in the spring (McClenney & Marti, 2008). In fact, approximately 45% of community college students leave during their first year (Braxton et al., 2004, Rode, 2004).

Due to these limitations, other higher education educators, practitioners, administrators, and policy makers need to be cautious when generalizing the findings to community college students in general.

**Summary**

To augment the scant research regarding community college students and faculty-student interaction, as well as to remedy the problem of community college researchers investigating a single institution or a regional system, a national sample was utilized to explore variables that predict faculty-student interaction at community colleges. This study employs secondary data from the CCSR. Community college students nationwide respond to survey questions that assess institutional practices and student behaviors related to engagement. The conceptual model (see Figure 1.)
outlines the dependent variable, faculty-student interaction, and the independent variables included in the present study. Descriptive and inferential statistics were applied to the data and determined which variables predicted faculty-student interaction of community college students.
CHAPTER IV.

Results

Introduction

Few studies in the research literature have investigated faculty-student interaction of community college students. Descriptive and inferential statistics were applied to the data to answer three research questions. Exploratory factor analysis was used to establish a factor structure for the dependent variable, faculty-student interaction. Then, a t-test was used to evaluate if a significant difference existed in faculty-student interaction between full- and part-time students. Two multiple regression analyses were employed to determine which variables significantly predicted faculty-student interaction of community college students for full-time students as well as for part-time students. Finally, uniqueness indices revealed the relative importance of each of the significant independent variables.

Descriptive Statistics

The final sub-sample included 2,820 community college students. Regarding demographic information (refer to Table 14), the sub-sample had more females (59%), more White students (69%) than any other race, and more single students (78%). Approximately 64% of the sample was between 18 to 24 years old. Only 27% of the sub-sample had children who lived with them. First-generation students comprised 33% of the sub-sample.
Table 14

Demographic Independent Variables

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Code</th>
<th>Label</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>0</td>
<td>Male</td>
<td>1143</td>
<td>40.53%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Female</td>
<td>1677</td>
<td>59.47%</td>
</tr>
<tr>
<td>Race</td>
<td>0</td>
<td>WHITE_REV</td>
<td>1950</td>
<td>69.15%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>(ASIAN_REV, BLACK_REV, HISPANIC_REV, and OTHER_REV)</td>
<td>870</td>
<td>31.85%</td>
</tr>
<tr>
<td>Marital Status</td>
<td>0</td>
<td>Yes</td>
<td>620</td>
<td>21.99%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>No</td>
<td>2200</td>
<td>78.01%</td>
</tr>
<tr>
<td>Age</td>
<td>0</td>
<td>AGE18to 21_b and AGE22to 24_b</td>
<td>1814</td>
<td>64.33%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>AGE25to29_b, AGE30to39_b, AGE40to49_b, and AGE50plus_b</td>
<td>1006</td>
<td>35.67%</td>
</tr>
<tr>
<td>Children who live with student</td>
<td>0</td>
<td>Yes</td>
<td>770</td>
<td>27.30%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>No</td>
<td>2050</td>
<td>72.70%</td>
</tr>
<tr>
<td>First-generation status</td>
<td>0</td>
<td>First-generation</td>
<td>929</td>
<td>32.94%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Non first-generation</td>
<td>1891</td>
<td>67.06%</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.

The financial independent variables described how a student paid for college tuition (refer to Table 15). Sixty-six percent used their own income/savings whereas 51% used their parent, spouse, or significant other’s income/savings. About half of the students had grants or scholarships, whereas 27% used student loans to pay for tuition. About 34% of students worked more than 30 hours a week. Students might use multiple sources to pay for their education and were able to check more than one source on the survey.
Table 15

**Financial Independent Variables**

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Code</th>
<th>Label</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student’s own income/savings</td>
<td>0</td>
<td>Not a source</td>
<td>951</td>
<td>33.72%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>A source</td>
<td>1869</td>
<td>66.28%</td>
</tr>
<tr>
<td>Parent or spouse/significant other’s</td>
<td>0</td>
<td>Not a source</td>
<td>1381</td>
<td>48.97%</td>
</tr>
<tr>
<td>income/savings</td>
<td>1</td>
<td>A source</td>
<td>1439</td>
<td>51.03%</td>
</tr>
<tr>
<td>Grants and scholarships</td>
<td>0</td>
<td>Not a source</td>
<td>1435</td>
<td>50.89%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>A source</td>
<td>1385</td>
<td>49.11%</td>
</tr>
<tr>
<td>Student loans</td>
<td>0</td>
<td>Not a source</td>
<td>2051</td>
<td>72.73%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>A source</td>
<td>769</td>
<td>27.27%</td>
</tr>
<tr>
<td>Hours of work per week</td>
<td>0</td>
<td>WORKplus30</td>
<td>962</td>
<td>34.11%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>(WORKNONE, WORK1to10, WORK11to20, and WORK21to30)</td>
<td>1858</td>
<td>65.89%</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.

The academic independent variables described GPA and type of major (refer to Table 16). The majority of students reported that their GPAs were C+ or above (92%) and that their majors were primarily occupational in nature (64%).

The organizational independent variables described if students in the sub-sample participated in orientation programs and learning communities (refer to Table 17). Only 27% of students participated in a college orientation program and only 10% participated in an organized learning community.
Table 16

*Academic Independent Variables*

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Code</th>
<th>Label</th>
<th>Sub-sample $N$ ($N = 2820$)</th>
<th>Sub-sample % ($N = 2820$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA</td>
<td>0</td>
<td>Pass/fail classes only or do not have a GPA at this school</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>C- or lower</td>
<td>46</td>
<td>1.63%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>C</td>
<td>184</td>
<td>6.52%</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>B- to C+</td>
<td>514</td>
<td>18.23%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>B</td>
<td>725</td>
<td>25.71%</td>
</tr>
<tr>
<td></td>
<td>3.5</td>
<td>A- to B+</td>
<td>848</td>
<td>30.07%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>A</td>
<td>503</td>
<td>17.84%</td>
</tr>
<tr>
<td>Student’s major</td>
<td>0</td>
<td>Occupational</td>
<td>1810</td>
<td>64.18%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>General Education/ College Transfer</td>
<td>1010</td>
<td>35.82%</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.

Table 17

*Organizational Independent Variables*

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Code</th>
<th>Label</th>
<th>Sub-sample $N$ ($N = 2820$)</th>
<th>Sub-sample % ($N = 2820$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>College orientation program or course</td>
<td>0</td>
<td>I have not done</td>
<td>2064</td>
<td>73.19%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>I have done</td>
<td>756</td>
<td>26.81%</td>
</tr>
<tr>
<td>Organized learning communities</td>
<td>0</td>
<td>I have not done</td>
<td>2545</td>
<td>90.25%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>I have done</td>
<td>275</td>
<td>9.75%</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from *The Community College Survey of Student Engagement* [2007], The University of Texas at Austin.
Exploratory Factor Analysis

Exploratory factor analysis (EFA) was utilized to determine if responses to seven survey items (refer to Table 18) constituted a latent factor of faculty-student interaction (the dependent variable). Also, EFA provided evidence of validity and reliability.

For the question regarding class participation, 67% of students indicated that they often or very often asked questions in class or contributed to class discussions. Relating to student e-mail use, half indicated that they e-mailed their instructors often or very often. Forty-nine percent of students reported that they discussed grades or assignments with an instructor often or very often. Sixty percent of students indicated that they often or very often received prompt feedback from instructors.

Forty-four percent of students reported that they never discussed ideas from their readings or classes with instructors outside of class. Sixty-nine percent of students indicated that they never worked with instructors on activities other than coursework. When answering how students ranked their relationships with instructors, 83% of students ranked their instructors as 5, 6, and 7 on a Likert scale from 1 to 7 (1 as unavailable, unhelpful, and unsympathetic to 7 as available, helpful, and sympathetic).
Table 18

Survey Items that were Factor Analyzed

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Code</th>
<th>Label</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asked questions in class or contributed to class discussions</td>
<td>1</td>
<td>Never</td>
<td>56</td>
<td>1.99%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sometimes</td>
<td>878</td>
<td>31.13%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Often</td>
<td>1045</td>
<td>37.06%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Very Often</td>
<td>841</td>
<td>29.82%</td>
</tr>
<tr>
<td>Used e-mail to communicate with an instructor</td>
<td>1</td>
<td>Never</td>
<td>426</td>
<td>15.11%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sometimes</td>
<td>962</td>
<td>34.11%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Often</td>
<td>838</td>
<td>29.72%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Very Often</td>
<td>594</td>
<td>21.06%</td>
</tr>
<tr>
<td>Discussed grades or assignments with an instructor</td>
<td>1</td>
<td>Never</td>
<td>198</td>
<td>7.02%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sometimes</td>
<td>1248</td>
<td>44.26%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Often</td>
<td>922</td>
<td>32.70%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Very Often</td>
<td>452</td>
<td>16.03%</td>
</tr>
<tr>
<td>Discussed ideas from your readings or classes with instructors outside of class</td>
<td>1</td>
<td>Never</td>
<td>1230</td>
<td>43.62%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sometimes</td>
<td>1098</td>
<td>38.94%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Often</td>
<td>374</td>
<td>13.26%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Very Often</td>
<td>118</td>
<td>4.18%</td>
</tr>
<tr>
<td>Received prompt feedback (written or oral) from instructors on your performance</td>
<td>1</td>
<td>Never</td>
<td>164</td>
<td>5.82%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sometimes</td>
<td>966</td>
<td>34.26%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Often</td>
<td>1158</td>
<td>41.06%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Very Often</td>
<td>532</td>
<td>18.87%</td>
</tr>
<tr>
<td>Worked with instructors on activities other than coursework</td>
<td>1</td>
<td>Never</td>
<td>1936</td>
<td>68.65%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sometimes</td>
<td>653</td>
<td>23.16%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Often</td>
<td>163</td>
<td>5.78%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Very Often</td>
<td>68</td>
<td>2.41%</td>
</tr>
<tr>
<td>Relationship with instructors</td>
<td>1</td>
<td>Unavailable, unhelpful, unsympathetic</td>
<td>15</td>
<td>.53%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Unavailable, unhelpful, unsympathetic</td>
<td>42</td>
<td>1.49%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Unavailable, unhelpful, unsympathetic</td>
<td>96</td>
<td>3.40%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Unavailable, unhelpful, unsympathetic</td>
<td>329</td>
<td>11.67%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Unavailable, unhelpful, unsympathetic</td>
<td>605</td>
<td>21.45%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Unavailable, unhelpful, unsympathetic</td>
<td>954</td>
<td>33.83%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Available, helpful, sympathetic</td>
<td>779</td>
<td>27.62%</td>
</tr>
</tbody>
</table>

SOURCE: Data used with permission from The Community College Survey of Student Engagement [2007], The University of Texas at Austin.
The principal factor method was used to extract the factor of faculty-student interaction. The data were not rotated because a single latent factor occurred. The scree test confirmed that only one meaningful latent factor existed. The item loadings were set at .40 or greater.

Table 19

*Factor Loadings and Final Communality Estimates from the Exploratory Factor Analysis*

<table>
<thead>
<tr>
<th>Faculty-student Interaction</th>
<th>Factor 1 (α =0.69)</th>
<th>h²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor Loading</td>
<td></td>
</tr>
<tr>
<td>Asked questions in class or contributed to class discussions</td>
<td>.44</td>
<td>.20</td>
</tr>
<tr>
<td>Used e-mail to communicate with an instructor</td>
<td>.43</td>
<td>.18</td>
</tr>
<tr>
<td>Discussed grades or assignments with an instructor</td>
<td>.62</td>
<td>.39</td>
</tr>
<tr>
<td>Discussed ideas from your readings or classes with instructors outside of class</td>
<td>.61</td>
<td>.37</td>
</tr>
<tr>
<td>Received prompt feedback (written or oral) from instructors on your performance</td>
<td>.52</td>
<td>.27</td>
</tr>
<tr>
<td>Worked with instructors on activities other than coursework</td>
<td>.45</td>
<td>.20</td>
</tr>
</tbody>
</table>

*Note. N = 2,820. Communality estimates appear in the column h². Cronbach’s alpha coefficient is presented in the parentheses in the header.*

Using the stated criteria, six (asked questions, used e-mail, discussed grades and assignments, discussed ideas outside of class, received prompt feedback, and worked on activities other than coursework) of the seven items loaded on one factor with factor loadings ranging from 0.43 to 0.62 (refer to Table 19). When reviewing these six items and their descriptions, factor one seemed to be a logical and reasonable proxy for faculty-student interaction. This factor was operationalized by
the summative score of those six questions to create the dependent variable of faculty-student interaction used in this study. The faculty-student interaction variable had a Cronbach’s alpha of .69 which demonstrated that the construct was adequately reliable as used in social science research (Garson, 2007a).

Six survey items represented the dependent variable (faculty-student interaction). The scale for each question is 1=Never, 2=Sometimes, 3=Often, and 4=Very often. Responses ranged from a student answering one on all six questions for a total of six (minimum value) or answering four on all six questions for a total of 24 (maximum value). Table 20 displays the frequency of student responses. Fourteen was the summative score with the most responses (381), and six was the summative score with the least responses (2). The histogram was slightly skewed to the left. Although the mean was slightly skewed to the high side, the histogram approached a normal curve, thus demonstrating a reasonable normal distribution. The median and mode were the same (14), and the mean was approximately the same (14.02). The standard deviation was 3.15 and the skewness was .48. The upper quartile was 16 and the lower quartile was 12. The interquartile range was 4; therefore, the middle half of the responses fell within a range of 4.
Table 20

*Frequency of Student Responses*

<table>
<thead>
<tr>
<th>Summative Score</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2</td>
<td>0.07</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>0.43</td>
<td>14</td>
<td>0.50</td>
</tr>
<tr>
<td>8</td>
<td>41</td>
<td>1.45</td>
<td>55</td>
<td>1.95</td>
</tr>
<tr>
<td>9</td>
<td>91</td>
<td>3.23</td>
<td>146</td>
<td>5.18</td>
</tr>
<tr>
<td>10</td>
<td>192</td>
<td>6.81</td>
<td>338</td>
<td>11.99</td>
</tr>
<tr>
<td>11</td>
<td>302</td>
<td>10.71</td>
<td>640</td>
<td>22.70</td>
</tr>
<tr>
<td>12</td>
<td>334</td>
<td>11.84</td>
<td>974</td>
<td>34.54</td>
</tr>
<tr>
<td>13</td>
<td>332</td>
<td>11.77</td>
<td>1306</td>
<td>46.31</td>
</tr>
<tr>
<td>14</td>
<td>381</td>
<td>13.51</td>
<td>1687</td>
<td>59.82</td>
</tr>
<tr>
<td>15</td>
<td>298</td>
<td>10.57</td>
<td>1985</td>
<td>70.39</td>
</tr>
<tr>
<td>16</td>
<td>247</td>
<td>8.76</td>
<td>2232</td>
<td>79.15</td>
</tr>
<tr>
<td>17</td>
<td>205</td>
<td>7.27</td>
<td>2437</td>
<td>86.42</td>
</tr>
<tr>
<td>18</td>
<td>126</td>
<td>4.47</td>
<td>2563</td>
<td>90.89</td>
</tr>
<tr>
<td>19</td>
<td>105</td>
<td>3.72</td>
<td>2668</td>
<td>94.61</td>
</tr>
<tr>
<td>20</td>
<td>61</td>
<td>2.16</td>
<td>2729</td>
<td>96.77</td>
</tr>
<tr>
<td>21</td>
<td>40</td>
<td>1.42</td>
<td>2769</td>
<td>98.19</td>
</tr>
<tr>
<td>22</td>
<td>22</td>
<td>0.78</td>
<td>2791</td>
<td>98.97</td>
</tr>
<tr>
<td>23</td>
<td>13</td>
<td>0.46</td>
<td>2804</td>
<td>99.43</td>
</tr>
<tr>
<td>24</td>
<td>16</td>
<td>0.57</td>
<td>2820</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Note. N = 2,820*

**Inferential Statistics**

**Introduction.**

To begin with, a t-test was performed to determine if a significant difference existed between full- and part-time students. Then, two regression models were created in order to provide the most accurate representation of variables that predicted faculty-student interaction of community college students. After reviewing correlation diagnostics, two multiple regression models were run – one with full-time students (1972) and other with part-time students (848). Finally, significant independent variables and uniqueness indices determined which variables
significantly predicted faculty-student interaction and the relative importance of these
variables. Variables were significant at the 0.05 level.

**Research question 1.**

Is there a significant difference between full- and part-time community college
students regarding their faculty-student interaction?

A t-test determined if a significant difference existed between the means of
full- and part-time community college students regarding their faculty-student
interaction. The reason for the two regression models was to determine if one model
was more predictive of faculty-student interaction than the other model. Full-time
students \((M=14.32, SD=3.14)\) were significantly different than part-time students
\((M=13.32, SD=3.04)\), \(t(1656) = -7.98, p < .0001\). A Cohen’s d of 0.32 was then
calculated with an effect size of 0.16. Even though a significant difference did exist
between full- and part-time students regarding their faculty-student interaction, the
effect size was small. Although the practical significance is minimal, the researcher
argues that a significant difference is still important to consider since the data used
for the current study came from a large, national sample.

**Correlation of independent variables.**

The following correlation diagnostics were used to examine evidence of
multicollinearity; tolerance and variance inflation factors (VIFs). Multicollinearity is
the extreme correlation or association of independent variables. If the independent
variables are highly correlated, one has difficulty assessing the relative importance
of independent variables to the dependent variable and this creates unreliable coefficients (Garson, 2007b).

The first test of multicollinearity used was tolerance. Typically if tolerance is less than .20, multicollinearity exists. In this research study, the independent variables were equal to or greater than .57, thus little evidence existed of multicollinearity.

Secondly, the variance inflation factor (VIF) of an independent variable explains the strength of the linear relationship between the variable and the other independent variables (Der & Everitt, 2002). Variation inflation is the consequence of multi-collinearity. Typically, VIFs greater than 10 cause some concern and indicate multicollinearity (Belsley, Kuh, & Welsch, 1980; Der & Everitt, 2002). Since the VIFs of the above independent variables were less than 10, there was not an indication of multicollinearity using this method.

Based on the results of tolerance and VIFs, the 15 independent variables remained in the model because they were not highly correlated with each other.

**Research question 2.**

What is the predictive value of demographic (gender, race, marital status, age, if children live with student, first-generation status), financial (income/savings, parent or spouse/significant other’s income/savings, grants and scholarships, student loans, and hours of work per week), academic (GPA and type of major), and organizational (college orientation program/course and organized learning communities) variables on faculty-student interaction of *full-time* community college students?
From the subsample of 2,820 community college students in this study, 1972 students were full-time students. The prediction equation was:

\[ Y = \alpha + \beta_4X_4 + \beta_9X_9 + \beta_{12}X_{12} + \beta_{14}X_{14} + \beta_{15}X_{15} \]

\[ Y = 11.31 + .55X_4 + .54X_9 + .64X_{12} + .51X_{14} + 1.73X_{15} \]

The model was significant as a whole. The prediction equation containing these fifteen variables accounted for 8.36 percent of the variance in faculty-student interaction of full-time community college students, \( F(15, 1628.89) = 11.89, p < .0001, R^2 = .0836. \)

Of the 15 independent variables, multiple regression revealed that five (age, grants/scholarships, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for full-time community college students. Faculty-student interaction scores were then regressed on the linear combination of the fifteen independent variables.

Beta weights (standardized multiple regression coefficients) and uniqueness indices were then reviewed to determine the relative importance of the five significant variables in the prediction of faculty-student interaction of full-time community college students (Hatcher, 1994). The uniqueness index for a given predictor variable is the percentage of variance in the dependent variable that is accounted for by that predictor variable, “beyond the variance accounted for by the other predictor variables” (p. 444).

Table 21 indicates that the five significant predictor variables displayed significant beta weights. GPA and learning community had the larger beta weights,
.12 and .17 respectively. The variables of age, grants/scholarships, and orientation program/course had beta weights of .08, .09, and .07 respectively. As a result, the order of variables regarding their magnitude of contribution was learning community, GPA, grants/scholarships, age, and orientation program/course. The strongest predictor of faculty-student interaction for full-time community college students in this model was participation in a learning community.

Table 21

Beta Weights and Uniqueness Indices Obtained in Multiple Regression Analyses Predicting Faculty-student Interaction for Full-time Students

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Beta Weights $^a$</th>
<th>Uniqueness Indices $^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>1. Gender</td>
<td>.11</td>
<td>.02</td>
</tr>
<tr>
<td>2. Race</td>
<td>.10</td>
<td>.01</td>
</tr>
<tr>
<td>3. Marital status</td>
<td>.22</td>
<td>.03</td>
</tr>
<tr>
<td>4. Age</td>
<td>.55</td>
<td>.08</td>
</tr>
<tr>
<td>5. Children who live with student</td>
<td>-0.33</td>
<td>-0.04</td>
</tr>
<tr>
<td>6. First-generation status</td>
<td>.28</td>
<td>.04</td>
</tr>
<tr>
<td>7. Student's own income/savings</td>
<td>.09</td>
<td>.01</td>
</tr>
<tr>
<td>8. Parent or spouse/significant other's income/savings</td>
<td>.07</td>
<td>.01</td>
</tr>
<tr>
<td>9. Grants/scholarships</td>
<td>.54</td>
<td>.09</td>
</tr>
<tr>
<td>10. Student loans</td>
<td>.11</td>
<td>.02</td>
</tr>
<tr>
<td>11. Hours of work per week</td>
<td>-0.18</td>
<td>-0.02</td>
</tr>
<tr>
<td>12. GPA</td>
<td>.64</td>
<td>.12</td>
</tr>
<tr>
<td>13. Student's major</td>
<td>.07</td>
<td>.01</td>
</tr>
<tr>
<td>14. Orientation program or course</td>
<td>.51</td>
<td>.07</td>
</tr>
<tr>
<td>15. Learning community</td>
<td>1.73</td>
<td>.17</td>
</tr>
</tbody>
</table>

Note. $n = 1972$

$^a$ Standardized multiple regression coefficients when faculty-student interaction was regressed on 15 predictor variables. $^b$ Uniqueness indices indicate the percentage of variance in faculty-student interaction accounted for by a given predictor variable beyond the variance accounted for by the other 14 predictors. $^c df = 1, 1956$

*p < .05, ** p < .01, ***p < .0001
Table 21 also lists the uniqueness indices for each independent variable. Learning community displayed the largest uniqueness index of .0275 signifying that participation in a learning community accounted for approximately 3% of the variance in faculty-student interaction of full-time community college students, beyond the variance accounted for by the other 14 independent variables. The variables of age, if children live with student, first-generation status, grants/scholarships, hours of work per week, GPA, orientation program/course, and learning community were significant at the .0001 level. The combined percent variation for these eight variables with significant uniqueness indices accounted for 6.03% of the variance in faculty-student interaction for full-time community college students beyond the variance of the other seven variables ($R^2 = .0836$).

**Research question 3.**

What is the predictive value of demographic (gender, race, marital status, age, if children live with student, first-generation status), financial (income/savings, parent or spouse/significant other’s income/savings, grants and scholarships, student loans, and hours of work per week), academic (GPA and type of major), and organizational (college orientation program/course and organized learning communities) variables on faculty-student interaction of *part-time* community college students?

From the subsample of 2,820 community college students in this study, 848 students were part-time students. The prediction equation was:

$$Y = \alpha + \beta_6X_6 + \beta_{12}X_{12} + \beta_{14}X_{14} + \beta_{15}X_{15}$$

$$Y = 9.87 + .46X_6 + .70X_{12} + .64X_{14} + 1.91X_{15}$$
The model was significant as a whole. The prediction equation containing these fifteen variables accounted for 7.29 percent of the variance in faculty-student interaction of part-time community college students, $F(15, 570.05) = 4.36, p < .0001, R^2 = .0729$.

Of the 15 independent variables, multiple regression revealed that four (first-generation status, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for part-time community college students. Faculty-student interaction scores were then regressed on the linear combination of the fifteen independent variables.

Beta weights (standardized multiple regression coefficients) and uniqueness indices were then reviewed to determine the relative importance of four significant variables in the prediction of faculty-student interaction of part-time community college students (Hatcher, 1994). The uniqueness index for a given predictor variable is the percentage of variance in the dependent variable that is accounted for by that predictor variable, “beyond the variance accounted for by the other predictor variables” (p. 444).

Table 22 shows that four predictor variables displayed significant beta weights. GPA and learning community demonstrated the larger beta weights, .15 and .17 respectively. The variables of first-generation status and orientation program/course had beta weights of .07 and .08 respectively. As a result, the order of variables regarding their magnitude of contribution was learning community, GPA, orientation program/course, and first-generation status. The strongest predictor of
faculty-student interaction of part-time community college students in this model was participation in a learning community.

Table 22

Beta Weights and Uniqueness Indices Obtained in Multiple Regression Analyses Predicting Faculty-student Interaction for Part-time Students

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Beta Weights $^a$</th>
<th>Uniqueness Indices $^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>1. Gender</td>
<td>.22</td>
<td>.03</td>
</tr>
<tr>
<td>2. Race</td>
<td>.32</td>
<td>.05</td>
</tr>
<tr>
<td>3. Marital status</td>
<td>.29</td>
<td>.04</td>
</tr>
<tr>
<td>4. Age</td>
<td>.28</td>
<td>.05</td>
</tr>
<tr>
<td>5. Children who live with student</td>
<td>-0.20</td>
<td>-0.03</td>
</tr>
<tr>
<td>6. First-generation status</td>
<td>.46</td>
<td>.07</td>
</tr>
<tr>
<td>7. Student's own income/savings</td>
<td>.08</td>
<td>.01</td>
</tr>
<tr>
<td>8. Parent or spouse/significant other's income/savings</td>
<td>.11</td>
<td>.02</td>
</tr>
<tr>
<td>9. Grants/scholarships</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>10. Student loans</td>
<td>.17</td>
<td>.02</td>
</tr>
<tr>
<td>11. Hours of work per week</td>
<td>.17</td>
<td>.03</td>
</tr>
<tr>
<td>12. GPA</td>
<td>.70</td>
<td>.15</td>
</tr>
<tr>
<td>13. Student's major</td>
<td>-0.10</td>
<td>-0.02</td>
</tr>
<tr>
<td>14. Orientation program or course</td>
<td>.64</td>
<td>.08</td>
</tr>
<tr>
<td>15. Learning community</td>
<td>1.91</td>
<td>.17</td>
</tr>
</tbody>
</table>

Note. $n = 848$

$^a$ Standardized multiple regression coefficients when faculty-student interaction was regressed on 15 predictor variables. $^b$ Uniqueness indices indicate the percentage of variance in faculty-student interaction accounted for by a given predictor variable beyond the variance accounted for by the other 14 predictors. $^c df = 1, 832$

$p < .05, ** p < .01, *** p < .0001$

Table 22 also lists the uniqueness indices for each independent variable.

Learning community displayed the largest uniqueness index of .0267 signifying that participation in a learning community accounted for approximately 3% of the
variance in faculty-student interaction of part-time community college students, beyond the variance accounted for by the other 14 independent variables. The variables of first-generation status and orientation program/course were significant at the .05 level and GPA and learning community were significant at the .0001 level. The combined percent variation for these four variables with significant uniqueness indices accounted for 5.67% of the variance in faculty-student interaction of part-time community college students, beyond the variance of the other 11 variables ($R^2 = .0729$).

Chow test.

Even though the t-test in Research Question 1 determined that a significant difference existed between the means of full- and part-time community college students regarding their faculty-student interaction, the effect size was small suggesting that there may have been little practical significance. As a result, the Chow test was employed to test if the coefficients estimated for the model with full-time students were significantly different from the coefficients estimated for the model with part-time students (Chow, 1960). A large F test statistic indicates that there is a significant difference between the samples (full-time versus part-time students). The F value for the Chow test statistic was 3.94 with a p-value of < 0.0001 indicating that there was strong evidence that the R-square values differed between models. When reviewing the parameter estimates, the independent variables (first-generation status, grants, GPA, orientation program/course, and learning community) that had p-values less than .05 indicated that the effects for
these variables were significantly different by model (full- versus part-time). The purpose of the Chow test was to determine the significant differences between models. As a result, first-generation status, grants, GPA, orientation program/course, and learning community significantly differed between models.

**Summary**

The full- and part-time models had similar R-square values, significant independent variables, beta weights, and uniqueness indices but differed in other ways as well.

**Full-time students.**

From the subsample of 2,820 community college students in this study, 1972 students were considered full-time students. The prediction equation containing the fifteen independent variables accounted for 8.36 percent of the variance in faculty-student interaction of full-time community college students, $F(15, 1628.89) = 11.89$, $p < .0001$, $R^2 = .0836$, and the model was significant as a whole.

Of the 15 independent variables, multiple regression revealed that five (age, grants/scholarships, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for full-time community college students.

GPA and learning community had the larger beta weights, .12 and .17 respectively. When reviewing the beta weights, the strongest predictor of faculty-student interaction for full-time community college students was participation in a learning community.
Learning community displayed the largest uniqueness index of .0275 signifying that participation in a learning community accounted for approximately 3% of the variance in faculty-student interaction of full-time community college students, beyond the variance accounted for by the other 14 independent variables. The combined percent variation for eight variables with significant uniqueness indices (age, children who live with student, first-generation status, grants/scholarships, hours of work per week, GPA, orientation program/course, and learning community) accounted for 6.03% of the variance in faculty-student interaction for full-time community college students beyond the variance of the other seven variables ($R^2 = .0836$).

**Part-time students.**

From the subsample of 2,820 community college students in this study, 848 students were considered part-time students. The prediction equation containing these fifteen variables accounted for 7.29 percent of the variance in faculty-student interaction of part-time community college students, $F(15, 570.05) = 4.36, p < .0001, R^2 = .0729$, and the model was significant as a whole.

Of the 15 independent variables, multiple regression revealed that four (first-generation status, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for part-time community college students. GPA and learning community had the larger beta weights, .15 and .17 respectively. The variables of first-generation status and orientation program/course had beta weights of .07 and .08 respectively.
Learning community displayed the largest uniqueness index of .0267 signifying that participation in a learning community accounted for approximately 3% of the variance in faculty-student interaction of part-time community college students, beyond the variance accounted for by the other 14 independent variables. The combination of four independent variables (first-generation status, orientation program/course, GPA, and learning community) accounted for 5.67% of the variance in faculty-student interaction of part-time community college students, beyond the variance of the other 11 variables ($R^2 = .0729$).

**Both models.**

Both the full- and part-time models were significant as a whole and had similar R-square values. The prediction equation containing the fifteen independent variables accounted for 8.36 percent of the variance in faculty-student interaction of full-time community college students and 7.29 percent of the variance in faculty-student interaction of part-time community college students. As a result, the R-square values were close, but the fifteen variables explained a bit more for full-time community college students.

Of the 15 independent variables, multiple regression revealed that five (age, grants/scholarships, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for full-time community college students and four (first-generation status, GPA, orientation program/course, and learning community) were significant predictors of faculty-student interaction for
part-time community college students. Both models had three of the same significant independent variables (GPA, orientation program/course, and learning community).

Regarding beta weights (magnitude of contribution), GPA and learning community had the larger beta weights in both models, .12 and .17 respectively for full-time students and .15 and .17 respectively for part-time students. As a result, GPA and learning community were significant predictor variables in both models, and the magnitude of contribution for each variable was approximately the same in both models. The strongest predictor of faculty-student interaction for both full- and part-time community college students in these models was participation in a learning community.

Regarding uniqueness indices for full-time students, learning community displayed the largest uniqueness index of .0275 signifying that participation in a learning community accounted for approximately 3% of the variance in faculty-student interaction of full-time community college students, beyond the variance accounted for by the other 14 independent variables. For part-time students, learning community also displayed the largest uniqueness index of .0267 signifying that participation in a learning community accounted for approximately 3% of the variance in faculty-student interaction of part-time community college students, beyond the variance accounted for by the other 14 independent variables. Thus, learning community had the largest uniqueness index for both models and was the same, 3%.
CHAPTER V.

Discussion

Extensive research indicates that student engagement is linked to student learning and persistence outcomes (Astin, 1985; Cohen & Brawer, 2003; Cole, 2007; DeMulder & Eby, 1999; Lundberg & Schreiner, 2004; McClenney, 2004; Sax et al., 2005; Trautmann & Boes, 2000). Students are more likely to persist and to achieve at higher levels if they are more actively engaged with faculty and staff, other students, and academic material (Andrade, 2007-2008; Cohen & Brawer, 2003; Fries-Britt, 2000; Oates & Leavitt, 2003). Faculty-student interaction is linked with student success factors and persistence in both four- and two-year higher education institutions (Astin, 1985; Cejda & Rhodes, 2004; Cohen & Brawer, 2003). Better understanding the role of faculty-student interaction may assist community colleges in identifying more effective strategies to increase academic performance and retention.

This study addressed three research questions to explore which variables significantly predicted faculty-student interaction for community college students. The research questions are:

1. Is there a significant difference between full- and part-time community college students regarding their faculty-student interaction?

2. What is the predictive value of demographic (gender, race, marital status, age, if children live with student, first-generation status), financial (income/savings, parent or spouse/significant other's income/savings, grants
and scholarships, student loans, and hours of work per week), academic (GPA and type of major), and organizational (college orientation program/course and organized learning community) variables on faculty-student interaction of *full-time* community college students?

3. What is the predictive value of demographic (gender, race, marital status, age, if children live with student, first-generation status), financial (income/savings, parent or spouse/significant other’s income/savings, grants and scholarships, student loans, and hours of work per week), academic (GPA and type of major), and organizational (college orientation program/course and organized learning community) variables on faculty-student interaction of *part-time* community college students?

This study was guided primarily by two theories that examined student engagement and faculty-student interaction: Astin’s (1985) *student involvement theory* and Pace’s (1979) *student development and college impress model*. Astin’s *student involvement theory* states that students learn by becoming involved. This theory addresses the behavioral approaches or processes that promote student development. The second concept that supported this work came from Pace’s (1979) *student development and college impress model*. Pace’s model is similar to Astin’s in that student time and effort are key factors that are associated with positive college experience outcomes. Moreover, Pace extends this idea and asserts that the key variable impacting student development is the quality of engagement, not just
participation in an activity. Ethington and Horn (2007) operationalize Pace’s model and include student background and personal characteristics.

Other research studies regarding faculty-student interaction in four-year higher education institutions used variables such as student learning and development outcomes, frequency and nature of the interactions, out-of-class communication, race and gender differences, impact on non-traditional students, use of information technology, participation in learning communities, and interaction as an example of a key educational practice. Only a limited number of researchers have assessed faculty-student interaction in a community college setting with focus on race or gender, student success, academic success, and learning communities. Due to the limited number of studies regarding the faculty-student interaction in community colleges, the current study added a national perspective by examining more recent data through the lens of a different theoretical framework and with the use of another survey. The dependent variable in this study was faculty-student interaction and the 15 independent variables included gender, race, marital status, age, if children live with student, first-generation status, income/savings, parent or spouse/significant other’s income/savings, grants/scholarships, student loans, hours of work per week, GPA, type of major, enrollment in an orientation program/course, and participation in an organized learning community. These variables have been found to be important factors in the faculty-student interaction research literature concerning both four- and two-year students (see Figure 1.).
Using the Community College Student Report survey data for the year of 2007 collected from community colleges by The Community College Survey of Student Engagement, similarities and differences were found between full- and part-time students. Analysis revealed several variables were significant in predicting faculty-student interaction. This chapter will discuss those variables and related literature.

A t-test determined that a significant difference existed between full- and part-time students regarding their faculty-student interaction. Although the full- and part-time models had different findings, they had three significant predictor variables in common: a student’s GPA, participation in an orientation program/course, and participation in a learning community. These three predictor variables were also found to be significant in prior research (Astin, 1985, 1993; Chang, 2005; Trautmann & Boes, 2000).

The positive correlation between a student’s GPA and faculty-student interaction demonstrates that students with higher GPAs engage in higher levels of faculty-student interaction. GPA was borrowed from Astin (1985, 1993), a variable he included in his research. He defines student involvement as the "amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1985, p. 134). Since Astin (1999b) notes that involvement is a behavioral term, he focuses on behavioral mechanisms or processes that promote student development and has studied the outcomes of various types of student involvement, including academic involvement. Students who earn higher GPAs are
more likely to be involved with their coursework and thus, are more likely to engage with faculty regarding academic matters (Astin, 1985; 1999b). The positive correlation between high GPA and increased faculty-student interaction is consistent with Thompson’s (2001) finding that community college students who have higher levels of informal interaction with faculty members report higher effort levels and greater academic success in mathematics and science.

Participation in an orientation program or course was also significant in predicting faculty-student interaction. Attending orientation is linked to academic success (Busby, Gammel, & Jeffcoat, 2002) and retention (Sidle & McReynolds, 1999; Hollins, 2009). College orientation programs tend to benefit students by helping them make a more successful transition from their previous environment into the collegiate environment (Hollins). Students learn the policies and procedures of the college, become acquainted with faculty and staff, and meet other students, all of which encourage involvement and connection to their institution early in their academic careers, as Astin (1985) advocates.

In addition, participation in a learning community was found to be a significant predictor of faculty-student interaction in the current study. A learning community is a progressive approach where faculty members from different disciplines collaborate to teach a cohort of students who are enrolled in two or more classes together. Shapiro and Levine (1999) describe characteristics of a learning community: faculty and students are organized into small groups, curriculum is structured and integrated, students establish academic and social support networks, and faculty
and students work together on specific learning outcomes. Generally, students involved in learning communities are more actively engaged with their coursework (Kuh et al., 2005). Also, they are more likely to interact with faculty regardless of their full-or part-time enrollment status due to the typical structure of the program. Learning communities tend to be structured in a way that fosters intense, high-quality interactions. Both students and faculty discuss meaningful issues related to course topics. Astin (1993) emphasizes that high-quality interactions with peers and faculty involving educationally meaningful issues afford the most valuable gains in student outcomes. Current research (Trautmann & Boes, 2000; Wilmer, 2009) shows that participation in learning communities is positively associated with faculty-student interaction, involvement, course retention, and grades. Advising and mentoring are usually integral parts of a learning community (DeMulder & Eby, 1999). Students in learning communities tend to be in smaller classes with more intense faculty-student interaction, thus advising and mentoring are easily fostered.

This study’s finding that participation in a learning community was significantly related to faculty-student interaction is consistent with Trautmann & Boes’ (2000) finding that faculty-student interaction increased in learning community courses compared to traditional course offerings. However, while Trautmann & Boes’ study examined community college students, they only used data from one community college. The current study used data from community college students nationwide and, thus, is more comprehensive than Trautmann and Boes’ study. Learning communities are not found as often in community colleges but are increasing in
frequency and this research would support the idea of expanding learning communities in these institutions further. The current study supports what other authors (Astin, 1985; BCSSE, 2008; DeMulder & Eby, 1999; Pastors, 2006) have found at four-year institutions — there is a significant positive relationship between participation in a learning community and increased levels of faculty-student interaction. The current study offers crucial support for the development of learning communities for community college students as well. In fact, two statistical measures utilized in the current study demonstrated that a learning community contributed the most to faculty-student interaction for both full- and part-time community college students.

Along with a student’s GPA, participation in an orientation program/course, and participation in a learning community, being a traditional-aged student and receipt of grants/scholarships also significantly predicted faculty-student interaction for full-time community college students. It is expected that more full-time than part-time students would be traditional-aged, thus this finding is consistent with that notion. Traditional-aged students are less likely to have full-time work obligations or children/spouse demands, thus would find it easier to enroll full-time. As a result, traditional-aged, full-time students may have had more time to speak with faculty before or after class, around campus during the day, or during extra-curricular activities. This reasoning is congruent with current undergraduate participation and persistence theories that focus mainly on traditional-aged, four-year college students (Kasworm, 2003). However, non-traditional students as characterized by age,
gender, minority status, and employment attend community colleges in much higher numbers (AACC, 2010c). Prior research maintains the most powerful impact on non-traditional aged students’ campus experiences are “class-related learning successes and their relationships with faculty”, known through the metaphor of “‘the connecting classroom’” (Kasworm, 2005, p. 13). Full-time, traditional-aged students at community colleges seem to be connecting with faculty on a level that may be similar to their non-traditional colleagues.

About half of community college students nationwide receive some form of financial aid (AACC, 2010c). Having grants seemed logical as a significant predictor for full-time students since tuition and fees cost more for a full-time course load. One possible conclusion is that students who receive financial aid are able to focus on their studies and interact with faculty more since they are not burdened by financial concerns such as the need to work. However, the current community college literature regarding faculty-student interaction does not include financial aid in the discussion. This study, however, found a significant relationship between receiving grants and faculty-student interaction for full-time community college students. Moreover, retention theorists (Bean, 1990; Bean & Metzner, 1985) maintain that environmental pulls such as employment can draw students away from college. Employment in excess of 20 to 25 hours per week is negatively associated with persistence (Bean & Metzner, 1985). One can speculate that students who work because of lack of sufficient financial aid will be significantly disadvantaged regarding interaction with faculty, as well as college persistence.
First-generation status was significant only for part-time students. Filkins and Doyle (2002) found that faculty-student interaction was a strong factor for first-generation and low-income students in personal and social development, as well as cognitive and affective growth during college. They did not separate full- and part-time students. Research (Chang, 2005; Greenwald & Grant, 1999; McClenney, 2004; Meléndez & Suárez, 2001) suggests that faculty can serve as advisors and mentors and, thus, they can offer support to students who may have fewer family resources, as with first generation students. In some cases, one could suggest that being a first-generation student would not be a significant predictor because first-generation students are unaware of the value of being involved with faculty. On the other hand, this study suggests that first-generation students seek out faculty as resources even though they may be unaware of the critical role faculty could play in their own success. First-generation students may not have the cultural capital to know where to turn for help so they turn to the individuals with whom they have the most frequent contact. Cultural capital includes one’s informal interpersonal skills, habits, manners, linguistics, educational credentials, and lifestyle preferences and is a symbolic type of knowledge that upper class members frequently impart onto their children (Bourdieu, 1977). Thus, first-generation part-time students may turn to the faculty for assistance to navigate the college environment.

To summarize, similarities and differences between full- and part-time community college students existed in factors that could predict faculty-student interaction. A student’s GPA, participation in an orientation program/course, and
participation in an organized learning community were significantly associated with greater faculty-student interaction for all students, regardless of their enrollment status. First-generation status was also an important finding for part-time students in this study. Age and receipt of grants/scholarships were significant only for full-time students, which seemed to contradict prior research. Of all the predictors, participation in a learning community contributed the most to faculty-student interaction for both full- and part-time community college students.

This study utilized data from the research organization, CCSSE. Based on each year’s data, CCSSE reports its overall findings as well as findings for each benchmark. Regarding the benchmark of student-faculty interaction, the topic of this study, key findings for the 2007 survey (for which year the data were used) were: 21% of students said they never used e-mail to communicate with an instructor, whereas, 43% used e-mail for that purpose either often or very often; 45% reported that they discussed grades or assignments with an instructor either often or very often, leaving over half who did so occasionally or never…; only 15% of students reported discussing ideas often or very often from their readings or classes with instructors outside of class, and 47% never engaged with faculty in that way; only 8% of students said they often or very often worked with instructors on activities other than coursework; and 56% stated that they often or very often received prompt feedback from instructors on their performance (CCSSE, 2007c).

These percentages closely match the percentages from the sub-sample used in this study. The information that CCSSE provides for the faculty-student
benchmark is descriptive. This study, however, employed inferential statistics to determine the significant predictors, not just describe percentages. Thus, the current study extended CCSSE’s 2007 annual findings by using statistical techniques not only to describe student responses to survey questions but also to predict significant variables.

Included in the executive report for the 2007 data, CCSSE data found that high-risk students, including academically underprepared students, students of color, first-generation students, and nontraditional learners, were more engaged in the college experience (CCSSE, 2007a). CCSSE’s definition of engagement encompasses five national benchmarks of effective educational practice, whereas this study focused on only one, faculty-student interaction. This current research did not find race as a significant predictor of faculty-student interaction. Age was a significant predictor for full-time students, and first-generation status was a significant predictor for part-time students. CCSSE’s 2008 executive summary addressed the topic of high expectations and high support, financial aid, and three other benchmarks besides faculty-student interaction (CCSSE, 2008). CCSSE’s 2009 executive summary focused on the connected college, a similar idea to Kasworm (2005). CCSSE offered a guide so college administrators, faculty, and student services personnel could assess if they had connected to their students, some of which ideas apply to this study. For example, CCSSE suggested to “create required cohort-based experiences, such as learning communities … to intentionally promote interaction among students,” “promote student connections with college
services and staff by integrating services into organized courses” such as an orientation program/course, and “provide comfortable, open spaces for students, faculty, and staff to interact” (2009, p. 2). The idea of providing additional spaces to encourage informal interaction between faculty and students was also suggested by Kuh et al. (2005). Participation in a learning community and orientation program/course were significant predictors of faculty-student interaction in this study.

This study used the term, faculty-student interaction, but it can easily be reversed to student-faculty interaction. This term is not directional. Both faculty and students need to take responsibility for initiating and developing the interaction. Community college faculty members’ primary focus is teaching, thus they are in contact with students most of the time. They need to encourage such interaction. The students, on the other hand, need to place priority on these interactions. Both faculty and students benefit from this interaction. These and other implications will be addressed in the next chapter.
CHAPTER VI.

Implications, Recommendations, and Conclusion

Implications

Faculty-student interaction is an example of engagement in higher education. This process has been associated with student success and persistence in both four- and two-year higher education institutions (Astin, 1985; Cejda & Rhodes, 2004; Cohen & Brawer, 2003). Literature suggests increasing opportunities for such interactions is a possible approach to assist students in their educational endeavors while enrolled at community colleges. Faculty-student interaction has been connected to enriching students’ academic experiences in college, as well as increasing student success. This research extends what is known about factors that positively contribute to faculty-student interaction.

This study does not offer conclusions about the value of faculty-student interaction; instead, it assumes this interaction is important based on previous research. Due to the numerous reported positive student outcomes of faculty-student interaction in the literature, this chapter suggests ways in which community college faculty, students, and administrators can increase faculty-student interaction.

Nearly 90% of a faculty member’s time is devoted to teaching at a community college (NCES, 2010a); thus, they are likely in more frequent contact with students than other college personnel. Due to the unique characteristics of community college students nationwide and the fact that 60% of students enroll part-time (AACC, 2010c), in-class interaction is the most feasible and primary time this interaction will
occur. Research suggests that most faculty-student interactions in the classroom center on coursework issues, such as asking questions about course information or a specific assignment, and only a few interactions involve personal problems or social communications (Cotten & Wilson, 2006; Kuh & Hu, 2001; Nadler & Nadler, 2001). Assuming faculty-student interaction is important to an institution, those responsible for hiring decisions can identify individuals who have concern for students and are committed to their learning (Hagedorn et al., 2002; Pace, 1980).

Community college administrators could support policies that offer incentives to faculty, particularly part-time faculty, to engage with students both inside and outside of the physical classroom or to engage in such discussions more frequently in an on-line format. Such incentives could also support faculty involvement with extracurricular student activities. Faculty who are frequently seen on campus and/or eat in the campus student dining facility are more visible to students, thus creating more opportunities for students and faculty to interact as was suggested by Cotten and Wilson. The most difficult but likely the most influential practice would be the implementation of reward systems that support faculty-student interaction. Hagedorn et al. (2002) suggests rewarding faculty who take an interest in developing students by giving of their time, energy, and academic resources. O’Meara (2005) discussed faculty reward systems for four-year institutions; some of her recommendations apply to a community college setting including promotion, incentive grants, and flexible work loads. For example, administrators could promote highly involved faculty members to department heads or other applicable positions so they can
model exceptional faculty behaviors and mentor younger faculty members. Also, administrators could collaborate with foundation offices or local companies to provide an incentive grant program where they would reward deserving faculty with grant money based on their creative ideas for increasing faculty-student interaction in their classrooms and helping students succeed. Furthermore, faculty could converse with administrators to determine options regarding flexible workloads such as abbreviated summer schedules.

Both full- and part-time students had three significant factors that affect faculty-student interaction: a student’s GPA, participation in an orientation program/course, and participation in an organized learning community. Implementing programs and developing policies that support students’ academic performance as well as encourage participation in orientation programs and learning communities could serve as additional ideas to increase faculty-student interaction.

Whether students were full- or part-time, this study suggests that GPA was a positive predictor of faculty-student interaction, students with higher GPAs were more likely to be engaged in faculty-student interaction. The reverse could be true as well; students with higher levels of faculty-student interaction were more likely to have higher GPAs. As a result, faculty should consider how their practices improve student academic performance or make more of an effort to interact with students thereby improving academic performance. Encouraging faculty to reach out to students who are having academic difficulties or encourage students to visit the college’s tutoring center is important. If the college does not already employ staff to
serve as professional tutors, faculty could encourage or require students in a higher level class to tutor students in a lower level class for either extra credit or for an assignment grade. Another idea to improve academic performance is to implement an organized early alert system where faculty communicate with advisors to detect attendance, academic, and personal problems early. Students who participated in the early alert system at a California community college had a retention rate of 81.3% at the end of the year, which was much higher compared to students who did not participate (Perez, 1998). To support this early alert system, staff roles need to be considered, and counselors or advisors who are responsible for the management of the early alert system need to be hired as suggested by Wilmer (2008). The advisor/counselor’s main objective would be to collaborate with faculty to keep students engaged in the classroom and other institutional activities and to remove barriers that may preclude students from attending classes. Implementing student support and academic services may assist with increasing faculty-student interaction.

Since participation in an orientation program was significant in predicting faculty-student interaction for both full- and part-time students, higher education professionals in community colleges need to consider implementing organized and intentional orientation programs. New student orientations seem to be a customary practice in the four-year colleges and universities but are not as common in community colleges. Hollins (2009) states that a pre-college orientation program is one of the most underutilized strategies for achieving student success within the
community college. Results from a new survey, Survey of Entering Student Engagement (SENSE), show that many community college students are unaware of the college’s core services in the first weeks of the first semester (Sander, 2008). SENSE recommends that community colleges need to aggressively reach out to new students regarding orientation, academic advising, and financial aid. Orientation programs appear to be an untapped resource to improve faculty-student interaction as they introduce students to faculty members and explain the assistance faculty can offer, as well as provide critical information about programs and resources the college provides.

Research (Chang, 2005) suggests that African American students who attend orientation programs are more likely to engage with faculty. Although this current study did not find race to be significant predictor of faculty-student interaction, this research did not address if there was an interaction between independent variables that are positively correlated with faculty-student interaction such as participation in a learning community and race. Since an estimated 36% of the nation’s community college enrollment is considered minority, it might be prudent to implement orientation programs that provide extra support to subpopulations of students from the beginning of their college experience.

Faculty can collaborate with student services’ personnel to provide an effective orientation program. Although some community colleges may have orientation programs in existence, personnel from instruction and student services may need to review the current program and make necessary changes so the
program is more purposeful and transitions students to the classroom experience. On the other hand, the community colleges that currently do not offer orientation programs need to begin considering the feasibility and level of such a program. A joint faculty-student-staff committee could be created to investigate such options, thus creating another opportunity for faculty-student interaction.

A well-designed orientation program should be student friendly. The orientation should be publicized and marketed effectively. Orientation events should be at convenient times including evenings, since many community college students work or have family responsibilities (AACC, 2007). Also, orientations should occur during the fall, spring, and summer semesters multiple times each semester to capture all new students. Since most community colleges have an open door policy, new students apply and enroll until the first day of class or even after classes begin. An ideal orientation program should allow students to hear essential information, meet faculty, staff, and current students, visit financial aid, and register for classes. Also, community colleges should implement and encourage student participation in one-credit orientation courses, also referred to as student success courses, near the beginning of their college career to assist with their transition into college (Hollins, 2009). Zeidenberg, Jenkins, and Calcagno (2007) found that students who enrolled in a student success course had a positive effect on their chance of earning a credential, persisting, or transferring for community college students in Florida. These courses typically require students to meet with their faculty advisors and discuss major coursework. Having a solid orientation program can provide vital
information, as well as introduce faculty to students which will foster the beneficial faculty-student relationship.

Participation in an organized learning community was a significant predictor of faculty-student interaction for both full- and part-time community college students. Learning communities provide a less traditional instructional method that can be utilized to serve a diverse educational and cultural student population (Dodge & Kendall, 2004), a valuable strategy for students who are considered at-risk, first-generation, mature, minority, and underprepared (Levin, 2007). In addition to increasing faculty-student interaction, these programs have shown to be an effective tool for greater academic success (Dodge & Kendall, 2004; Hegler, 2004; Sander, 2008) and increased retention rates (Dodge & Kendall, 2004; Hegler, 2004).

Faculty members should begin to investigate the possibility of implementing learning communities at their respective colleges. Faculty and administrators can incorporate learning communities as a central learning method at the college and encourage other instructors to participate. It is important that the curriculum schedule incorporates learning communities and is a viable and convenient option for student and faculty schedules. Hegler (2004) and Smartt-Gaither (1999) recommend establishing learning communities with two courses paired rather than three which is logical for community colleges since many students attend part-time. Other ways in which learning communities can be adapted from the typical four-year institution model would be important to consider.
Dodge and Kendall (2004) offer useful guidelines on how to create and promote a learning community at community colleges. To begin with, they first suggest reflecting on whether the selected two courses should be linked. The instructors need to consider if the courses are logically paired so the content and skills overlap, if students will be more likely to succeed if they study both subjects concurrently, and if the courses are popular enough to attract students to register for both courses. Secondly, they suggest that the instructors garner administrative support by obtaining approval of the divisional deans who will evaluate whether the paired courses fit into the departmental course offerings. Thirdly, Dodge and Kendall suggest that the instructors collaborate to create a unified curriculum and corresponding materials and advertise the learning community by visiting feeder classes and soliciting participation of academic advisors, counselors, deans, and staff members who maintain the schedule of curriculum classes to promote and explain the learning community offerings to students. Although their article offers more suggestions, the ones mentioned are the most relevant to initiate the learning community idea on campus.

Although full- and part-time students had three significant predictors in common, full-time students had another significant predictor of faculty-student interaction, having grants, which also has implications for policy and practice. Perhaps, full-time students who receive financial aid are able to focus on their studies and interact with faculty more since they are not burdened by financial concerns such as the need to work. Community college student services personnel,
including counselors and financial aid officers, should publicize information on the federal financial assistance programs and assist students with completing the Free Application for Federal Student Aid (FAFSA). Many eligible community college students nationwide are not applying for financial aid and fail to complete the FAFSA at a higher rate than four-year students (The Advisory Committee on Student Financial Assistance, 2008). They do not believe they qualify for financial aid (ACSFA). Research shows that colleges need to provide students with aid eligibility information coupled with assistance in completing the FAFSA to have a significant effect on FAFSA submission rates (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2010).

During the admissions process and advising sessions, college personnel should encourage prospective and current students to complete the FAFSA early. In doing so, students may also be eligible for other financial aid including state-wide grants. Financial aid personnel can increase aid applications by utilizing technology. Strategies could include announcements using e-mail, college web-sites, and social networking sites such as Facebook, MySpace, and Twitter, as well as publicizing information on LCD screens across campus (ACSFA). The financial aid office, with the help of others on campus, also needs to assist students with completing the FAFSA. For example, colleges can conduct workshops on how to complete a FAFSA and also host FAFSA Days where college personnel assist students with completing the required forms online in college computer labs. Bettinger et al.’s study (2010) also demonstrated that the students who received assistance with
completing the FAFSA were more likely to enroll in college the following fall semester and received more financial aid than the students who did not receive assistance with completing the FAFSA. Students who receive financial aid may have more time to interact with faculty because the financial aid allows them to focus on their academics instead of employment.

**Recommendations for Future Research**

Community colleges across the US have experienced rapid growth in enrollment due to current economic conditions coupled with widespread funding reductions (AACC, 2010a). Community college personnel are accommodating these students with the same, or even fewer, resources. Additional research can provide ideas for how to assist this growing population with ways to increase faculty-student interaction.

One recommendation for future research is to utilize different methods of research. The studies in the research literature regarding faculty-student interaction are mainly quantitative in nature. Employing qualitative methods or a mixed methods approach will augment the current research literature by viewing faculty-student interaction through different lenses. By employing qualitative or mixed methods approaches, researchers could better understand how students make meaning of classroom experiences and their views of faculty-student interaction. For example, Kasworm’s (2005) qualitative research, which discusses adult student identity and student engagement in community college classes through the metaphor of the *connecting classroom*, only examines college transfer students. As Kasworm
discusses the high propensity of nontraditional students to be connected to the classroom, additional research is needed to identify ways that faculty-student interaction can be increased within the classroom environment, whether that is an on-line or face-to-face format.

Other researchers could replicate this study with another sample from the 2007 CCSR or a more recent CCSR cohort year such as 2008 or 2009 to determine if findings would be similar or dissimilar regarding the predictor variables of faculty-student interaction.

Alternatively, researchers could use another community college engagement survey. Other surveys may have additional or different survey items to create the dependent variable of faculty-student interaction and/or different survey items to represent the independent variables. For example, another survey used with community college students nationally is the *Community College Student Experiences Questionnaire* (CCSEQ) (Friedlander, Pace, & Lehman, 1990, revised 1999). The CCSEQ measures the quality of effort that community college students expend on curricular and extra-curricular opportunities and how these opportunities “are being effectively used and enjoyed” (University of Memphis, 2007, para. 2). The CCSEQ may offer insight as to why students may or may not expend effort on interacting with faculty which can then suggest ways to increase faculty-student interaction. Another survey is the Survey of Entering Student Engagement (SENSE). SENSE began its field test administration in 2008, surveying 22 community colleges and including over 13,200 responses (Sander, 2008). During the year of 2009-2010,
SENSE completed its first national administration. This instrument focuses on institutional practices and student behaviors in the first few weeks of college and is administered during the fourth and fifth weeks of the fall academic term to randomly selected students (SENSE, 2010b). A pertinent area of questions related to this current study assesses how students evaluate their earliest relationships and interactions with instructors (SENSE, 2010a). SENSE may identify important initial practices valued by new students that foster faculty-student interaction.

Additional research needs to address faculty-student interaction in an on-line environment for community college students. Distance learning has increased over the past few years and is projected to do so in the future (Benson, Johnson, Duncan, Shinkareva, Taylor & Treat, 2008). Due to the rapid projected growth, researching the faculty-student interaction in the on-line environment can assist faculty to discover ways to successfully engage these students and increase faculty-student interaction. Furthermore, students take both on-campus and online classes. A researcher could conduct a qualitative comparison of faculty-student interaction for this group of students taking classes in both modes.

Since having grants was significantly related to faculty-student interaction for full-time community college students, a researcher could analyze how various forms of financial aid impact faculty-student interaction. Due to the present US economy and upcoming changes in federal financial aid programs, this research is worth considering.
Finally, researchers could assess the differences in faculty-student interaction for students when they interact with part- or full-time faculty members. This current study evaluated the enrollment status of the students but did not evaluate the appointment status of the faculty members. Community colleges employ a considerable number of part-time faculty members to reduce institutional costs and to combat increased demand from students, especially with the current situation of the US economic recession and community college dramatic enrollment increase (AACC, 2010a). According to a 2008 report by the National Center for Education Statistics, 67% of community college faculty were employed part-time in the fall of 2003 whereas only 28% of public four-year faculty were employed part-time (NCES, 2010a). When assessing associate degree completion, Jaeger and Eagan (2009) found that students who were exposed to part-time faculty members had a significant yet modest negative effect on attaining an associate’s degree. Part-time faculty may have different levels of faculty-student interaction than full-time faculty, thus further research is warranted in this area as well. Furthermore, CCSSE had added a faculty survey in addition to the student survey so one can assess if faculty perceptions of faculty-student interaction are the same or different than student perceptions.

Conclusion

Faculty-student interaction is a prime example of student engagement. Community college students’ primary involvement or interaction typically occurs inside the classroom due to their part-time status, employment responsibilities, lack
of involvement in student activities, and attendance at non-residential campuses (Braxton et al., 2004; Cohen & Brawer, 2003; Hagedorn et al., 2000; McClenney, 2004). The majority of a faculty member’s time is devoted to teaching at a community college (NCES, 2010a), thus they are likely in more frequent contact with students than other college personnel. As a result, faculty members serve a vital role as they influence student success by teaching students the academic material as well as identifying struggling students or students who are not reaching their full academic potential (Kuh et al., 2005). By implementing programs and policies that increase faculty-student interaction both inside and outside of the classroom, community college educators can assist students in becoming more fully engaged in college.
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APPENDICES
Appendix A. 2007 Member Colleges

2007 Administration Year - 279 Colleges

**AK**
- Kenai Peninsula College-UAA
- Kodiak College, University of Alaska Anchorage
- Kuskokwim Campus, University of Alaska Fairbanks
- Prince William Sound Community College
- Tanana Valley Campus, University of Alaska Fairbanks
- University of Alaska Matanuska Susitna College
- University of Alaska Southeast Ketchikan campus

**AL**
- Alabama Southern Community College
- Shelton State Community College

**AR**
- North Arkansas College
- NorthWest Arkansas Community College
- Ouachita Technical College
- University of Arkansas Community College at Batesv

**AZ**
- Chandler-Gilbert Community College
- Cochise College
- Paradise Valley Community College
- South Mountain Community College

**BC**
- Douglas College

**CA**
- American River College
- City College of San Francisco
- College of Alameda
- De Anza College
- Glendale Community College
- Laney College
- Merced College
- MiraCosta College
- Mt. San Antonio College
- Palomar College
- Pasadena City College
- San Diego Mesa College
- Santa Ana College
- Taft College
Victor Valley College
West Hills Community College District

CO
Colorado Mountain College
Pueblo Community College

DE
Delaware Technical & Community College - Owens Cam
Delaware Technical & Community College - Stanton-W
Delaware Technical & Community College - Terry Cam

FL
Brevard Community College
Broward Community College
Central Florida Community College
Chipola College
Daytona Beach Community College
Edison College
Florida Community College at Jacksonville
Florida Keys Community College
Gulf Coast Community College
Hillsborough Community College
Indian River Community College
Lake City Community College
Lake-Sumter Community College
Manatee Community College
Miami Dade College
North Florida Community College
Okaloosa-Walton College
Palm Beach Community College
Pasco-Hernando Community College
Pensacola Junior College
Polk Community College
Santa Fe Community College
Seminole Community College
South Florida Community College
St. Johns River Community College
St. Petersburg College
Tallahassee Community College
Valencia Community College

GA
East Georgia College
Georgia Military College
Middle Georgia College
South Georgia College
Southeastern Technical College
IA
Ellsworth Community College
Kirkwood Community College
Marshalltown Community College
Northwest Iowa Community College
Southeastern Community College

ID
College of Southern Idaho

IL
College of Lake County
Heartland Community College
Joliet Jr College
Kankakee Community College
McHenry County College
Parkland College
Rend Lake College
Richard J. Daley College
South Suburban College
Spoon River College
Truman College
Wilbur Wright College

IN
Ivy Tech Community College - Central Indiana
Vincennes University

KS
Hesston College
Johnson County Community College
Kansas City Kansas Community College

KY
Ashland Community and Technical College
Big Sandy Community and Technical College
Bowling Green Technical College
Elizabethtown Community & Technical College
Gateway Community and Technical College
Hopkinsville Community College
Jefferson Community and Technical College
Madisonville Community College
Maysville Community & Technical College
Owensboro Community and Technical College
West Kentucky Community and Technical College

LA
Baton Rouge Community College
Bossier Parish Community College
Delgado Community College
L. E. Fletcher Technical Community College
Louisiana Delta Community College
Louisiana Technical College - Region 2
Louisiana Technical College - Region 3
Louisiana Technical College - Region 4
Louisiana Technical College - Region 6
Louisiana Technical College - Region 7
Louisiana Technical College - Region 8
Louisiana Technical College - Region 9
Nunez Community College
River Parishes Community College
South Louisiana Community College
SOWELA Technical Community College

MA
Berkshire Community College
Bristol Community College
Bunker Hill Community College
Cape Cod Community College
Caritas Laboure College
Greenfield Community College
Holyoke Community College
Massachusetts Bay Community College
Massasoit Community College
Middlesex Community College
Mount Wachusett Community College
North Shore Community College
Northern Essex Community College
Quinsigamond Community College
Roxbury Community College
Springfield Technical Community College

ME
Central Maine Community College
Kennebec Valley Community College
Northern Maine Community College

MH
College of the Marshall Islands

MI
Alpena Community College
Delta College
Grand Rapids Community College
Kirtland Community College
Macomb Community College
Mid Michigan Community College
Schoolcraft College

MN
Alexandria Technical College
Century College
Fond du Lac Tribal and Community College
Hibbing Community College
Itasca Community College
Lake Superior College
Leech Lake Tribal College
Mesabi Range Community and Technical College
Minneapolis Community and Technical College
North Hennepin Community College
Rainy River Community College
Riverland Community College
Rochester Community and Technical College
Vermilion Community College

MO
Metropolitan Community College - Kansas City
North Central Missouri College

MS
Northeast Mississippi Community College

MT
Montana State University Billings
Salish Kootenai College

NC
Asheville-Buncombe Technical Community College
Caldwell Community College and Technical Institute
Carolinans College of Health Sciences
Cleveland Community College
Coastal Carolina Community College
Guilford Technical Community College
Isothermal Community College
Louisburg College
Mayland Community College
Southeastern Community College
Surry Community College
Wayne Community College

ND
Bismarck State College
Lake Region State College
Minot State University-Bottineau
North Dakota State College of Science
Williston State College

NE
Central Community College
Western Nebraska Community College

NJ
Brookdale Community College
Burlington County College
Cumberland County College
Gloucester County College
Salem Community College

NM
Dona Ana Community College
New Mexico Junior College
Santa Fe Community College

NY
Borough of Manhattan Community College
Corning Community College
Genesee Community College
Hudson Valley Community College
LaGuardia Community College
Onondaga Community College
Queensborough Community College
Tompkins Cortland Community College

OH
Edison State Community College
James A. Rhodes State College
Sinclair Community College
Washington State Community College

OK
Northern Oklahoma College
Oklahoma City Community College
Redlands Community College

OR
Southwestern Oregon Community College

PA
Community College of Allegheny County
Community College of Philadelphia
Montgomery County Community College
Northampton Community College
Reading Area Community College
Westmoreland County Community College

SC
Aiken Technical College
Greenville Technical College
Midlands Technical College
Technical College of the Lowcountry
Tri-County Technical College
York Technical College

TN
Chattanooga State Technical Community College
Cleveland State Community College
Motlow State Community College
Southwest Tennessee Community College
Volunteer State Community College

TX
Alvin Community College
Angelina College
Austin Community College
Brazosport College
CyFair College
Del Mar College
Eastfield College
El Centro College
El Paso Community College
Frank Phillips College
Houston Community College System
Kingwood College
Lamar State College - Orange
Lee College
Montgomery College
North Harris College
Northeast Lakeview College
Northeast Texas Community College
Northwest Vista College
Palo Alto College
San Antonio College
San Jacinto College - Central Campus
San Jacinto College - North Campus
San Jacinto College - South Campus
South Texas College
St. Philip's College
Temple College
Texas State Technical College Marshall
The Victoria College
Tomball College
Trinity Valley Community College
Vernon College
Weatherford College
Wharton County Junior College

VA
Danville Community College
Piedmont Virginia Community College
Thomas Nelson Community College

WA
Big Bend Community College
Lower Columbia College
Olympic College
Skagit Valley College
South Seattle Community College
Wenatchee Valley College

WV
West Virginia State Community and Technical College

WY
Casper College
Central Wyoming College
Eastern Wyoming College
Laramie County Community College
Northwest College
Sheridan College
Western Wyoming Community College

SOURCE: http://www.ccsse.org/survey/profiles.cfm
Appendix B. CCSSE Data Use Agreement

Data Use Agreement
The Community College Student Report

The Community College Survey of Student Engagement’s (CCSSE) survey instrument, The Community College Student Report (CCSR), is copyrighted. Any use of items from The Community College Student Report is prohibited without written permission from CCSSE. Any individual or organization that wishes to borrow one or more survey items from the instrument must have written permission from CCSSE and submit the details on how the items will be used.

Further, data obtained through the CCSSE and maintained in CCSSE’s national dataset will be made available only for use in research projects approved by CCSSE in advance and only upon favorable review of requestor’s submission of the following information:

1. List of the specific CCSR item(s) and/or the specific group of colleges or college types for which data are requested, along with an indication of the survey year(s) for which the data are requested (this description of data requested must be very specific for CCSSE staff to be able to respond to your request);
2. Written permission from college president(s)/CEO(s), if data for a specific college or colleges are requested (as contrasted with aggregate data);
3. Statement of the objective of the applicant’s survey or study, along with clearly stated research questions;
4. Expected completion date of the research;
5. Name, title, organization and complete contact information for the principal investigator; if the requested use is for a dissertation study, please provide also the same information for the dissertation committee chairperson.

Agreement:
Applicant must agree to the following conditions:

1. Applicant will provide to CCSSE both electronic and hard copies of the proposal for subject research (e.g., the dissertation proposal for doctoral studies), including the overview of proposed research, research questions, literature review, and description of methodology. These materials shall be provided in a timeframe that allows CCSSE data to be shared at least 3 weeks for review and comment prior to finalization of the research proposal.
2. Applicant will provide to CCSSE an electronic copy of the results of data analysis; electronic and hard copies of the subject report or study, and the appropriate citation for the work. The signature below also indicates permission to cite the report or study, with appropriate credit, on the CCSSE Web site.
3. When data on CCSSE’s items are reported, applicant will include the following citation: “Data used with permission from The Community College Survey of Student Engagement (date of survey version – e.g., 2007). The University of Texas at Austin.”
4. Permission is valid for one-time use only but may be renewed with written permission from CCSSE.
5. Applicant agrees to comply with provisions set forth in CCSSE’s policy statement on Responsible Uses of Survey Data (see link at bottom of page at www.ccsse.org).

Lesley Greco Wirt
Principal Investigator’s Name

Date

The University of Texas at Austin
Community College Survey of Student Engagement
1 University Station, D6003, Austin, TX 78712-0378
## Appendix C. Pre- and Post-Listwise Deletion of the Dependent and Independent Variables

### Table C1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Label</th>
<th>Original dataset N (N = 5000)</th>
<th>Original dataset % (N = 5000)</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
<th>Difference in percents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLQUEST</strong></td>
<td>asked questions in class or contributed to class discussions</td>
<td>N/A</td>
<td>Missing values</td>
<td>6</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1 Never</td>
<td>114</td>
<td>2.28%</td>
<td>56</td>
<td>1.99%</td>
<td>-2.29%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Sometimes</td>
<td>1665</td>
<td>33.34%</td>
<td>878</td>
<td>31.13%</td>
<td>2.21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Often</td>
<td>1786</td>
<td>35.76%</td>
<td>1045</td>
<td>37.06%</td>
<td>1.30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Very Often</td>
<td>1429</td>
<td>28.61%</td>
<td>841</td>
<td>29.82%</td>
<td>1.21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EMAIL</strong></td>
<td>used e-mail to communicate with an instructor</td>
<td>N/A</td>
<td>Missing values</td>
<td>41</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1 Never</td>
<td>852</td>
<td>17.18%</td>
<td>426</td>
<td>15.11%</td>
<td>-2.07%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Sometimes</td>
<td>1752</td>
<td>35.33%</td>
<td>962</td>
<td>34.11%</td>
<td>-1.22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Often</td>
<td>1363</td>
<td>27.49%</td>
<td>838</td>
<td>29.72%</td>
<td>2.23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Very Often</td>
<td>992</td>
<td>20.00%</td>
<td>594</td>
<td>21.06%</td>
<td>1.06%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FACGRADE</strong></td>
<td>discussed grades or assignments with an instructor</td>
<td>N/A</td>
<td>Missing values</td>
<td>40</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1 Never</td>
<td>426</td>
<td>8.59%</td>
<td>198</td>
<td>7.02%</td>
<td>-1.57%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Sometimes</td>
<td>2185</td>
<td>44.05%</td>
<td>1248</td>
<td>44.26%</td>
<td>.21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Often</td>
<td>1570</td>
<td>31.65%</td>
<td>922</td>
<td>32.70%</td>
<td>.15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Very Often</td>
<td>779</td>
<td>15.71%</td>
<td>452</td>
<td>16.03%</td>
<td>.32%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FACIDEAS</strong></td>
<td>discussed ideas from your readings or classes with instructors outside of class</td>
<td>N/A</td>
<td>Missing values</td>
<td>65</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1 Never</td>
<td>2172</td>
<td>44.01%</td>
<td>1230</td>
<td>43.62%</td>
<td>-.39%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Sometimes</td>
<td>1908</td>
<td>38.66%</td>
<td>1098</td>
<td>38.94%</td>
<td>.28%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Often</td>
<td>639</td>
<td>12.95%</td>
<td>374</td>
<td>13.26%</td>
<td>.31%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Very Often</td>
<td>216</td>
<td>4.38%</td>
<td>118</td>
<td>4.18%</td>
<td>-.20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FACFEED</strong></td>
<td>received prompt feedback (written or oral) from instructors on your performance</td>
<td>N/A</td>
<td>Missing values</td>
<td>46</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1 Never</td>
<td>340</td>
<td>6.86%</td>
<td>164</td>
<td>5.82%</td>
<td>-1.04%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Sometimes</td>
<td>1777</td>
<td>35.87%</td>
<td>966</td>
<td>34.29%</td>
<td>-1.61%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Often</td>
<td>1951</td>
<td>39.38%</td>
<td>1158</td>
<td>41.06%</td>
<td>1.68%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Very Often</td>
<td>886</td>
<td>17.88%</td>
<td>532</td>
<td>18.87%</td>
<td>.99%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table C2

*Pre- and Post-Listwise Deletion of the Demographic Independent Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Label</th>
<th>Original dataset N (N = 5000)</th>
<th>Original dataset % (N = 5000)</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
<th>Difference in percents</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEX_REV</td>
<td>Gender</td>
<td>N/A</td>
<td>Missing values</td>
<td>131</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>Male</td>
<td>1971</td>
<td>40.48%</td>
<td>1143</td>
<td>40.53%</td>
<td>.05%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Female</td>
<td>2898</td>
<td>59.52%</td>
<td>1677</td>
<td>59.47%</td>
<td>-.05%</td>
</tr>
<tr>
<td>RERACE</td>
<td>Recoded as: ASIAN_REV; BLACK_REV; HISPANIC_REV; OTHER_REV</td>
<td>N/A</td>
<td>Missing values</td>
<td>189</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>American Indian or other Native American</td>
<td>80</td>
<td>1.66%</td>
<td>43</td>
<td>1.52%</td>
<td>-.14%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Asian, Asian American or Pacific Islander</td>
<td>280</td>
<td>5.82%</td>
<td>146</td>
<td>5.18%</td>
<td>-.64%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Native Hawaiian</td>
<td>23</td>
<td>.48%</td>
<td>11</td>
<td>.39%</td>
<td>-.09%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Black or African American, Non-Hispanic</td>
<td>567</td>
<td>11.79%</td>
<td>263</td>
<td>9.33%</td>
<td>-2.46%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>White, Non-Hispanic</td>
<td>3084</td>
<td>64.10%</td>
<td>1950</td>
<td>69.15%</td>
<td>5.05%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>Hispanic, Latino, Spanish</td>
<td>597</td>
<td>12.41%</td>
<td>315</td>
<td>11.17%</td>
<td>-1.24%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>Other</td>
<td>180</td>
<td>3.74%</td>
<td>92</td>
<td>3.26%</td>
<td>-.48%</td>
</tr>
<tr>
<td>MARRY_REV</td>
<td>Marital Status</td>
<td>N/A</td>
<td>Missing values</td>
<td>129</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>Yes</td>
<td>975</td>
<td>20.02%</td>
<td>620</td>
<td>21.99%</td>
<td>1.97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>No</td>
<td>3896</td>
<td>79.98%</td>
<td>2200</td>
<td>78.01%</td>
<td>-1.97%</td>
</tr>
</tbody>
</table>
### Table C3

**Pre- and Post-Listwise Deletion of the Financial Independent Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Label</th>
<th>Original dataset N (N = 5000)</th>
<th>Original dataset % (N = 5000)</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
<th>Difference in percents</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWNINC_REV</td>
<td>Student’s own income/savings</td>
<td>N/A</td>
<td>Missing values</td>
<td>145</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>Not a source</td>
<td>1734</td>
<td>35.72%</td>
<td>770</td>
<td>27.30%</td>
<td>-2.00%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>A source</td>
<td>3121</td>
<td>64.28%</td>
<td>1869</td>
<td>66.28%</td>
<td>2.00%</td>
</tr>
<tr>
<td>PARSPINC_REV</td>
<td>Parent or spouse/significant other’s income/savings</td>
<td>N/A</td>
<td>Missing values</td>
<td>165</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>Not a source</td>
<td>2421</td>
<td>50.07%</td>
<td>1381</td>
<td>48.97%</td>
<td>-1.10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>A source</td>
<td>2414</td>
<td>49.93%</td>
<td>1439</td>
<td>51.03%</td>
<td>1.10%</td>
</tr>
<tr>
<td>GRANTS_REV</td>
<td>Grants and scholarships</td>
<td>N/A</td>
<td>Missing values</td>
<td>170</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>Not a source</td>
<td>2405</td>
<td>49.79%</td>
<td>1435</td>
<td>50.89%</td>
<td>1.10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>A source</td>
<td>2425</td>
<td>50.21%</td>
<td>1385</td>
<td>49.11%</td>
<td>-1.10%</td>
</tr>
<tr>
<td>STULOANS_REV</td>
<td>Student loans</td>
<td>N/A</td>
<td>Missing values</td>
<td>181</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>Not a source</td>
<td>3460</td>
<td>71.80%</td>
<td>2051</td>
<td>72.73%</td>
<td>.93%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>A source</td>
<td>1359</td>
<td>28.20%</td>
<td>769</td>
<td>27.27%</td>
<td>-.93%</td>
</tr>
</tbody>
</table>

AGENEW
Recoded as: AGE22to24_B; AGE25to29_B; AGE30to39_B; AGE40to49_B; AGE50plus_B; 18 to 21 is the reference group

HAVKID_REV
Children who live with student

generation_REV
First-generation status
<table>
<thead>
<tr>
<th>PAYWORK</th>
<th>Work hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>1-5 hours</td>
</tr>
<tr>
<td>2</td>
<td>6-10 hours</td>
</tr>
<tr>
<td>3</td>
<td>11-20 hours</td>
</tr>
<tr>
<td>4</td>
<td>21-30 hours</td>
</tr>
<tr>
<td>5</td>
<td>More than 30 hours</td>
</tr>
</tbody>
</table>

More than 30 hours is the reference group.

Table C4

Pre- and Post-Listwise Deletion of the Academic Independent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Label</th>
<th>Original dataset N (N = 5000)</th>
<th>Original dataset % (N = 5000)</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
<th>Difference in percents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENRLMENT_REV</td>
<td>Enrollment at this college</td>
<td>N/A</td>
<td>Missing values</td>
<td>0</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>0</td>
<td>Less than full-time</td>
<td>1570</td>
<td>31.40%</td>
<td>848</td>
<td>30.07%</td>
<td>-1.33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Full-time</td>
<td>3430</td>
<td>68.60%</td>
<td>1972</td>
<td>69.93%</td>
<td>1.33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA_REV</td>
<td>GPA</td>
<td>N/A</td>
<td>Missing values</td>
<td>122</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>0</td>
<td>Pass/fail classes only or do not have a GPA at this school</td>
<td>118</td>
<td>2.42%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1.5</td>
<td>C- or lower</td>
<td>109</td>
<td>2.23%</td>
<td>46</td>
<td>1.63%</td>
<td>-0.60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>C</td>
<td>351</td>
<td>7.20%</td>
<td>184</td>
<td>6.52%</td>
<td>-0.68%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>B- to C+</td>
<td>962</td>
<td>19.72%</td>
<td>514</td>
<td>18.23%</td>
<td>-1.49%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>1181</td>
<td>24.21%</td>
<td>725</td>
<td>25.71%</td>
<td>1.50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>A- to B+</td>
<td>1397</td>
<td>28.64%</td>
<td>848</td>
<td>30.07%</td>
<td>1.43%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>760</td>
<td>15.58%</td>
<td>503</td>
<td>17.84%</td>
<td>2.26%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAJOR_B (revised)</td>
<td>Student's major</td>
<td>N/A</td>
<td>Missing values</td>
<td>1055</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>0</td>
<td>Occupational</td>
<td>2531</td>
<td>50.62%</td>
<td>1810</td>
<td>64.18%</td>
<td>13.56%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>General Education/College Transfer</td>
<td>1414</td>
<td>28.28%</td>
<td>1010</td>
<td>35.82%</td>
<td>7.54%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table C5

*Pre- and Post-Listwise Deletion of the Organizational Independent Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Label</th>
<th>Original dataset N (N = 5000)</th>
<th>Original dataset % (N = 5000)</th>
<th>Sub-sample N (N = 2820)</th>
<th>Sub-sample % (N = 2820)</th>
<th>Difference in percents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIEN_REV</td>
<td>College orientation program or course</td>
<td>N/A</td>
<td>Missing values</td>
<td>126</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>0 I have not done</td>
<td>3589</td>
<td>73.64%</td>
<td>2064</td>
<td>73.19%</td>
<td>-0.45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 I have done</td>
<td>1285</td>
<td>26.36%</td>
<td>756</td>
<td>26.81%</td>
<td>0.45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRNCOMM_REV</td>
<td>Organized learning communities</td>
<td>N/A</td>
<td>Missing values</td>
<td>109</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>0 I have not done</td>
<td>4444</td>
<td>90.86%</td>
<td>2545</td>
<td>90.25%</td>
<td>-0.61%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 I have done</td>
<td>447</td>
<td>9.14%</td>
<td>275</td>
<td>9.75%</td>
<td>0.61%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
From: Joseph Rabiega, IRB Coordinator  
North Carolina State University  
Institutional Review Board

Date: November 28, 2008

Project Title: Variables that Predict Faculty-Student Interaction of Community College Students

IRB#: 440-08-11

Dear Lesley:

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101.b.4). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review.

NOTE:

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the research must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.

Please provide a copy of this letter to your faculty sponsor.

Sincerely,

Joseph Rabiega  
NCSU IRB