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Perceptions of the Glass Ceiling Effect in Community Colleges

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Perceptions of the Glass Ceiling Effect in Community Colleges

A Dissertation

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy
in
Educational Administration

by

Cheryl E. Myers

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December, 2010

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ABSTRACT

The purpose of this study was to determine the existence of a glass ceiling effect within community colleges by examining faculty, staff and administrator's perceptions of a glass ceiling as it relates to the advancement of women at their institutions. This was done by using a cross-sectional survey administered electronically to faculty, staff and administrators in community colleges in the United States who were members of the American Association of Community Colleges. Four hundred fifty seven participants provided responses for the study. Results of ANOVA of perceptions of facilitators and barriers to advancement revealed there was a significant difference in perception between genders related to barriers to advancement, with females finding internal structural/job opportunities and organizational culture presenting more obstacles to advancement than males. Males significantly agreed more than females that a positive attitude toward women existed in their institutions. Females significantly agreed more than males that barriers hindered the advancement of women and that a glass ceiling existed in their institutions. Multiple regression analysis indicated gender was a significant predictor of perceptions of internal structural and organizational culture barriers to advancement. Work profile characteristics were not found to be significant predictors of the perception of facilitators or barriers. Logistic regression analysis indicated neither individual characteristics nor work profile characteristics were able to predict denial of promotion. These findings may be used to encourage those in authority who are able to make hiring and policy decisions to more closely examine the organizational structure, culture and climate in their institutions to foster an atmosphere conducive to productive work environments for all employees.

Gender, Glass Ceiling, Promotion, Equity, Community Colleges, Barriers to Advancement

CHAPTER ONE

Introduction

The country has celebrated the strides females have made over the last century in gaining access and equal rights to the privileges that males have in American society: the right to vote, the right to an education, the right to equal pay for equal work. These are a few of the victories that have occurred through changes in the law. However, even with these laws written into federal and state constitutions, the playing field is still unequal.

In 1961, President John F. Kennedy established the President's Commission on the Status of Women with the purpose of examining gender differences in education, the workplace, and under the law. The findings revealed that gender discrimination was rampant in the United States (Schubert-Madsen & Schubert, 1991). As a result, Congress enacted numerous laws to combat this discrimination, beginning with the Equal Pay Act of 1963.

Following the Equal Pay Act came Title VII of the Civil Rights Act of 1964, and Executive Orders 11246 and 11375 of 1965, all designed to prohibit discrimination in employment on the basis of gender and race. However, the country was slow to change from its male dominated ways. The Equal Employment Opportunity Act of 1972 and Title IX of the Educational Amendments Act of 1972 were necessary pieces of legislation aimed to further advance the ability of women and minorities to gain equal opportunity to education and employment. But, despite these laws, and almost 45 years since Title VII was enacted, women remain underrepresented in the upper echelons of the corporate and administrative world. For example, in New Hampshire only 9% of publicly held corporations, 21% of financial institutions and 25% of hospital trustees are female (Mowry, 2008). Likewise, Begley (2005) reports that

only 11% of Fortune 500 corporate officers are women. In the medical arena, 20% of hospital chief executive officers are female (Eiser & Morahan, 2006).

More specifically related to higher education, between the years 1990 and 2000, the number of full-time female graduate students increased by 57% compared to a 17% increase for males, and the number of bachelor's degrees earned by women rose 21% compared to a 6% increase for men. The enrollment of women in college also increased 14% during those same years from 7.5 million to 8.6 million while the number of men enrolled in college increased from 6.3 million to 6.5 million. Furthermore, it is projected that 57% of all college students will be women by the year 2012 (National Center for Education Statistics (NCES, 2002). In the Fall of 2006, of the 25,034,324 students enrolled in all college, university and certificate programs, 14,476,579 (58%) were female. Additionally, 59% of all degrees and certificates conferred in 2006-07 were earned by women (NCES, 2009). Of all students enrolled in postsecondary education, 43% are attending two year institutions (NCES, 2008c). Of the total 6,488,055 students at these institutions, 3,807,687 (59%) were female in the Fall of 2005. The trends show that women will continue to outnumber men in post-secondary attendance and degrees earned (NCES, 2005).

Yet, despite the increasing participation of women in higher education, in academic leadership at the end of 20th century, only 16% of college and university presidents, 25% of chief academic officers and 13% of chief business officers were women (Chliwniak, 1997). Half a decade later, according to Eddy (2002), the numbers are not much different, with 20% of the presidents of higher education institutions being female. Of these, 2% are presidents of major research universities, with the remainder employed in community, independent, women's and comprehensive colleges. In the Southern Region of the United States, 43% of full-time

administrators at community colleges are women (Southern Regional Educational Board, 2009), but this number includes all administrative positions, from registrar to chief executive officer. The American Association of Community Colleges (AACC) reports 61% of community college students are female (AACC, 2009a) but only 28% of CEOs are women (AACC, 2009b).

These numbers indicate females are attaining educational credentials at a rate similar to or greater than males, but the disparity in the attainment of administrative and leadership positions still exists. In 1989, the United States Department of Labor commissioned the Glass Ceiling Initiative to investigate the barriers faced by women in being promoted to higher levels of management in the business world. Subsequently, much has been written on the issue of gender inequity in management in the corporate world (Cotter, Hermsen, Ovadia, & Vanneman, 2001; Scott, 2001; Baker, Wendt, & Slonaker, 2002; Gutner, 2002). In higher education, Glazer-Raymo (1999) was one of the first to relate the findings of the Glass Ceiling Commission to academia, however, there have been few studies that explore the presence of a glass ceiling explicitly in community colleges. It is important to identify the specific reasons why the disparity in the number of male and female administrators exists. Discovering and addressing these barriers will allow those in positions of authority in higher educational institutions to be more inclusive in hiring and promotion decisions.

In addition to the moral, legal, ethical and social ramifications of gender inequity, the leadership in higher education needs to more adequately reflect the consumers of that education. It is imperative that higher education includes diversity in its mission (Lindsay, 1999). Likewise, if the perception of a glass ceiling effect is present, women are less likely to apply for promotions, thus perpetuating gender inequity. The country cannot afford to underutilize the human capital available if we are to stay competitive in an ever increasing global economy.

Problem

In 1961, President John F. Kennedy established the President's Commission on the Status of Women. The purpose of this commission was to examine gender differences in education, the workplace, and under the law. The findings revealed that gender discrimination was rampant in the United States (Schubert-Madsen & Schubert, 1991). As a result, Congress enacted numerous laws designed to discourage discrimination, beginning with the Equal Pay Act of 1963, Title VII of the Civil Rights Act of 1964, Executive Orders 11246 and 11375 of 1965, the Equal Employment Opportunity Act of 1972 and Title IX of the Educational Amendments Act of 1972.

But despite these laws, women remain underrepresented in the upper echelons of the corporate and administrative world. Over time, fewer than 20% of the presidencies in institutions of higher education have been held by women (Chliwniak, 1997; Eddy, 2002). Currently, 28% of CEO positions in community colleges are held by women (AACC, 2009b) despite the fact that 55% of full-time administrators at these institutions are women (SREB, 2009).

The glass ceiling effect that has been documented to exist in the corporate world may contribute to the gender disparity in leadership in community colleges. While there has been research on the glass ceiling effect in academia, little research has been done to explore the presence of a glass ceiling explicitly in community colleges. The work of Parsad and Glover (2002) examining gender differences in faculty tenure in community colleges was the only study located that specifically targeted community colleges. This study will add to the body of literature on the glass ceiling by attempting to explain some of the gender disparity seen in the leadership of community colleges. Therefore, the purpose of this study was to determine the existence of a glass ceiling effect within these institutions by examining faculty, staff and

administrator's perceptions of a glass ceiling as it relates to the advancement of women at their institutions. This was done by using a cross-sectional survey administered electronically to faculty, staff and administrators in community colleges in the United States who are members of the American Association of Community Colleges followed by statistical analysis using factor analysis, analysis of variance, multiple and logistic regression.

Research Questions

The primary question for the dissertation project was: Does the perception of a glass ceiling exist in community colleges? Additional research questions were:

1. Is there a difference in the perception of the existence of a glass ceiling between males and females?
2. Is there a difference in the perception of facilitators to advancement between males and females?
3. Is there a difference in the perception of barriers to advancement between males and females?
4. For faculty and administrators, to what extent do individual characteristics (gender, marital status, age and race) influence an individual's perception of the facilitators and barriers to advancement?
5. For faculty and administrators, to what extent do work profile characteristics (hours per week worked, year entered academia, percentage of time spent teaching, researching, and on service and administration) influence an individual's perception of the facilitators and barriers to advancement?
6. For faculty and administrators, to what extent do individual characteristics predict whether an individual is denied a promotion?

7. For faculty and administrators, to what extent do work profile characteristics predict whether an individual is denied a promotion?

These variables were important to examine as previous work done related to the glass ceiling effect indicated females are promoted less frequently than males and are concentrated in lower level positions, without being given the opportunity to advance (Jeavons & Sevastos, 2003; Banks, 2003; Roos & Gatta, 2006). Some assert women's commitment to the job and advancement, as measured by the number of hours per week worked and their outside obligations, such as marital and family responsibilities impede their ability to advance (Ginther & Hayes, 2003; Williams, 2005). Because women are not tenured as frequently, they often move from institution to institution, and thus are in lower ranking jobs with higher teaching and service loads than research agendas (Menges & Exum, 1983).

Others argue it is not gender, but age and the year an individual entered the workforce (cohort effect) that indicates whether or not advancement is achieved (Morgan, 1998). In academia, promotion and salary are often linked to discipline, with women often in human services disciplines, which are historically lower paid fields (Bellas, 1997; Nettles, Perna & Bradburn, 2000).

Yet another argument can be made for the role race/ethnicity plays in an individual's success in obtaining promotions and achieving top executive positions. An entire body of work exists exploring racial differences in promotions and the glass ceiling effect (Maume, 2004; Cotter, Hermesen, Ovadia & Vanneman, 2001; Brown & Woody, 2007).

Significance

It is incumbent upon society, and the professoriate as the body that disseminates knowledge, to impart the values and morals this country has come to know and cherish. The idea that one group of citizens, women, would not have equal access and equal opportunity to advance their careers in the same way that men do, is unconscionable in the 21st century. Not only does census data show that women are beginning to outnumber men, but they also are exceeding the number of men attending and graduating from post-secondary institutions.

In order for the nation to fully utilize its human resources and compete in the ever increasing global economy, more women must be able to occupy executive level positions of leadership. Academia sets the tone for student development of critical thinking skills and opinion formation. Therefore, academic leadership must more closely reflect the diversity of the student body that looks upon the leadership for guidance and modeling of acceptable behavior. By determining if the perception of a glass ceiling effect exists in community colleges and how women perceive their ability to advance in such an institution, those in positions of power will be more informed as to how to facilitate policy and hiring decisions that conform to the tenets of the nation's equal opportunity and nondiscrimination laws.

Definition of Terms

For the purposes of this project, the following definitions were used to signify the operational and conceptual meanings of the terms used in this study.

Affirmative action is a "U.S. government remedy to improve or advance the employment and educational opportunities of minority groups and women" (Igwebuike, 2006, p. 192)

Barrier to advancement is a blockade, whether real or perceived, that prevents the ascent or promotion of an individual from one job position to the next (Department of Labor, 1995).

Entry level position is a job typically located at the bottom of the administrative hierarchy.

Faculty will be defined as those employed by institutions of higher education who are responsible for any aspect of teaching, research, service or administration.

Gender pay gap refers to the difference in monetary compensation for individuals based on gender.

Glass ceiling is defined as those “artificial barriers based on attitudinal or organizational bias that prevent qualified individuals from advancing in their organization into upper management positions” (Department of Labor, 1995, p.7).

Governmental barriers are considered to be the lack of oversight and enforcement of laws, lack of data collection to determine where problems may exist and inadequate dissemination of information related to the glass ceiling (Department of Labor, 1995).

Institutions of higher education refer to four year universities and colleges offering undergraduate and graduate degrees, two year colleges offering degrees and certificates and technical/vocational colleges offering degrees and certificates.

Promotion-in-rank involves the movement of a faculty member from one rung to the next on the academic ladder. Typical ranks are instructor to assistant professor to associate professor to professor.

Research refers to those scholarly activities that advance the knowledge of a discipline.

Service includes those activities that are performed beyond the duties of teaching and research.

Examples include advising, committee work, community service and volunteerism.

Societal barriers consist of supply barriers, in terms of educational attainment and opportunity, and the tendency for individuals to possess stereotypical and biased attitudes towards women and minorities (Department of Labor, 1995).

Structural barriers reflect an organization's lack of effort to recruit and hire women and minorities into positions that will allow them to advance in management. This also includes the organization's climate, networking opportunities, rating systems, employee behavior, the offering of mentors, training, professional development and choice assignments (Department of Labor, 1995).

Teaching relates to those activities that take place in the classroom or lab setting for which all or part of account for faculty workload.

Upper level management/executive position in the corporate world refers to those positions at the chief executive, chief financial or chief operating officer level. In academia, it refers to those positions at the vice-chancellor/president and chancellor/president level, or other senior level positions.

Conclusion

To help explain why gender inequity exists at the upper levels of administration in academia, specifically in community colleges, research is needed to validate the existence of the glass ceiling effect. This research project sought to determine the presence of a glass ceiling effect within these types of institutions by examining faculty, staff and administrator's perceptions of a glass ceiling effect as it relates to the advancement of women at their institutions.

Organization of Study

In Chapter One, an introduction to the study, the problem statement and purpose of the study were given. A brief overview of the methodology, research questions, significance and definition of terms was included. A review of the literature discussing the historical perspectives, the glass ceiling phenomenon and the conceptual framework that guided the study

can be found in Chapter Two. The quantitative methodology used in this project, including details of survey design, data collection and data analysis is explained in Chapter Three. Chapter Four contains a detailed description of the results of the quantitative analysis of data, while a discussion of the findings, implications for policy and practice and recommendations for future research can be found in Chapter Five.

CHAPTER TWO

Review of Literature

Women in the academy are a relatively new phenomenon. Beginning in Colonial times, a snapshot of the people who made up the faculty at institutions of higher education revealed a predominantly white, male and Protestant group. Over time, the demographics of the faculty have changed, both out of necessity in terms of human resources, and with advances in equality and opportunities for women and minorities. Today, women account for 38% of full-time faculty and 48% of part-time faculty (Cataldi, Fahimi & Bradburn, 2005), up from 32% in 1991 (NCES, 1997a).

Faculty rank and position are the means by which achievement in a discipline is acknowledged and recognized. Seemingly, if individuals make similar contributions to the field, they should be rewarded in a similar fashion. However, what history reveals is despite the fact that women have gained ground in terms of the number participating in higher education as students and faculty, there is a disparity in the number of females holding upper level administrative positions in the academy that often come as a reward for accomplishments in the field. This review of literature explores the historical perspective of gender equity in the workforce, the glass ceiling phenomenon and the barriers it poses for women in the workforce (Roos & Gatta, 2006), as well as, the body of knowledge that exists to establish (Menges & Exum, 1983; Glazer-Raymo, 1999; Toutkoushian, 1999; Kjedal, Rindfleish & Sheridan, 2005) or refute (Probert, 2005) the existence of a glass ceiling for women in academia. The chapter concludes with a discussion of the conceptual framework that informed the study and influenced the development of the research questions.

Historical Perspective on Gender Equity Legislation

In 1961, President John F. Kennedy established the President's Committee on Equal Employment Opportunity and extended Executive Order 10925 which requires federal contractors to take affirmative action in employment to ensure individuals are not discriminated against on the basis of race, creed, color or national origin. Mr. Kennedy also established the President's Commission on the Status of Women. The purpose of this commission was to examine gender differences in education, the workplace, and under the law. The findings revealed that gender discrimination was rampant in the United States (Schubert-Madsen & Schubert, 1991). As a result, Congress enacted numerous laws to try to remedy the situation, beginning with the Equal Pay Act of 1963.

As an amendment to the Fair Labor Standards Act, which governs minimum wage and other salary issues, the Equal Pay Act went into effect in June, 1964 after 18 years of Congressional debate over wages for women. The Act calls for equal pay for equal work, regardless of gender. However, pay differentials are allowed if based on merit, seniority, quality or quantity of work, or any other factor other than gender (Burns, 1964).

The Civil Rights Act of 1964 was the first federal legislation prohibiting discrimination in employment. Title VII of that Act outlaws discrimination against women and minorities in hiring, firing and compensation. Only if religion, gender or national origin is a bona fide occupational qualification, are employers protected from discrimination claims under Title VII (Hill, 1978). The Equal Employment Opportunity Commission enforces Title VII, investigates complaints and may file lawsuits against violators (Kaplin & Lee, 2006).

Another protection to women was provided through Executive Orders 11246 and 11375 signed in 1965 by President Lyndon B. Johnson. These orders prohibit federal contractors from discriminating against women and minorities in employment (Hallam, 1973) and establish affirmative action guidelines. Gender was added as a requirement of affirmative action programs in 1970 and 1971 when the Department of Labor required written plans from federal contractors addressing the hiring of women and minorities (Hanna, 1988).

The seventies were a time ripe for advancement of women's issues under the law. In 1972, Title VII was extended to prohibit discrimination in public and private educational institutions. Higher Education Guidelines were published requiring universities to take affirmative action in recruiting, hiring, salary setting, job classification and grievance procedures (Kaplin & Lee, 2006). Additionally in 1972, Title IX of the Educational Amendment Act was passed, which states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance..." (Porto, 2005, p.28). The Office of Civil Rights administers this amendment which prohibits all institutions receiving federal funds from discriminating on the basis of sex (Kaplin & Lee, 2006).

Also under the purview of the Equal Employment Opportunity Commission is the Pregnancy Discrimination Act of 1978. Women who choose to bear children may not be discriminated against in hiring, insurance programs or sick leave benefits. Additionally, pregnancy is to be treated as any other disability when considering compensation under insurance and leave policies (Kaplin & Lee, 2006).

Despite the enactment of these statutes, women continue to be discriminated against in the educational and employment setting. Numerous Title IX claims have been made against colleges and universities, most commonly as it relates to equal opportunity in athletics. Title VII discrimination claims are also widespread and are frequently seen in litigation in the higher education arena related to hiring, promotion and tenure decisions (Kaplin & Lee, 2006). Table 1 illustrates the trends in the number of complaints of gender discrimination received by the EEOC from 1992 to 2009. It should be noted less than 10% of claims have resulted in a reasonable cause finding under the law, however, the number of complaints filed has consistently remained steady in numbers over the years (EEOC, 2010a; EEOC, 2010b).

Table 1

Complaints of Gender Discrimination Filed with the EEOC 1992-2009

	1992	1995	1998	2001	2004	2007	2009
Complaints	21,796	26,181	24,454	25,140	24,249	24,826	28,028
No Cause	53.8%	44.3%	55%	54.7%	58.2%	54.8%	56.9%
Reasonable Cause	3.4%	2.3%	5.2%	9.9%	6.4%	5.9%	5%

Note. Source: EEOC website <http://www.eeoc.gov>

The Glass Ceiling Phenomenon

While some gains had been made since President Kennedy first established the President's Commission on the Status of Women, females still lagged behind males in salary and promotions in most corporate and educational institutions. In the classic 1986 Wall Street Journal article, Carol Hymowitz and Timothy Schellhardt first coined the term "glass ceiling" in reference to women in management positions who never quite seemed to make it to the executive level. The term is derived from the premise that women could advance to a certain point in an

organization, see the top levels of leadership, but could not pierce the impenetrable barrier through which they were looking, thus the “glass ceiling.” Prejudices, lack of sponsors, seeming lack of job commitment, and family responsibilities are identified as barriers to advancement. Citing a 1979 Korn/Ferry International survey, Hymowitz and Schellhardt (1986) report that of 1,362 top executives in the corporate world, only 2% (27) were female.

In the 1987 publication, "Workforce 2000," commissioned by the Federal Government, it was asserted that in order for the American economy to remain competitive in the global market, there must be an increased effort to include more women and minorities in the workforce. It was projected that by the year 2000, 47% of the American workforce would be female, and 61% of all females would be working. Women earned only 66% of what men earned in 1983, an increase of only 4% from 1967. In 1980, 32% of female workers were employed in predominantly “female” occupations, those where 90% or greater of the workers were women. The numbers of women entering “male” professions was increasing, as evidenced by 45% of accounting degrees, 36% of juris doctorates, 36% of computer science majors and 42% of business majors were female in 1983. Women’s wages were projected to equal 74% of male wages by the year 2000 (Johnston, 1987).

While strides were made for women entering the employment sector, they were concentrated in entry and first level positions, few were in mid or senior level categories. In 1989, the Department of Labor was commissioned to investigate the reasons why these women, regardless of their accomplishments or qualifications, were not holding upper management positions in the corporate world. Over the ensuing three years, 94 Fortune 1000 companies were reviewed, finding women represented 37.2% of all employees, 16.9% of all managers, but only 6.6% of executive level managers. This information, combined with research done by

universities, non-profit entities and others confirmed that a glass ceiling did, in fact, exist for women and minorities (Department of Labor, 1995).

The Catalyst Corporation, a non-profit research corporation founded in 1962, was enlisted by the Department of Labor to conduct research on women in corporate management. In its 1990 survey, several barriers to the advancement of women were identified. These included: “stereotypes and preconceptions about women; managers’ reluctance to take risks with women in line positions; lack of careful career planning and planned job assignments; exclusion of women from informal channels of communication; counterproductive behavior of male coworkers” (Department of Labor, 1995, p. 8). There seemed to be a bottleneck of women in middle management positions that rarely widened to allow ascent to upper level management. These findings along with those of the Korn/Ferry International survey further validated there were barriers that were preventing the advancement of women in the corporate world.

Subsequently, the Glass Ceiling Act of 1991 was introduced by Senator Robert Dole as Title II of the Civil Rights Act of 1991. The Act established the Glass Ceiling Commission, with the Secretary of Labor to serve as the chair. The twenty-one member bipartisan commission was charged with the mission to “conduct a study and prepare recommendations on eliminating artificial barriers to the advancement of women and minorities to management and decisionmaking positions in business” (Department of Labor, 1991, p. 10).

The goals of the glass ceiling initiative were to: “1) to promote a quality, inclusive and diverse workforce capable of meeting the challenge of global competition; 2) to promote good corporate conduct through an emphasis on corrective and cooperative problem-solving; 3) to promote equal opportunity, not mandated results; and, 4) to establish a blueprint of procedures to guide the Department in conducting future reviews of all management levels of the corporate

workforce” (Department of Labor, 1991, p.3). To identify what barriers existed, and where they existed, and determine corrective actions, the initiative began with a pilot study of nine Fortune 500 companies.

In the Fortune 500 review, (Department of Labor, 1991) the number of employees in the companies reviewed ranged from less than 8,000 to more than 300,000. Seven industry groups and five geographic regions of the country were represented. The majority of the companies had international branches. Regardless of their corporate culture or policies and procedures, the study found five common threads. First, women and minorities were predominantly located at lower levels of management, and reached a plateau beyond which they did not advance. Second, a lack of corporate ownership regarding principles of equal employment opportunity and access existed. No system was in place to track or monitor the development of employees. Third, performance appraisal and salary compensation systems were not assessed regularly to ensure non-discrimination. Fourth, women and minorities more often hold “staff” positions, such as human resources and public relations, versus “line” positions, such as sales and production. Individuals promoted to executive level positions are more commonly in line positions. Finally, despite the fact that all the companies were federal contractors and subject to compliance with affirmative action legislation, the review found there was inadequate recordkeeping regarding recruitment, employment and developmental activities, key aspects of equal employment opportunity (EEO) requirements (Department of Labor, 1991).

As a result of this pilot study of the Glass Ceiling Commission, the lack of advancement of women and minorities in the corporate world could now be attributed to organizational barriers and institutional biases that prevented their climb up the ladder. These barriers begin with the recruitment process whereby word of mouth, employee referrals and use of search firms not

aware of company EEO requirements are the primary means of gathering candidates for management positions. Once in an organization, the professional development experiences afforded an individual prepare them for the move into upper level management positions. These types of opportunities can include mentoring, graduate study and international assignments. According to the findings of the pilot study, women and minorities are often not offered these experiences, and thus are not prepared to assume higher responsibilities. One company in the pilot allowed individuals to choose their own successor and groom that individual for the next step up the ladder. Another company identified employees with “high potential” (p. 22) and those individuals were given the experiences to build their skills (Department of Labor, 1991). Additionally, EEO principles are not enforced throughout all levels of organizations. For example, it was found that no tracking of developmental opportunities existed in the companies studied, therefore, there was no evidence there was an opportunity for equal participation of all employees (Department of Labor, 1991). Upper level managers who have hiring powers may not be fully aware of affirmative action programs or be fully committed to them (Department of Labor, 1991).

Through their examination of the corporate world, the Department of Labor determined that a glass ceiling did exist in the corporate world, and defined the term as those “artificial barriers based on attitudinal or organizational bias that prevent qualified individuals from advancing in their organization into upper management positions” (Department of Labor, 1991, p.7). Turning the microscope on itself, the Federal Government examined its own system to detect the presence of a glass ceiling.

In October of 1992, the Merit Systems Protection Board released the report “A Question of Equity: Women and the Glass Ceiling in the Federal Government.” In this study, 13,000 employees were surveyed with a return of 66% (4,827 men and 3,443 women); 19 focus group sessions with 144 participants were conducted; and data from the Central Personnel Data File were obtained concerning employee gender, civil service grade level and occupational group. From the compilation of this data, it was found that only 1 in 4 supervisors and 1 in 10 executives were women. Men had a 33% greater chance to be promoted than women at the grade 9 level, and a 44% greater chance at the higher grade 11 level (Merit Systems Protection Board, 1992).

In order to advance in a federal career, education and experience were indicated to be the two most important factors needed. Geographic mobility, or willingness to relocate, was also noted to be an important asset to possess for those in higher grades and for those who received more promotions. Job commitment as evidenced by performance appraisal data, enthusiasm and intent to apply for promotions was seen as a positive trait when promotions are considered. The amount of time spent on the job, in terms of hours per week, was proportional to the opportunity to receive a promotion. Likewise, those with family responsibilities, mostly women, who could not put in an excess number of hours at the office, were less frequently promoted. Women, especially women with children, were perceived to be less committed to the job and this was a barrier to their advancement (Merit Systems Protection Board, 1992).

Women in federal jobs were less likely to have mentors and less likely to be members of effective networks. Networking can provide access to future job opportunities, both directly and indirectly. Study participants perceived these two factors as being important in an individual's ability to further career options. What may be most disturbing from this study is that women

believe they are held to a higher standard of performance than men, that there are more obstacles for them to surpass in proving themselves and that their ideas are often discounted or ignored. Additionally, many women think men believe they have obtained their upper level positions solely because they are women (Merit Systems Protection Board, 1992).

Acknowledging the presence of a glass ceiling in its own ranks, the Federal Government sought to identify strategies that would lead to diminishing the effects of that invisible barrier that existed for women and minorities in all sectors. In 1995, the Department of Labor released another report “Good for Business: Making Full Use of the Nation’s Human Capital: The Environmental Scan.” At this time, it was reported that 95-97% of senior managers of Fortune 1000 industrial and Fortune 500 companies were white males. Only 5% of senior managers in Fortune 2000 industrial and service companies were women. Since then, not much progress has been made, as Dencker (2006) found the glass ceiling is still entrenched in Fortune 500 companies. Likewise, Jordan, Clark and Waldron (2007) report the glass ceiling still exists in Fortune 100 companies with only 5.8% of top executives being female.

In the federal sector, women remain underrepresented in higher level positions. Based on data from the 2000 Demographic Profile of the Federal Workforce, Chih-Wei and Winslow (2006) surmise that the glass ceiling, gender roles and the gap in educational attainment between men and women in these positions accounts for this disproportionate representation. Additionally, according to these researchers, women have less mobility due to family obligations, and thus are limited in their ability to apply for and obtain promotions.

According to the Department of Labor (1995), the glass ceiling barriers were further refined and reported to fall into three categories: societal barriers, internal structural barriers and governmental barriers. Societal barriers consist of supply barriers, in terms of educational

attainment and opportunity, and the tendency for individuals to possess stereotypical and biased attitudes towards women and minorities. Structural barriers reflect an organization's lack of effort to recruit and hire women and minorities into positions that will allow them to advance in management. This also includes the organization's climate, networking opportunities, rating systems, employee behavior, the offering of mentors, training, professional development and choice assignments. Governmental barriers are considered to be the lack of oversight and enforcement of laws, lack of data collection to determine where problems may exist and inadequate dissemination of information related to the glass ceiling.

This historical perspective on the glass ceiling has provided the background of the origins and evolution of this phenomenon. The existence of a glass ceiling effect has been established and barriers to the advancement of women identified.

Exploring the Glass Ceiling Phenomenon

Societal Barriers

The societal barriers identified in the literature include educational biases, stereotypical attitudes toward the roles of women in the workplace and gender stereotypes. From the educational perspective, one such barrier found is the difference in educational opportunity and attainment between men and women. Women, historically, have not had an equal opportunity to the same educational pursuits males have had. Without similar educational experiences or credentials, women are less likely to be hired into the types of line positions that will facilitate career advancement. However over time, the playing field has become more level due to legislation such as Title VII and Title IX. Between 1940 and 1976, the number of individuals overall who had completed 4 or more years of high school and/or college increased tremendously, but between 1976 and 1995, the gain reached a plateau. By gender, the high

school graduation rate of females increased from 84.2% to 87.4%, while the male rate decreased from 96.6% to 86.3%. As far as college completion, females had an increase of 3.8%, while males had a decrease of 2.5% between 1977 and 1995 (Mortenson, 1997). Yet, equal access does not necessarily translate into equal opportunity to participate in the types of classes and programs that lead to opportunities for graduate study or higher paying jobs.

In an analysis of United States Census Bureau data, Mortenson (1997) has indicated males earn higher wages than females at all educational levels, but the higher the education, the higher the wage for both genders. While this is logical, females encounter biases in education that lessen their opportunities to foster higher educational attainment, such as testing bias, less attention from teachers, fewer math and science courses, and fewer hands-on opportunities in lab/experiment type settings (Franzosa, 1993; Hansot & Tyack, 1988; Bauer & Dahlquist, 1999).

Stereotypical and biased attitudes toward women were identified by the Glass Ceiling Commission as another societal barrier to their advancement in the workplace. Traditionally women have been the caretakers of the family and their work was done inside the home. As a result of the passage of legislation, more opportunities became available for women to pursue roles outside of the home. However, that did not mean society as a whole accepted this modern scope of a woman's duties.

With their venture into the workplace, women have been typically found in "women's work," jobs such as clerical positions, public relations, education, nursing and healthcare. Attempts to enter the traditional male domain were met with resistance and resulted in women being hired into lower ranking staff positions at lower salaries. One possible explanation for this is sex stereotypes exist that have remained essentially unchanged over time (Williams & Bennett, 1975; Bergen & Williams, 1991; Rieder, 1978). These stereotypes can take the form of

questioning the priorities of females, the suitability of females for management positions, or the overall image of the female (Wickwire & Kruper, 1996).

Substantiating these societal barriers is the work of Eiser and Morahan (2006). In the healthcare industry in the United States, it was purported policies and practices favor males. There is strong gender stereotyping in the fields, with men being seen as more analytical and females being seen as less able to lead if they exhibit caring behaviors. Males are also seen to be more competitive while women are seen to be primary family caregivers and thus having to choose between home and career.

Females encountering stereotypes often have to exhibit a higher level of leadership quality to be promoted (Kaufman, Isaksen & Lauer, 1996). Chernesky (2003) also noted women are perceived differently than men, even if their performance is the same. In academia, it has been found that women who have children soon after receiving a PhD are less likely to earn tenure and more likely to experience negative stereotyping and negative assumptions about their competency (Williams, 2005).

A survey of 155 human resources professionals in the State of Illinois revealed women were overrepresented in the field and in lower to mid-level management positions. Women were more likely to have jobs sex-typed as feminine, which effectively leaves them out of the executive positions in the human resources field, as these jobs are seen as masculine (Pichler, Simpson & Stroh, 2008).

The societal barriers found in the literature support the original assertions of the Glass Ceiling commission. Women encounter educational biases that impede their attainment of higher educational pursuits, such as biases in aptitude testing (Franzosa, 1993). Females are often advised to take traditionally “softer” science and math courses than males which limit their

experiences and ultimately the number of women entering science and math related disciplines (Hansot & Tyack, 1988; Bauer & Dahlquist, 1999).

Stereotypical attitudes toward the role of women in the workplace take the form of women being hired into lower ranking positions and fields noted to be traditionally female (Williams & Bennett, 1975; Rieder, 1978). Once in a position, women encounter attitudes that reflect the gender stereotypes of women as less able to lead (Kaufman, Isaksen & Lauer, 1996).

Internal Structural Barriers

Research reveals internal structural barriers found in the workplace are inadequate recruitment practices, lack of opportunity to participate in professional development, occupying staff versus line positions, a lack of understanding of, and commitment to, Equal Employment Opportunity principles and the culture of an organization. Inadequate recruitment practices were cited as being a structural barrier by the Department of Labor (1995). Many companies rely on word of mouth referrals by current employees and/or managers. Since the majority of higher management positions are held by men, networking among males is likely to result in the awarding of more jobs to men. Companies reviewed also failed to make executive search and referral firms aware of the need to extend recruitment to women as is required by law. In addition, the sometimes informal nature of the interview process can be a barrier to women. Many top executives interview in non-traditional, male dominated venues, such as hotels, bars, or golf courses, which can place women at a disadvantage.

Another internal structural barrier that was identified, the lack of opportunity to contribute and participate in professional development experiences (Department of Labor, 1995) presents in several ways. Individuals with potential are often identified by top management early in their careers and given opportunities, such as additional education, development programs,

mentoring, high profile positions and choice assignments, which facilitate their movement up the career ladder. In the focus groups conducted by the Glass Ceiling Commission, women reported being seldom included in these programs which hindered their ability to advance in an organization (Department of Labor, 1995). Supporting this, in their study, Jeavons and Sevastos (2003) noted equal levels of promotion for males and females existed, but that females were employed in positions lower than they were qualified for and lower than males with the same job duties.

Hired into staff positions, versus line positions, contributes to the internal structural barriers. Individuals in staff positions are typically paid less, seen as less competent and have more difficulty getting promoted than those in line positions (Banks, 2003). Daily, Certo and Dalton (1999) also concluded that women are not being hired into the line positions that allow for promotion. They report that no significant progress has been made in the advancement of women in executive positions from 1987 to 1996. Using data collected from Fortune 500 firms in 1987 and 1996, the number of women on the company board of directors increased from 42.6% to 81.2%, but the number of female chief executive officers remained at two in both 1987 and 1996.

The companies reviewed by the Commission were found to have general lack of understanding and commitment to equal employment opportunity (EEO) principles. While low and mid-level managers were usually trained in EEO, as managers moved up the ladder, emphasis was no longer placed on these principles and EEO officers were not included in interviewing and hiring decisions. It was also found that there was no tracking or monitoring of development opportunities to ensure non-discrimination. Thus, a lack of corporate ownership of equal opportunity principles was identified as another barrier to the advancement of women in

corporate settings. Bible and Hill (2007) substantiated this in their study where EEO policies were found to exist, however no procedures to implement the policies were in place.

These organizational structural barriers have been shown to impede the advancement of women in the academic setting (Bain & Cummings, 2000) but, smaller, younger firms are more favorable to women in general, and specifically to the advancement of women to higher positions (Frankforter, 1996). In their study of ten university systems, Bain and Cummings found women were more concentrated in lower tiered institutions and disproportionately held positions in which there were greater teaching obligations, limiting time for research, ultimately impeding advancement opportunities. Investigating 600 American corporations, Frankforter found a significant interaction between firm size and firm age and the presence of female offices. Younger, smaller firms were found to have a greater percentage of female employees and female officers, indicating gender biases are less likely to be encountered in these arenas (Frankforter). The policies and procedures, as well as the creation of new positions and budget in an organization were found to also impact the promotion of females. If a woman was sponsored by a male in an organization, she was found to be more likely to be promoted than a woman who was not (Johnsrud, 1991).

Yet another structural barrier may be the culture of the organization itself. Is the climate of the company such that women feel equally accepted and valued? Van Vianen and Fischer (2002) assert that not only do policies and procedures affect the promotion potential of women, but also the company's culture of networking, subjective decision making and treatment of women with children also have an impact. In non-managerial groups, women preferred a less masculine culture than did men.

In healthcare, it has been found that there is a lack of mentors for women, and females are generally excluded from social networks in the professions (Eiser & Morahan, 2006). Mentors have been found to be a key to assisting women to rise above a glass ceiling (Anderson, 2005) and mentor support and career encouragement positively predict advancement into middle and upper level positions for females, while a male hierarchy in the workplace negatively predicts advancement for females (Tharenou, 2001).

Using data from the 1991-92 Career Development Survey of Federal Employees, Daley (1998) spoke to the perceptions of those in the organization. Females were more likely than males to perceive being denied a promotion due to gender and lack of education and experience. Overall, however, lack of experience was perceived by both genders as important when developmental opportunities were denied.

Conversely, Hagedorn and Laden (2002) found only a slight gender effect on perceptions of organizational climate. These researchers conducted a secondary analysis of data collected by the Center for the Study of Community Colleges, and after controlling for differences in age and experience, noted that males and females perceive organizational climate similarly. There was no greater dissatisfaction or intent to leave an organization by females, but women did perceive discrimination more than men.

MacCrae's (2005) work also indicates the perceptions of a glass ceiling are still intact. A lack of female role models, the "good old boys" network, family responsibilities which preclude women from participating in social networking and the lack of special assignments all contribute to the inability of females to stay on par with males in promotions and earnings.

In an examination of the glass ceiling in public relations and corporate communications management, Wrigley (2002) interviewed 27 women regarding perceptions of the existence of a glass ceiling. Five factors were identified to be possible contributors to the perception of a glass ceiling: denial; gender role socialization; historical precedence; females turning against other females and corporate culture.

Thus, as evidenced by this review, the internal structural barriers that exist in the workplace take varied forms. Inadequate recruitment practices are manifested by informal referrals, meetings and interviews that favor males (Department of Labor, 1995). When hired, women are often offered staff positions versus higher prestige line positions and many encounter difficulty participating in professional development opportunities that provide the entre' to movement up the career ladder (Daily, Certo & Dalton, 1999). Many organizations do not emphasize EEO principles to ensure non-discrimination (Bible & Hill, 2007), have policies and procedures in place, social networks and a process for assigning duties that preclude women, all of which foster a culture that adversely affects the ability of women to be promoted (Van Vianen & Fischer, 2002).

Governmental Barriers

Governmental barriers identified by the Department of Labor (1995) include the lack of oversight and enforcement of laws, lack of data collection to determine where problems exist and inadequate dissemination of information related to the glass ceiling. The Equal Employment Opportunity Commission (EEOC) is the agency of the Federal government that is charged with the oversight of enforcement of Title VII of the Civil Rights Act of 1964 and the Equal Pay Act of 1963. The Commission is made up of five commissioners and a general counsel, all appointed by the President of the United States and confirmed by the U.S. Senate. In fiscal year 2002, the

EEOC received the highest number of charges for violation of the Equal Pay Act since 1997 at 1,256. Interestingly, the number of charges subsequently dropped each year to a low of 861 in 2006. Of those 861 charges of violations in 2006, 463 (61.9%) were closed due to no reasonable cause for the complaint. The number of closed cases due to no cause ranged from 54.3% to 61.9% between 1997 and 2006 (EEOC, 2006).

The case is similar for charges of sex discrimination under Title VII. Examination of statistics presented on the EEOC website (2006) reveals that during the period of 1997 – 2006, the number of charges filed ranged from a low of 23,094 in 2005, to a high of 25,236 in 2002. The number of cases closed for no reasonable cause ranged from 54.3% to 58.3%. Reasonable cause has only been found in between 4% to 9.9% of cases over this time period (EEOC, 2006). This paucity of cases in which an employer is found to be in violation of either Title VII or the Equal Pay Act may certainly be discouraging to those who champion women's issues.

The governmental barriers identified by the Department of Labor in 1995 are currently somewhat dubious. The EEOC database on the number of reports and resolutions of violations of the Equal Pay Act and Title VII are public record and indicate the government is actively collecting data on these reports. Numerous government publications are also available on the findings of the glass ceiling commission and other task forces charged with investigating this phenomenon. What one may question, however, is the actual enforcement of the laws through the EEOC based on the minute number of employers who are found to be in violation of EEO provisions.

In Wrigley's (2002) study, when directly asked the question, participants routinely denied the existence of a glass ceiling, yet their comments indicated otherwise. Many took personal blame for being denied a promotion, while others pretended a glass ceiling did not exist and

therefore was not a problem. Some acknowledged a glass ceiling existed in other fields, but not in theirs as it was predominantly female, discounting that most executives were male. Wrigley created the concept of negotiated resignation to describe this denial. In order to reconcile the inequity in job situations, women work harder and keep the peace in an effort to be recognized and promoted. A certain degree of denial can be related to the community college setting. While the majority of students and faculty are female, females are a distinct minority in executive positions (AACC, 2009b), yet, little literature or discussion exists to question this disparity.

According to Wrigley (2002), gender role socialization was identified as a factor contributing to the presence of a glass ceiling. Both males and females have been raised in families modeling stereotypical gender roles. These stereotypes are transferred into the work environment where women encounter males that do not believe women should be, nor are they capable of being, leaders or managers. Women are socialized to accept these stereotypes and subsequently have limited goals and views of success. Historical precedence works in concert with gender role socialization as a factor. American society has historically been patriarchal and a “good ole boys” network exists in many corporations.

The fourth factor identified by Wrigley (2002) is the concept of women turning against other women. Participants in the study expressed they have encountered females in executive positions who are harsher on other women than on males and once these women attain upper level positions, they are reluctant to help other women advance. Lack of supportive female mentors was also identified as an issue contributing to the perception of a glass ceiling.

Finally, the corporate culture itself was found to be a factor leading to the perception of a glass ceiling (Wrigley, 2002). The male dominated environment contributes to the view of

women being appropriate for only certain types of jobs. The participants noted they believed males felt threatened by females and therefore fewer opportunities for females were available. Wrigley also noted women were noted to work harder than men and as a result were given more work that limited their ability to participate in developmental and networking activities.

In summary, the barriers that prevent women from advancing in an organization and establish a glass ceiling effect have been found to be of three sources: societal, institutional and governmental. Each of these sets of barriers plays its own unique role in contributing to the disparity in the number of women versus men promoted to senior level management positions in the corporate world. In an examination of the glass ceiling in public relations and corporate communications management, Wrigley (2002) interviewed 27 women regarding perceptions of the existence of a glass ceiling. Five factors were identified to be possible contributors to the perception of a glass ceiling: denial; gender role socialization; historical precedence; females turning against other females and corporate culture.

Are these same barriers present in academia? With a large concentration of female faculty in the community college setting, the question must be asked if the factors identified by Wrigley (2002) are in play in this setting as well. Glazer-Raymo (1999) asserts that the lack of females in senior administrative positions in academia can be attributed to similar barriers as seen in the corporate world.

The Gender Pay Gap

Much of the research that has been conducted to establish the presence of a glass ceiling effect has focused on determining the differences in salary between males and females. The National Committee on Pay Equity (2006) reports that in 1960, women earned 60.7% of male salaries. This number remained virtually unchanged over the ensuing 20 years, until 1982 when

the gap started to gradually decrease. Between 1982 and 1992, a 9.1% decrease was noted, and between 1992 and 2006, only a 6.1% gain was made by women. In 2006, women earned 76.9% of a male's salary (National Committee on Pay Equity, 2006).

Typically what is found is when controlling for such variables as age, educational attainment and time on the job, women earn less than do their male colleagues. One early explanation for this difference (Martin, 1989) is women entering the business world expected to earn less than males, so they therefore, did not ask for a higher salary when negotiating a contract. Martin found that even when given the mean and ranges of salary offers, in 4 of 5 business areas, women expected to earn less than men. Other explanations consider the societal and organizational barriers that exist that keep women in lower earnings categories (Giapponi & McEvoy, 2005-2006).

Examples of the gender pay gap from many fields can be found. Kay and Hagan (1995) speak of the difference in salary in the legal profession. After taking educational attainment, position and type of organization into account, 61% of the earnings differential in the field of law was unaccounted for, with men being more likely to earn a higher salary than women with the same pedigree. Additionally, the salary gap widens, instead of narrowing, as women move up the career ladder. Likewise, in a study of graduates of the University of Michigan School of Law, Wood (1993) found females earned only 60% of male wages after 15 years in the profession.

In the human resources field, it was noted males earn an average of 20% more than females in comparable positions (Millar, 2004). Conversely, however, Nelson (2003) reports female human resources directors are paid only 1.3 % less than males, a decrease of almost 30%

from 1993. In a 2007 Payroll Compensation Survey, as reported in the Payroll Managers Report (2007), females earned 75% of male salaries.

The sciences show similar wage gaps. Lal, Yoon and Carlson, (1996) discovered that the wage gap for female engineers was 3%, a statistically significant difference, after accounting for educational attainment, specialty, region and experience. In astronomy and physics, women make up a small proportion of workers, earning 18% of the physics degrees and 26% of astronomy PhDs in 2003, with a salary gap of 5% noted (Ivie, 2005). Babco and Jesse's (2005) report on the 2004 American Association for the Advancement of Science's salary survey indicates after controlling for age and time on the job, the median salary for women was \$50,000, while the median for men was \$60,000 for the life sciences professions (agriculture, biochemistry, cell biology, genetics, immunology, etc.).

In academia, using data from the Chronicle of Higher Education Salary and Benefits Survey and the Integrated Postsecondary Education Data System (IPEDS), Monks and McGoldrick (2004) noted females earned 13% less than males in the top five salaried positions at private institutions. Of this, 10.4% could be accounted for by the type of institution and occupation, leaving 2.6% of the gap unexplained. They report females are less likely to work at large research institutions or hold the position of dean in business or law schools, which are typically the higher paying positions.

Contrary to most findings, Jordan, Clark and Waldron's (2007) study noted in Fortune 100 companies, the wage gap is virtually non-existent if a female reaches the top executive positions. In their view, this signifies women are as equally valuable to the company as men. Blau and Devaro (2007) also found that while there may be a lower probability for women being promoted, there is no gender pay gap. Despite this recent finding, the gender pay gap and the

glass ceiling effect have been well established in the corporate world. But what happens prior to individuals entering the job market which might influence their ultimate choice of jobs and perceptions of their career potential? Does the educational system that is supposed to prepare thoughtful, well rounded individuals foster an atmosphere of equality and inclusion of women?

The Glass Ceiling in Academia

Women comprised 37% of graduate students and 46% of undergraduate students in the early 1970s, but only 27% of the faculty. Additionally, few, if any, women held a rank higher than assistant professor in postsecondary institutions, while the majority of men were at the professor rank. By the early 1980s, the percentage of female academics was 26%, but only 50% of those were tenured, compared to 74% of male faculty (Menges & Exum, 1983). In the 1990s, 60% of male faculty, versus 40% of female faculty, were more likely to be tenured in 1992, with that number remaining virtually unchanged in 1998. In community colleges, 49.8% of the total faculty were tenured in 1998, with 53% of male faculty and 47% of female faculty achieving this distinction (Parsad & Glover, 2002). While some strides have been made, is discrimination a possible reason for this disparity despite affirmative action programs or is something else affecting the ability of women to reach more senior positions? As Table 2 indicates, the percentage of females as graduate students has steadily increased from 1970-1997, but as a percentage of faculty, the numbers remain lower than males (NCES, 1997b; NCES, 2008a; NCES, 2008b; NCES, 2008d; NCES, 2008e).

Table 2

Percentage of Females in Higher Education as Students and Faculty

	1970 ^a	1980 ^b	1990 ^c	2000 ^c	2007 ^c
Undergraduate	46	54	52	56	57
Graduate	37	49.8	53.5	59	60
Faculty	27	26	31.7	-	46
Tenured Faculty	-	50	40	43	-

Note. ^a Source “Barriers to the Progress of Women and Minority Faculty,” by R.J. Menges and W.H. Exum, 1983, *The Journal of Higher Education*, 54(2), p. 123. ^b Source “Tenure Status of Postsecondary Instructional Faculty and Staff: 1992-98,” by B. Parsad and D. Glover, (2002).

^c Source NCES website <http://nces.ed.gov>

Menges and Exum (1983) report that women and minorities are at a disadvantage in promotion and tenure reviews. Because they are promoted and tenured less frequently, they become more likely to move from one institution to another, and are more subject to layoffs as they are the least senior in the organization. Thus, as faculty members, women are concentrated in the lower academic ranks, which precludes their ability to easily ascend the career ladder (Toutkoushian, 1999).

The seminal work on the glass ceiling in academia was done by Judith Glazer-Raymo. In her book, *Shattering the myths: Women in academia*, Glazer-Raymo (1999), examines the dearth of women in upper level executive positions in colleges and universities. She reports that according to the 1995-1996 CUPA administrative survey, women accounted for only 28.7% of executives, 26% of chief academic officers and 13.8% of chief business officers. However, 61.3% of associate admissions directors and 56.4% of registrars were women, thus furthering the notion that women are concentrated in less prestigious, lower level positions.

According to Glazer-Raymo (1999) it is not that there is a lack of females available for executive jobs, but how they are hired into positions and groomed for promotions, that is the problem. The progress of women in the pipeline depends on their discipline, institution, department, mentoring, willingness to relocate, race and ethnicity. The proportion of women grows faster at lower ranks, and women are more likely to be in part-time or non-tenure track positions. At the end of the 1980s, three of 100 executive jobs were held by women, and in 1995 that number had increased to only 2-5%. At that rate, Glazer-Raymo asserts that it would take 475 years for women to reach equality with men.

In 1998-99, 19% of executive positions in academia were held by women. By position, 20% of presidencies, 7% of provosts/vice-provosts, 46% of vice-presidents, 5% of program directors, and 16% of deans were female. Little difference in numbers is seen in data from 2000-01. The total number of executive positions held by women increased to 22%, with a slight upward trend in the presidency to 22%. However, the remaining positions saw a shift in numbers: 6% of provosts/vice-provosts, 46% vice-presidents, 5% of program directors and 14% of deans were females (Monks & McGoldrick, 2004).

In a 2007 report of the American Council on Education (ACE) and the College and University Professionals Association for Human Resources (CUPA-HR), women held 23% of college and university presidencies. As a follow-up, the two organizations completed a study in 2008 of 9,700 individuals from 850 institutions in the United States. Findings indicated 45% of all senior administrators and 38% of all chief academic officers were female (Edmonds, 2010). This trend is portrayed in Table 3.

Table 3

Percentage of Females in Administrative Positions in Colleges and Universities

	1998-99 ^a	2000-01 ^a	2008 ^b
President	20	22	23
Vice President	46	46	38
Provost/Vice Provost	7	6	-
Dean	16	14	-
Director	5	5	-

Note. ^a Source “Gender Earnings Differentials among College Administrators,” by J. Monks and K. McGoldrick, 2004, *Industrial Relations*, 43(4), p. 742. ^b Source “New Survey Suggests More Work Needed to Broaden the Pool of Women and Minorities in Line for College Presidencies,” by K. Edmonds, (2010), www.acenet.edu

Kjeldal, Rindfleish and Sheridan (2005) report a glass ceiling still exists in Australian academia. Females occupy only 3.5% of the positions ranked higher than senior lecturer. The barriers that contribute to this disparity include the informal networking processes of the organizations, and gender stereotypes about women that pervade these discussions which lead to inequitable treatment and rates of promotion.

Examining an arts and sciences division at a state university, Roos and Gatta (2006) investigated gender equity and barriers to advancement. Using data obtained from the dean’s database for the years 2000 and 2004, of 743 full-time equivalents, females occupied 26% of total positions. While it was noted there were more females in tenured ranks in 2004, few were in the highest paid, most prestigious positions and few were in leadership positions. Of those in leadership, in 2000, women were overrepresented as graduate and undergraduate directors, and in 2004, women were underrepresented at the chair and undergraduate director positions.

As in the corporate world, the majority of the research on the glass ceiling in academia focuses on the wage gap and differences in rank and tenure (Ashraf, 1996; Bellas, 1997; Toutkoushian, 1999; Toutkoushian & Conley, 2005; Barbezat & Hughes, 2005). One of the few studies to examine data over a period of 20 years, Ashraf (1996) used information obtained from college faculty in five national surveys done in 1969, 1972, 1977, 1984 and 1989 by the Carnegie Foundation for the Advancement of Teaching. Using research oriented (jobs oriented to research), PhD, teaching load, type of institution and publishing output as variables, salary gaps between genders and races were examined. The gender wage gap was found to be 14.25% in 1969, then decreased to 8.18% in 1974, but increased again after that to 14.64% in 1989. The gap was highest among those in the rank of professor, than those at the assistant and associate professor ranks. According to Ashraf (1996), this could be due to either a decrease in gender discrimination or the fact that the gender wage gap increases with rank, which is correlated to the length of time one is in the professoriate.

Utilizing data from the 1993 National Study of Postsecondary Faculty (NSOPF), it was noted that only 15% of women held full professorships compared to 39% for men, 42% of women were tenured versus 66% for men, women were more concentrated in positions in community colleges and earned an average of approximately \$10,000 less than full-time male faculty (Nettles, Perna & Bradburn, 2000). Examining faculty salary data from the 1999 NSOPF, Umbach (2006) found a 6.8% gap in the salaries of faculty in Research I and II universities in the disciplines of English Literature, Biology, and Mechanical Engineering after controlling for education, rank and experience.

Also using the 1999 NSOPF, Toutkoushian and Conley (2005) aimed to determine if there was any unexplained gender wage gap in academe over time. After controlling for highest degree held, length of appointment, race, age, position, years from highest degree, primary duties, region of the country, number of publications, discipline and institutional type, the total wage gap between men and women in 1999 was found to be 17.7%. Experience level, rank and duties (those whose primary duty is teaching earn less) account for some of this gap, but the unexplained gap totals 6 percent (Toutkoushian & Conley). From the same data, Barbezat and Hughes (2005) conclude males earn 20.7% more than females and 19 - 24% of that salary gap is unexplained. Controlling for the same variables as did Toutkoushian and Conley. Barbezat and Hughes have determined the unexplained gap to be between 3.9 and 4.9 percent.

Bellas (1997) sought to determine if the labor market, or the percentage of women in a given discipline, played more of a role in setting the salary for that discipline. Using data from the Oklahoma State University annual faculty survey and College and University Personnel Association, and controlling for human capital effects (having a PhD, support for research, number of publications) and productivity, faculty in disciplines with a larger proportion of females earned less than those where there are fewer women. Entry level salaries for faculty in a discipline are influenced by the percentage of women in that discipline and the higher the percentage of women, the slower the salary growth (Bellas). In an examination of salaries of individuals in top administrative positions in private institutions, females were found to earn 13% less than males, with 10% of this difference accounted for by type of institution and position. The salaries of deans and directors were noted to differ significantly by gender. After controlling for type of institution and position, a 2-3% salary differential was still seen for women (Monks & McGoldrick, 2004).

The salary difference between males and females may be explained by academic rank, but the question of the difference in the rate of promotion between men and women remains. Three factors that contribute to this difference for women are work experience, the number of employers and having children (Ginther & Hayes, 2003). The difference in achieving tenure for males and females may be attributed to females having children within five years of earning their doctorate. In science and engineering, there is a 24% gap in the rates of tenure between males and females 12-14 years after receiving the PhD. Women who have babies within this five year time frame are less likely to have career ladder jobs. Moreover, 59% of married women with children surveyed are considering leaving academia due to difficulty balancing family and career concerns (Mason & Goulden, 2002).

What Glass Ceiling?

Not all research has identified a glass ceiling as the reason why women are underrepresented in executive level positions. Measuring the glass ceiling in terms of a gender salary gap, Morgan (1998) found the earnings gap was dependent upon the cohort a woman was in, i.e., when she started working, versus a glass ceiling effect. Results obtained from analyzing data from the Survey of Natural and Social Scientists and Engineers (SSE), indicate there is a flat effect on earnings due to being female over the seven year period from 1982-1989. The negative effect seen on female salaries is a result of when a woman started working, rather than how long she has worked. For those who entered the job market after 1971, there is a 0 – 4% penalty on salaries as of 1989, according to Morgan.

Kaufman-Rosen and Kalb (1995) purport women are changing their priorities and are simply not willing to make the sacrifices traditionally deemed necessary to achieve a top administrative position. Instead of devoting time to someone else's company, women are

beginning their own businesses – there are over “6.5 million female-owned businesses, employing more people than all of the Fortune 500 companies combined” (p. 24). Other women are choosing to devote their time to family instead of the office. Similarly, Probert (2005) asserts the gender difference in academia should be investigated more extensively at the demographic level. Divorce, separation and child-rearing all play an important role in determining how much time a woman can devote to career aspirations.

Yet another argument can be made for the fact women with working partners do not need to work, and therefore apply for promotions at a lower rate. Cutler and Jackson (2002) studied the sales force of a major financial institution. With a 64% response rate, all respondents were college graduates, married or partnered, had more than five years experience with the firm and earned more than \$100,000. Fifty-five percent of males had partners who worked full-time, while 100% of females had partners who worked full-time. Controlling for education, training and specialty, only 20% of the females had applied for a promotion and only 25% planned to apply for advancement, while 50% of the males planned to apply for promotion.

In a study of the relationship between the glass ceiling variables and procedural justice, Lemons (2003) asserts an organization may be perceived to be unfair in promotion decisions based upon the lack of female role models, career ladders, and networking opportunities, regardless of the actions of the organization. Bowling, Kelleher, Jones and Wright (2006) contend there are fewer barriers for women to ascend the administrative ladder today than in the past. Reviewing top executives in state government from 1970-2000, there was an increase from 14% to 30% in female heads of social services and income security; female leadership in fiscal agencies increased from 3% to 26% and women’s salaries were 95% of males, up from 89% in the 1970s. The proportion of females in leadership positions increased from one in 20 in 1974 to

one in three in 2004. The largest gender gap was found in agencies dealing with natural resources, the environment, energy, criminal justice and transportation.

Addressing the widely seen gender salary gap, long term job stability has been found to be more important for the wage growth of females than for males. An analysis of data from the 1979-2000 United States National Longitudinal Survey of Youth revealed higher job mobility resulted in lower wages over time. While gender and educational attainment affected job stability and wages for both genders, family related issues resulted in an increased number of females leaving the job market, thus decreasing their earnings potential over time (Fuller, 2005).

Powell and Butterfield (1994) also question the existence of a glass ceiling. Reviewing data from promotion decisions to senior executive positions in the government from 1987 to 1992, neither the gender of the applicant nor the gender of the decision maker were found to have a significant effect on selection. Rather, being employed in the department the position was located, the number of years at the highest employment grade and performance appraisal ratings were significant in promotion decisions.

Nor does Paulson-Gjerde (2002) embrace the notion of a uniform glass ceiling. Examining data from the 1979-1989 National Longitudinal Study of Labor Force Behavior Youth Cohort, this researcher determined females were less likely to be promoted than males, but the rate of promotion varied across occupations. Only in some occupations were women held to a higher standard, therefore, the presence of a uniform glass ceiling does not exist. More recently, Yasin and Helms (2007) question the existence of the glass ceiling, as well. Their findings indicate married women are less likely to be top managers, as family obligations, the number of children or being the head of household caused women not to pursue executive positions.

The lack of females in higher level positions may also be due to differences in the level of commitment to the organization. In a study of 34,833 managers from 11 global companies, males were found to have a greater concern for reward and career development than females. At the senior management levels, male commitment to the organization was linked to developing their income and future career opportunities, whereas female commitment was associated with advancing the business, which females believed, would bring future reward (Kulesa, Masson and Simonds, 2005). Also speaking to organizational commitment, Dodd-McCue and Wright (1996) noted females are less committed to organizations than males, thus accounting for their underrepresentation in upper management.

As these studies indicate, women do play a role in choosing, committing to and advancing in the institutions in which they are employed. Due to individual aspirations, personal or family obligations, women may opt not to pursue the types of activities that are commonly associated with facilitating career advancement. These factors could contribute to the disparity seen between the numbers of males and females in executive positions versus a glass ceiling effect.

Conceptual Framework

Theory of Social Equity

Borrowing from the field of public administration, H. George Frederickson's theory of social equity forms the conceptual framework for this study. "Social equity is a phrase that comprehends an array of value preferences, organizational design preferences, and management style preferences" (Frederickson, 1990, p. 228). First developed in 1968, Frederickson's theory was aimed at identifying the inequality in governmental processes based on race.

Public administration as a field was initially described by Woodrow Wilson in 1880 when he asserted administration should be separated from politics. In contrast to Wilson, Leonard White's position in the first textbook written on public administration in 1926, posited that government and administration must be integrated. After the Depression and New Deal era, government expanded, became more centralized and public social programs were developed. The threads of public administration embedded in these new programs were representativeness, politically neutral competence and executive leadership (Frederickson, 1980).

Several models of public administration developed over time. The classic bureaucratic model emphasized structure, hierarchy and control. The neobureaucratic model stressed logicalness, systems analysis and productivity. Survival, competition and technology were components of the institutional model, while interpersonal relationships, communication, motivation and change were highly regarded in the human relations model. Finally, the public choice model focused on antibureaucracy, economic logic and decentralization (Frederickson, 1980).

In 1980, social equity was added to the objectives of public administration with the key question asking if services offered enhanced equity, with equitable treatment of citizens as the major tenet (Frederickson, 1980). The emphasis of social equity is on equality in services, responsible decision making and programming, change in management, responsiveness to needs of citizens versus organizations and an interdisciplinary approach to problem solving (Frederickson, 1990).

The foundation of social equity theory is based on Stephen Chitwood's work describing vertical and horizontal equity. Vertical equity implies services distributed among heterogeneous people are based on a rationale or criterion for allocation. For example, one person may receive

different goods or services from another because that individual has a different need or qualification than another. Horizontal equity implies there is equal treatment for equal people (Frederickson, 1980). In this type of equity, all people in a given class would receive the same goods or services, regardless of any defining criteria.

The compound theory of social equity describes three levels of equality. “Individual equity consists of one class of equals, and one relationship of equality holds among them” (Frederickson, 1990, p.230). For example, anyone who wants a product or service can obtain it at the same price, regardless of any individual differences in class or criteria. Segmented equity refers to the equity that exists within a certain group or category, e.g. females, but inequity exists between different groups, e.g. males and females. Equal pay for equal work falls into the realm of addressing segmented equity (Frederickson, 1997). The third level, block equity, requires equality between groups or classes (Frederickson, 1990). At this level, males and females would be treated equally. The Civil Rights Act of 1964 and the Equal Employment Act of 1972 address issues of block equity (Frederickson, 1997).

The Theory of Social Equity and Academe

Relating this concept to academe, what is most commonly seen in institutions of higher education is segmented equity. If one compared the salaries, promotion rates and positions of females to other females, equity would be noted. However, when comparing these same factors between males and females, inequity is found. Males generally earn higher salaries, are promoted more often, and attain more upper level positions in educational organizations than do females.

In order to fully utilize the available human capital and comply with legal and ethical standards, institutions of higher education should strive to achieve and maintain block equity.

Legally, the Civil Rights Act of 1964 and the Equal Employment Act of 1972 outlaw discrimination based on race or gender. Ethically, it is important to demonstrate and create an atmosphere of equality and inclusion when assembling a workforce in higher education as an example to the future generations. In such a system, individuals would be hired, promoted and paid at equitable rates, regardless of gender. No longer would females be concentrated in lower and mid level positions, such as department chairs and division heads, or in student affairs or human resources positions. Females would be as equally able to attain executive level leadership positions as males.

Newman (1996) applied Frederickson's theory to her study of equal employment opportunity (EEO) in the Florida State government. While block equity may exist through EEO laws, allowing women to gain entrance to positions in equitable numbers to males, Newman asserts that organizations fail to aid the advancement of women as they do for men, thus perpetuating a system of segmented equity. "Existing EEO policies are unable to remove or even lower many of the obstacles women encounter in the workplace. They are part of the solution but also part of the problem" (Newman, p. 432).

Similarly, Wise (1990) also asserts that segmented equity results from one group, e.g. males, having access to a majority of leadership positions thus providing a framework for inequity. Her work studied the civil service system in the United States in comparison to the system in Sweden. Women in both countries, according to Wise, were found to be more highly concentrated in lower grade level jobs and less likely to be in leadership positions, although the disparity was more pronounced in the United States.

The theory of social equity can be applied to this research on the glass ceiling effect in community colleges, as the underlying tenet of this work is equity. The review of literature

pointed out the barriers to the advancement of women as identified by the Glass Ceiling Commission (1991) and the gender salary gap that exists in academia and the corporate world. Currently, segmented equity exists in academia. That is, equity exists within the genders, but not between genders. Women are concentrated in lower administrative positions, lower ranks and earn lower salaries. Ideally what would be appropriate is for block equity to exist. The concept of block equity can be applied if men and women possessing comparable human capital elements, such as education and experience, are to have equal opportunity and equal access to similar executive positions. However, it has been shown that the societal, internal structural and governmental barriers that exist form a glass ceiling through which women are unable to penetrate to achieve this equity (see Figure 1).

Social Equity

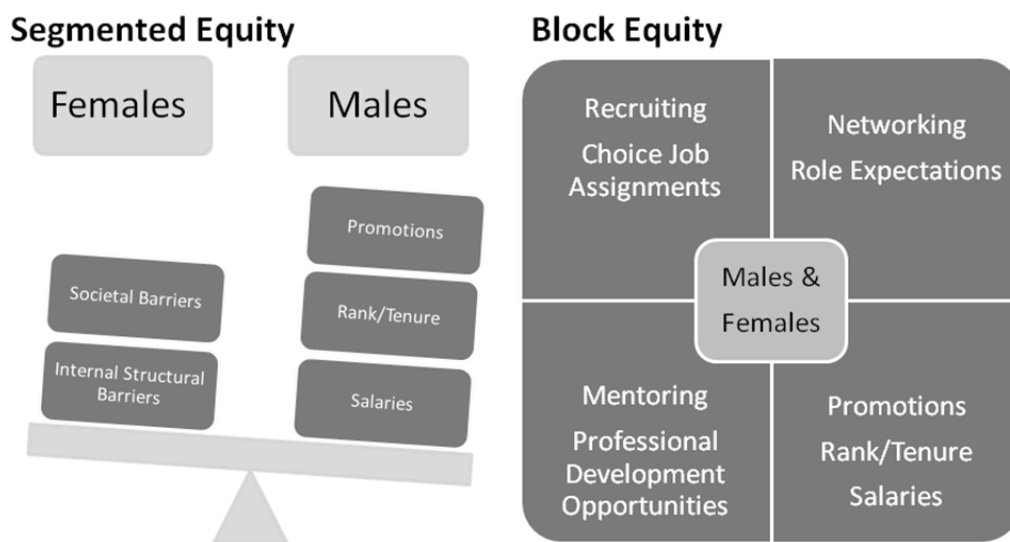


Figure 1: Social Equity Theory as it Relates to the Glass Ceiling Phenomenon

The depiction on the left side of Figure 1 illustrates the concept of segmented equity in higher education. The societal and internal structural barriers women face in the workplace serve to tip the scales in favor of males who receive promotions, rank and tenure and salaries at a higher rate than females. If block equity were achieved, the barriers would no longer be present and males and females would have an equal opportunity in recruitment, choice job assignments and mentoring and professional development opportunities. The societal barriers of stereotypical role expectations for women would disappear and the organizational culture would be such that women would be included in networking and social events. As a result, promotions, rank and tenure and salaries would all be equitable for each gender.

Conclusion

This review of the literature explored the historical perspectives of women in the workplace and legislation related to gender equality (Executive Order 10925, President's Commission on the Status of Women, Equal Pay Act of 1963, Title VII of the Civil Rights Act of 1964, Executive Orders 11246 and 11375, Title IX of the Educational Amendments Act of 1972, Pregnancy Discrimination Act of 1978). Although this legislation was enacted, there still exists a gap in the number of women in upper level management positions in the corporate world.

The Glass Ceiling Commission established that a glass ceiling did in fact exist for women in the corporate and federal workplaces. This artificial obstacle is created when there are attitudinal and organizational barriers, as well as institutional biases that prevent women from advancing in their organizations (Department of Labor, 1995). The literature is convincing in that it establishes the presence of a glass ceiling and a gender wage gap in the corporate world.

Most of the work on the glass ceiling waned after the mid to late 90s. Glazer-Raymo (1999) believes this decline in attention to the problem is because gender equity is no longer a priority – people believe the problem has been resolved. This researcher would agree with this assessment. Because the gender wage gap has narrowed and more women have reached executive levels, government funding for research into the issue has decreased, therefore it seems to no longer be in the forefront. However, in academia, the presence of a gender wage gap and differences in rank and promotion according to gender are still being actively researched. The majority of these studies examine faculty and administrators in four year colleges and universities. While few studies have explicitly linked the lack of females in top executive level academic positions to the glass ceiling effect, a distinct disparity exists between genders in the number of individuals holding these positions in community colleges. Although some dispute it, the evidence suggests otherwise. Females hold greater than 50% of administrative positions in community colleges, but less than 28% of executive offices, thus making the perceptions of the presence of a glass ceiling effect in community colleges an area that needs exploration in this study.

CHAPTER THREE

Methodology

Despite the numerous laws that have been enacted over the years (Equal Pay Act of 1963, Title VII of the Civil Rights Act of 1964, Executive Orders 11246 and 11375 of 1965, Title IX of the Educational Amendment Act of 1972, Pregnancy Discrimination Act of 1978) women remain underrepresented in the upper echelons of the corporate and administrative world. Likewise, in academia, there is a similar disparity in the gender proportionality in administrative positions. Women remain the majority of full-time graduate students and will comprise 57% of college students by the year 2012 (National Center for Education Statistics (NCES, 2002). Additionally, 59% of all degrees and certificates conferred in 2006-07 were earned by women. In community colleges, of the total 6,488,055 students enrolled, 59% were female in the Fall of 2005. The trends show that women will continue to outnumber men in post-secondary attendance and degrees earned (NCES, 2005).

While these figures show a larger number of women are attending college and earning degrees than men, the American Association of Community Colleges (AACC) reports 59% of community college students are female, but only 28% of CEOs are women (AACC, 2009). In the Southern Region of the United States, 43% of full-time administrators at community colleges are women (Southern Regional Educational Board, 2009), but this number includes all administrative positions, from registrar to chief executive officer.

Much of the literature has focused on the issue of gender inequity in management in the corporate world. The literature generated about academia has focused on the wage gap and rank and tenure differences between men and women. Few studies explicitly link the lack of women in administrative positions in academia to the presence of a glass ceiling. Even fewer explore

this phenomenon specifically in community colleges. Thus, utilizing a quantitative approach, this project ultimately sought to determine if the presence of a glass ceiling exists by examining the perceptions of a glass ceiling in community colleges in the United States. A detailed description of the methodology used, including research design, data collection and data analysis procedures, is provided in this chapter.

Research Questions

The primary question for this research was: Does the perception of a glass ceiling exist in community colleges? Additional research questions were:

1. Is there a difference in the perception of the existence of a glass ceiling between males and females?
2. Is there a difference in the perception of facilitators to advancement between males and females?
3. Is there a difference in the perception of barriers to advancement between males and females?
4. For faculty and administrators, to what extent do individual characteristics (gender, marital status, age, and race) influence an individual's perception of the facilitators and barriers to advancement?
5. For faculty and administrators, to what extent do work profile characteristics (hours per week worked, year entered academia, percentage of time spent teaching, researching, and on service and administration) influence an individual's perception of the facilitators and barriers to advancement?
6. For faculty and administrators, to what extent do individual characteristics predict whether an individual is denied a promotion?

7. For faculty and administrators, to what extent do work profile characteristics predict whether an individual is denied a promotion?

Research Design

The ultimate purpose of this research was to determine if the gender inequity in higher education administration in community colleges can be attributed to the same barriers faced by women in the corporate world. Thus, the concept of the glass ceiling effect needed to be validated in the higher education arena and a quantitative approach was utilized. The specific design that was employed for this research was a non-experimental, cross-sectional survey design. A cross-sectional design allows for the measurement of current attitudes or beliefs and can be done in a short period of time (Creswell, 2003).

Appropriate procedure was followed in obtaining approval from the University of New Orleans Institutional Review Board (IRB). Participants were individually contacted through email addresses obtained from the American Association of Community Colleges membership directory, therefore, approval from the IRB of sample colleges was not necessary. Completion of the survey implied consent to participate.

Population and Sample

Population

The population studied was community college faculty, staff and administrators who are members of the American Association of Community Colleges (AACC). The AACC is the “primary advocacy organization for the nation’s community colleges” (AACC website, 2009). Membership consists of over 14,000 faculty, staff and administrators at 1,031 colleges in the United States and its territories, with one member college in Canada.

Sampling Design and Participant Selection

A proportional stratified random sample design was employed. This type of design is useful when it is impractical or impossible to survey all potential participants (Fink, 1995). An online sample size calculator from Creative Research Systems (2009) was used to determine the number of participants needed for this project. With a population of 14,825 potential participants, the calculated sample size was found to be 374 individuals. This calculation was verified using two additional sample size calculators, one from Raosoft, Inc. (2009) and the other from MaCorr, Inc. (2009). Each of these companies is involved in designing and conducting market research.

In examining response rates on email surveys from 1986 to 2000, Sheehan (2001) reported the highest response rate in 1986 at 61.5% and the lowest in 1994 at 19%, with the average being 39.77%. Though this is a good return, the rate has been decreasing over the last 12 years, with a 35.97% response in 1998, 27.5% in 1999 and 24% in 2000 (Sheehan, 2001). Vogt (2007) indicates that in his experience, the best response rate doctoral dissertations have received is 40%. Since the work of Sheehan (2001) indicates the response rate is decreasing, to account for non-responses, a 25% (3,700) proportion for sample size was utilized in anticipation of a 15% response rate.

To ensure representativeness and control for state related anomalies, it was desired to have as equal a representation of participants from each state as possible. First, a list of all community colleges who are members of the AACC was obtained through the AACC member directory. Of the 1,031 colleges, three are located in a United States territory and one is in Canada. These four institutions and their 11 members were excluded from the potential participants to keep any organizational, cultural or governmental differences outside of the United States from affecting

the results. As a result, 1,027 colleges and 14,814 members in the United States and Washington, D.C. were available for selection.

The list of colleges was sorted by state and the number of members from each college was determined. The number of colleges in each state ranged from one each in Washington, D.C. and Rhode Island to 126 in California. An equal proportion of participants from each state and Washington, D.C. was selected to have representation from all areas of the country. To reach the desired number of 3,700 potential participants, 25% of the members of each state were selected. By choosing 25% of the members of each state, a total of 3,749 participants was obtained, which exceeded the target of 3,700 by 49 individuals. To select the individuals from the colleges to be participants, the number of individuals needed from the state was divided by the number of colleges in the state. The quotient was rounded to the next highest whole number and that number was then randomly chosen for inclusion in the sample.

Contacting Participants

Participants were contacted through the use of email communication. Email addresses were obtained through the member directory of the AACC. An introduction to the researcher and the project was given, along with the required informed consent information and an electronic link to the survey. The first email solicitation was sent on June 1, 2010. Participants were asked to complete the survey by June 15, 2010. Anonymity of responses was assured in the initial communication. A number of email replies were received stating the survey had been completed, or asking to be removed from the participant list. These individuals were removed from the contact list, and a follow-up email was sent on June 15, 2010 to those remaining (3,727) thanking individuals for completing the survey and reminding those who had not completed the survey to do so by June 30, 2010. A link to the survey was included in the follow-up email. At

the end of June, 323 responses had been received which did not meet the number necessary to fill the sample. A third follow-up email was sent to 3,719 individuals (again removing those who had replied stating they had completed the survey) on June 28, 2010, asking for completion of the survey as soon as possible. The survey was closed on July 31, 2010 when the number of responses reached 549 and no responses had been received for a one week period of time.

Data Collection

Instrument Selection and Design

Interviews, questionnaires, or a combination of both can be used to collect data in a survey design. A review of the literature on the Glass Ceiling effect resulted in the location of an instrument developed by Lyness and Thompson (2000). In their work studying the pathways to executive positions, the researchers sought to examine careers by investigating perceived facilitators and barriers to advancement, career histories and developmental experiences. During this undertaking, Lyness and Thompson (2000) developed items that comprise two scales: “Items and Scales Measuring Perceived Barriers to Advancement” and “Items and Scales Measuring Perceived Facilitators of Advancement.”

These items and scales incorporate the key elements identified by the Glass Ceiling Commission as being obstacles to women attaining upper level executive positions. The concepts of networking, mentoring, choice job assignments, and institutional culture are all addressed in the scales and thus were useful in helping to address the research questions of this project. These concepts are identified in the literature as being internal structural barriers which contribute to the presence of a glass ceiling.

The first author of the scales, Karen Lyness, was contacted via email in July of 2009 to request permission to use the scales. In late August, Dr. Lyness directed me to obtain permission from the American Psychological Association (APA) as this organization holds the copyright for the scales. On September 9, 2009, application was made to the APA to request permission to use the scales for the purposes of this dissertation. Permission was granted by the APA on October 14, 2009, with the proviso that permission be obtained from the authors. Dr. Lyness was contacted on October 16, 2009 and permission was granted on October 18, 2009.

Validity Determination

Validity of an instrument is necessary in order to draw meaningful conclusions from the data. Content validity is one type of validity that should be evaluated on an instrument. Content validity ensures that the questions asked are representative of the possible questions that could be used to measure what the researcher intends to measure (Creswell, 2003). The subjective opinion of experts can be used to determine the content validity of a survey (Huck, 2004).

The validity of the scales has been established through the original research done by Lyness and Thompson (2000). Each item developed was based upon a review of the literature in each of the areas addressed by the scales, prior research by the investigators and content analysis of interviews with male and female executives. Since the scales were validated in the corporate world, it was necessary to ensure they were valid for the academic realm. Therefore, ten individuals, conveniently chosen, were asked to review the survey for face validity for community college faculty and administrators. These ten individuals, five faculty and five administrators, were colleagues of the researcher employed by a local community college, and were not part of the sample.

Survey Administration

The survey was self-administered through the use of the electronic survey software, QualtricsTM, available through the University of New Orleans. The individuals who reviewed the survey for face validity were also asked to answer the survey prior to it being sent to the sample participants, to ensure the software was working correctly, there were no typographical errors and all links worked properly.

Variables

Dependent Variables

Five dependent variables were considered in this project: perceptions of a positive attitude toward women, perceptions of the existence of a glass ceiling, perceptions of facilitators to advancement, perceptions of barriers to advancement, and promotion. Perceptions of facilitators and barriers were important to consider as the literature indicates a glass ceiling effect may contribute to the gender disparity seen in executive positions. As this research sought to determine if the perception of a glass ceiling exists in community colleges and if the perceptions of males and females differ, the perceptions of facilitators, barriers, a positive attitude toward women and the existence of a glass ceiling were instrumental in addressing this query. Promotion refers to an individual's attempt to advance in an organization, either through a promotion-in-rank or as a promotion in administrative position. It was important to determine whether an individual applied for a promotion and whether or not that promotion was received. If a promotion was not received, the perception of the reasons is germane to establishing the perception of a glass ceiling effect.

Independent Variables

The independent variables used in the data analysis were grouped as individual characteristics and work profile characteristics. Individual characteristics included gender, marital status, age and race. Work profile characteristics included hours per week worked, year entered academia, percentage of time spent teaching, researching and on service and administration.

Individual Variables

- Gender – male versus female. The underlying tenet of this research lies in gender equity, therefore, gender of participants had to be known.
- Marital status – Single; Married/Partnered. Some studies reviewed for this project indicate women who are married may have less of a commitment to career advancement due to family responsibilities, making this variable important to ascertain.
- Year born – a drop down menu was available to choose a year from 1930 to 1990. Similar to the year entered academia, the age of an individual may influence perceptions and had to be considered in this research.
- Race/Ethnicity – African-American; Asian; Caucasian; Hispanic; Native American; Other. The body of work related to race/ethnicity and the glass ceiling is well established. It was important to discover if race played a role in the findings of this study which could have influenced perceptions of the participants.

Work Profile Variables

- Hours per week worked – participant were given a range from which to choose: 0-10; 11-20; 21-30; 31-40; 41-50; 51-60; >60 hours. Studies (Ashraf, 1996; Dodd-McCue & Wright, 1996) indicate the number of hours per week worked correlate to the

commitment to the job and therefore are tied to promotion, making this variable a key to determining whether or not an individual is promoted.

- Year entered academia –a drop down menu was available to choose a year from 1950 to 2010. To determine if perceptions and promotions are related to the cohort effect discussed in the literature, it was vital to include this information.
- Percentage of time spent teaching – ranges given were 0-20%; 21-40%; 41-60%; 61-80%; 81-100%
- Percentage of time spent on research - ranges given were 0-20%; 21-40%; 41-60%; 61-80%; 81-100%
- Percentage of time spent on service - ranges given were 0-20%; 21-40%; 41-60%; 61-80%; 81-100%
- Percentage of time spent on administration - ranges given were 0-20%; 21-40%; 41-60%; 61-80%; 81-100%

These variables are all germane to the perceptions an individual may have of the barriers leading to the presence of a glass ceiling, as well as the actual existence of one. The literature reviewed indicates women are often concentrated in lower ranking positions in academia, which typically have higher teaching and service requirements. These assignments leave little time for research and administration which are linked to promotions in rank and position, thus, it was essential to determine if these factors played a role in the findings of this study.

Data Analysis

Coding and Entering Data

The Qualtrics[®] software utilized allowed responses to be electronically downloaded in Statistical Package for the Social Services (SPSS) format. Once the data was in SPSS (version 16), several variables had to be recoded to be used in analysis. Two questions related to the perception of a glass ceiling effect had to be reverse scored and transformed into new variables so the responses matched the Likert scale scoring of the scales of the Perceived Barriers and Perceived Facilitators and accurate mean scores could be obtained for analysis. Because the item “Barriers exist to the advancement of women in my organization” and “A glass ceiling hinders the advancement of women in my organization” were highly correlated ($r = .83$) a grand mean for the two items was determined and a new variable computed (Barriers/Glass Ceiling) to be used in the analysis of variance.

Five factors were identified in the factor analysis, two facilitators and three barriers factors. For use in the gender differences computations, a composite mean score/variable was created for the items that made up the “relocation” barriers factor. The items making up the “internal structural/job opportunities” and “organizational culture” factors were highly correlated ($r = .74$), so another composite mean variable was created for use in the ANOVA. Mean scores for the remaining factors identified in the factor analysis were computed for use in the analysis of variance. Additionally, dummy variables for use in the regression analyses were created for gender, marital status, age, race, hours per week worked, year entered academia and percentage of time spent teaching, researching, on service and administration. The variable descriptions and codes used are depicted in Table 4.

Table 4

Variable Descriptions and Assigned Codes

Variables	Assigned Codes
Barriers/Glass Ceiling	= mean of Glass Ceiling Questions 1 and 3
Barrier Internal Structural/Organizational Climate	= mean of items in Barriers Factor 1 (Internal Structural) and Barriers Factor 3 (Organizational Climate)
Relocation	= mean of items in Barriers Factor 2 (Relocation)
Mentoring	= mean of items in Facilitators Factor 1 (Mentoring)
Experience/Opportunities	= mean of items in Facilitators Factor 2 (Experience/Opportunities)
Gender	= 1 if male; 0 = female
Marital	= 1 if married/partnered; 0 = single
AA	= 1 if African American; 0 = otherwise
Asian	= 1 if Asian; 0 = otherwise
Caucasian	= 0 in all categories (referent)
Hisp	= 1 if Hispanic; 0 = otherwise
NA	= 1 if Native American; 0 = otherwise
Oth	= 1 if other race; 0 = otherwise
Twenties	= 1 if age in twenties; 0 = otherwise
Thirties	= 1 if age in thirties; 0 = otherwise
Forties	= 1 if age in forties; 0 = otherwise
Fifties	= 0 if age in fifties in all categories (referent)
Sixties	= 1 if age in sixties; 0 = otherwise

(table 4 continued)

Independent Variables	Assigned Codes
Seventies	= 1 if age in seventies; 0 = otherwise
HoursWorked	= 1 if worked 41-50 hours per week; 0 = otherwise
Teach	= 1 if taught 0-20% of time; 0 = otherwise
Research	= 1 if research 0-20% of time; 0 = otherwise
Service	= 1 if service 0-20% of time; 0 = otherwise
Admin	= 1 if administration 81-100% of time; 0 = otherwise
YearEntered	= 1 if entered academia in 1980s; 0 = otherwise

Using a 5-point Likert scale, the responses for the facilitators to advancement items were coded 1 for “not a facilitator”, 2 for “somewhat of a facilitator,” 3 for “a facilitator,” “4 for “an important facilitator,” and 5 for “a very important facilitator.” Responses for the barriers to advancement items were coded 1 representing “no problem at all”, 2 for “somewhat of a problem,” 3 for “a problem,” 4 for “a serious problem,” and 5 for “a very serious problem.”

SPSS requires determining how missing or unusable data were to be handled (Leech, Barrett, & Morgan, 2005). Missing data was coded 999. If a respondent did not complete both the facilitators and barriers items and the demographic data, the responses were determined unusable and were not included in the data analysis.

Descriptive Statistics

Using SPSS, frequencies for demographic information were run in order to describe the sample. Personal characteristics included gender, year born, marital status and race/ethnicity. Frequencies of work profile characteristics (year entered academia, number of hours per week

worked, percentage of time spent teaching, researching, on service and administration) were also determined. The level of education, as well as, the number of respondents having academic rank, and what that rank was, was computed. Responses to the questions of whether or not an individual had ever applied for a promotion not received, the reason communicated as to why the promotion was not received, and the respondent's perception of the reason promotion not received were tabulated. As a measure of central tendency, the mean of survey responses was determined, with the standard deviation ascertained as a measure of variability.

Factor Analysis

In keeping with the definition, a glass ceiling effect is said to exist if there are societal, internal structural and/or governmental barriers that prevent an individual from advancing to a higher level position. Using SPSS, principal axis factoring with oblique rotation was conducted on the survey items that make up the *Facilitators and Barriers to Advancement Scales*. By using exploratory factor analysis, it was possible to determine the relationships among the variables and if the responses to items of the same construct were similar (Leech, Barrett & Morgan, 2005). This was important in determining the reliability of the chosen scales, thus validating them. Oblique rotation with the direct oblimin method was used as it was assumed the factors were correlated, moving regression lines so that factor loadings were most heavily represented in only one factor. By rotating the data, "the correlations among the items in a factor are raised, but the correlations among the factors are lowered" (Vogt, 2007, p. 240).

In addition to determining the overall reliability of the scales, factor analysis was used to identify specific variables within each scale. For example, in the original work of Lyness and Thompson (2000) "difficulty getting geographic mobility opportunities" and "difficulty getting

developmental assignments” were identified as factors within the barriers scale, while “having a good track record” and “mentoring” were factors within the facilitators scale.

The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett’s Test of Sphericity were run with each factor analysis. The Kaiser-Meyer-Olkin measure tests whether or not the size of the sample was adequate to perform a valid factor analysis, while Bartlett’s Test helps make the determination of whether or not the correlation matrix in a factor analysis is “significantly different from an identity matrix” (Field, 2009, p.648). An identity matrix indicates variables do not correlate with other variables, and thus a factor analysis would be invalid (Field, 2009).

Reliability Determination

Reliability and validity of questionnaires needs to be assessed prior to using an instrument. Internal consistency reliability is necessary to establish to ensure accuracy of results, with the goal of this process being to determine the extent to which data are consistent. The coefficient alpha, or Cronbach’s alpha may be used to establish internal consistency with a Likert-scale questionnaire (Huck, 2004). This type of reliability can be demonstrated by the use of a reliability coefficient, which “assumes a value somewhere between 0.00 and +1.00, with these two ‘end points’ representing situations where consistency is either totally absent or totally present” (Huck, p.76).

Two studies were located in which the Perceived Barriers and Perceived Facilitators Scales have been used. The first study, conducted by the authors of the scales, was conducted with a sample of 52 women and 48 men who held staff and management positions in a multinational financial services corporation (75% and 70% response rates). Coefficient alphas for the scales comprising perceived barriers ranged from .69 for the “difficulty getting geographic mobility

opportunities” scale to .84 for the “difficulty getting developmental assignments” scale. The perceived facilitators scales had similar reliability, with the coefficient alphas ranging from .70 for the “having a good track record” scale to .90 for the “mentoring” scale (Lyness & Thompson, 2000).

The second study using the scales was completed by Tai and Sims (2005). In this investigation, the researchers sought to determine the perception of a glass ceiling effect in high technology companies. A sample of 177 males and 141 females who were employees of high technology companies (56% and 44% response rates) participated. Cronbach’s alpha for the perceived barriers scales was reported to be higher than in Lyness and Thompson’s (2000) study, ranging from .77 for the “difficulty in getting geographic mobility opportunities” scale to .87 for “difficulty getting developmental assignments” scale. The perceived facilitators scales results were consistent with Lyness and Thompson’s, with the Cronbach’s alpha of .84 for “developing relationships” scale and .89 for “developmental assignments” scale.

The reliability of the scales for this project was determined by utilizing the “reliability analysis” function in SPSS. An analysis of each of the scales identified as a factor was performed with inter-item correlation matrix, Cronbach’s alpha if item deleted and item-total statistics included in the output.

Analysis of Gender Differences

Using statistics, inferences about a population can be made from sample data, with the ability to test a hypothesis to determine any differences between groups (Gravetter & Wallnau, 2004). The six step version of hypothesis testing, as described by Huck (2004) was utilized. The hypotheses related to gender differences were as follows.

Research Question Number One:

H₁: There is a statistically significant difference in perception between males and females in regard to the existence of a glass ceiling effect in community colleges

Research Question Number Two:

H₂: There is a statistically significant difference in perception between males and females in regard to facilitators to advancement in community colleges

Research Question Number Three:

H₃: There is a statistically significant difference in perception between males and females in regard to barriers to advancement in community colleges

The level of significance is a “scientific cutoff point to determine whether the sample data are consistent or inconsistent” (Huck, 2004, p. 163) with the null hypothesis. The level of significance for this project was set at .01. At this level, there was a 1% chance of committing a Type I error (rejecting the null hypothesis when it is true; for example, stating there is a difference in the perceptions of males and females when there is not). This conservative level was chosen because three separate analyses were needed to determine the difference in perceptions for each scale, Barriers to Advancement (2 factors), Facilitators to Advancement (2 factors) and the perception of a glass ceiling (2 items). A more liberal level of .05 would have increased the likelihood of Type II error occurring (failing to reject the null hypothesis when it is false; for example, stating there is not a difference in the perceptions of males and females when there is) (Huck).

In examining the perceptions of the participants related to the items pertaining to the perception of a glass ceiling and to test the difference in perceptions related to the Facilitators and Barriers to Advancement, an analysis of variance (ANOVA) was run for each. An ANOVA

“is used to evaluate mean differences between two or more treatments or populations” (Gravetter & Wallnau, 2004, p. 397).

Using SPSS, the compare means command with the one-way analysis of variance was executed. For perceptions related to the glass ceiling, dependent variables were Barriers/Glass Ceiling and the item “in my organization a positive attitude exists toward women in upper management positions” with gender being the grouping variable. The dependent variables entered for the Facilitators to Advancement were the mean of facilitator Mentoring items and the mean of facilitator Experience/Opportunities items. Gender was the fixed factor (independent variable). Levene’s statistic for homogeneity of variance was run to verify the assumptions of ANOVA in regard to variance were being met. ANOVA assumes the variance between each group is similar and Levene’s test “tests the null hypothesis that the variances in different groups are equal” (Field, 2009, p.150). The ANOVA was followed with Bonferroni’s post-hoc test to test the robustness of the differences between the groups. According to Field, this particular procedure is considered conservative, but more powerful than Tukey’s, when the number of means to compare is small. Effect size was manually calculated by dividing the between groups sum of squares by the total sum of squares and then taking the square root of the quotient.

A one way analysis of variance was also used for the Barriers to Advancement scale factors. Dependent variables entered were Internal Structural/Organizational Climate and Relocation, with gender as the grouping variable. Because Levene’s test for homogeneity of variance for the Internal Structural/Organizational Climate variable was significant, the variance ratio was calculated. “In large samples Levene’s test can be significant even when group variances are not very different. Therefore, it should be interpreted in conjunction with the variance ratio” (Field, 2009, p.152). Again, the Bonferroni post-hoc test was employed.

Regression Models

Regression analysis can be used to explain differences in variables or predict one based on another. Multiple regression involves a single dependent variable, but two or more independent variables (Huck, 2004). In order to answer the following research questions, multiple regression analysis was performed using SPSS.

4. For faculty and administrators, to what extent do individual characteristics (gender, marital status, age and race) influence an individual's perception of the facilitators and barriers to advancement?
5. For faculty and administrators, to what extent do work profile characteristics (percentage of time spent teaching, researching, and on service and administration) influence an individual's perception of facilitators and barriers to advancement?

Sequential (hierarchical) linear multiple regression was utilized creating 10 models. The number of faculty respondents was 33, not meeting the sample size requirement for regression based on the number of predictors, therefore, perceptions of faculty and administrators were analyzed collectively. It was necessary to construct the models using each of the five separate variables identified in the factor analysis. Dependent variables were the composite mean of the factors identified during the factor analysis (three barriers variables and two facilitators variables). The models created each used the same independent dummy variables, referred to in Table 4, added to the model one at a time in this order: individual characteristics (gender, marital status, age and race), work profile characteristics (hours per week working in current job, percentage of time spent teaching, researching and on service and administration, and year entered academia).

Logistic regression analysis using SPSS was used to answer the final two research questions.

6. For faculty and administrators, to what extent do individual characteristics predict whether an individual is denied a promotion?

7. For faculty and administrators, to what extent do work profile characteristics predict whether an individual is denied a promotion?

Using the binary logistic regression command, independent variables were entered in the model in the same order as was used for the multiple regression models. The dependent variable, promotion, was a dichotomous variable which was answered with a “yes” or “no” as to whether or not an individual was denied a promotion.

“Multicollinearity exists when there is a strong correlation between two or more predictors in a regression model” (Field, 2009, p. 223). This presents an issue in regression because if there is a strong relationship between predictors, then accurate regression coefficients are hard to determine. To detect whether multicollinearity exists, the tolerance statistic can be analyzed and should be greater than 0.1 (Field, 2009). For each of the regression models tested in this research, the tolerance statistic was analyzed to determine if multicollinearity existed.

Summary

A quantitative, cross-sectional survey design utilizing proportional, stratified random sampling was employed to determine the existence of a perception of the glass ceiling effect in community colleges. A survey incorporating the “Items and Scales Measuring Perceived Barriers to Advancement” and “Items and Scales Measuring Perceived Facilitators of Advancement” was utilized to assess the perceptions of faculty, staff and administrators in community colleges through a self-administered questionnaire taken by electronic methods.

Using SPSS, data analysis consisted of determining descriptive statistics of the sample, internal consistency reliability using Cronbach's alpha, principle factor analysis using oblique rotation with the direct oblimin method, analysis of variance for gender differences in perception, and multiple and logistic regression creating models using individual and work profile characteristics. The statistical analysis utilized to answer each research question is depicted in Table 5.

Table 5

Summary of Statistical Analyses used to Answer Research Questions

Question	Type of Analysis	Independent Variables	Dependent Variables
One	ANOVA	Gender	Perceptions of Existence of a Glass Ceiling
Two	ANOVA	Gender	Perceptions of Facilitator Mentoring Perceptions of Facilitator Experience/Opportunities
Three	ANOVA	Gender	Perceptions of Barriers Internal Structural/ Organizational Climate Perceptions of Barrier Relocation
Four	Linear Regression	Individual Characteristics	Perceptions of Facilitator Mentoring Perceptions of Facilitator Experience/Opportunities
Four	Linear Regression	Individual Characteristics	Perceptions of Barrier Internal Structural Perceptions of Barrier Relocation Perceptions of Barrier Organizational Climate

(table 5 continued)

Question	Type of Analysis	Independent Variables	Dependent Variables
Five	Linear Regression	Work Profile Characteristics	Perceptions of Facilitator Mentoring Perceptions of Facilitator Experience/Opportunities
Five	Linear Regression	Work Profile Characteristics	Perceptions of Barrier Internal Structural Perceptions of Barrier Relocation Perceptions of Barrier Organizational Climate
Six	Logistic Regression	Individual Characteristics	Promotion
Seven	Logistic Regression	Work Profile Characteristics	Promotion

CHAPTER FOUR

Results

The purpose of this study was to determine the existence of a glass ceiling effect within community colleges by examining faculty, staff and administrator's perceptions of a glass ceiling as it relates to the advancement of women at their institutions. The survey instrument used was the items that comprise two scales: "Items and Scales Measuring Perceived Barriers to Advancement" and "Items and Scales Measuring Perceived Facilitators of Advancement" developed by Lyness and Thompson (2000).

The information presented in this chapter will be organized as follows: findings of face validity panel; response rate; factor analysis; reliability of scales; and descriptive statistics of the participants on independent variables (gender, age, race, marital status, level of education, position, year entered academia, rank, percentage of time spent teaching, researching, on service and administration, and hours per week worked). The research questions will then be addressed individually with inferential statistical analysis results relative to each question.

Validity Findings

The five community college faculty and five administrators the survey was sent to all responded to the request for feedback. The expert panel unanimously agreed the items on the survey had relevance to the community college setting. It was therefore concluded the items were appropriately valid for this project.

Factor Analysis

Principle axis factoring using oblique rotation resulted in the identification of three factors related to Barriers to Advancement and two factors related to Facilitators to Advancement. The sample size was deemed “superb” (Fields, 2009, p.659) on the basis of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy equal to .96 for barriers and KMO = .95 for facilitators, whereby values greater than 0.9 are considered superb according to Field. Bartlett’s test of sphericity was found to be significant for both barriers ($\chi^2(325) = 8.35, p < .001$) and facilitators ($\chi^2(210) = 6.42, p < .001$) indicating there were relationships between the variables.

Analysis indicated three components of the barriers had eigenvalues greater than 1 and were retained as the three factors. The first component explained 52.3% of the variance and the collective variance explained by all three factors was 63.1%. Examination of eigenvalues for facilitators indicated two components had values greater than 1. A total of 60.2% of the variance was explained by these two factors, with Factor 1 accounting for 48.4% of that number. Appendix A lists all barriers items with corresponding factor loadings and Appendix B lists the facilitators items with factor loadings.

The first barriers variable included items that related to internal structural barriers and job opportunities. The items clustered around the second barriers variable were all related to relocation, while the third barriers variable was associated with organizational culture as a barrier to advancement. Items of the facilitators clustered primarily into two factors, with the first reflective of mentoring relationships and the second dealing with experience and job opportunities as a catalyst for career advancement.

Reliability

Each of the factors identified in the factor analysis was considered a scale of the survey instrument with the reliability of each determined. The three barriers factors all revealed a high reliability (Cronbach's $\alpha = .96$ for Factor 1; $.70$ for Factor 2; $.83$ for Factor 3). According to the corrected item-total correlation, all items correlated with the total barriers questionnaire, having values greater than 0.3 . The two facilitators factors were also highly reliable (Cronbach's α of $.90$ and $.94$). Additionally, all items correlated with the total facilitators questionnaire with values greater than 0.3 . Based on these findings, the barriers and facilitators scales were deemed to be reliable in this project.

Descriptive Statistics

The survey was distributed to 3,749 individuals as discussed previously in Chapter Three. Five hundred forty-four (544) responses were received which equates to a 15% response rate. Responses were considered usable if the items on both the facilitators and barriers scales, as well as demographic data, were answered. After reviewing the data for these criteria, of the total number of responses, 457 were ultimately included in the statistical analysis.

Pertaining to personal characteristics, demographically, 69.8% of the participants were female. The range of ages was 25 to 74, with a mean age of 53.8 years and mode of 58 years. Caucasian was the majority race (81.2%), followed by African-American (9%) and Hispanic (5.3%). Three hundred sixty-one (79%) individuals reported being married or partnered. Having a master's degree was the predominant educational level (51.2%), while 40.3% of the sample had a doctoral degree. When asked to list their current position, 35.9% described themselves as being executive administrators, 20.8% chose staff/administrator, 19.9% were

division/department heads, 15.8% were deans and 7.4% were faculty. Table 6 depicts the basic demographic make-up of the participants.

Table 6

Demographics

Variable	<i>n</i>	%	<i>M</i>
Female	319	69.8	
Male	135	29.5	
Age			53.8
Caucasian	371	81.2	
African-American	41	9.0	
Hispanic	24	5.3	
Other	11	2.4	
Asian	5	1.1	
Native American	4	0.9	
Married/Partnered	361	79.0	
Single	94	20.6	
Master's Degree	234	51.2	
Doctoral Degree	184	40.3	
Bachelor's Degree	29	6.3	
Associate Degree	9	2.0	
Executive Administrator	164	35.9	

(table 6 continued)

Variable	<i>n</i>	%	<i>M</i>
Division/Department Head	91	19.9	
Staff/Administrator	95	20.8	
Faculty	34	7.4	

The participants were asked to respond to questions related to work profile characteristics. The mode for the year entered academia was 1990, with 19 participants (4.2%) beginning that year, while the range was from 1960 (one participant) to 2009 (3 participants). By decade, 27% of participants entered in the 1980s, and another 27% in the 1990s; 22% began in the 2000s; 20% started in the 1970s and 3% entered academia in the 1960s. Of those who reported having rank (28%), 49.5% were at the professor level, 17% were associate professors, 9.5% assistant professors and 2.4% were instructors. These characteristics are indicated in Table 7.

Table 7

Work Profile Characteristics

Variable	<i>n</i>	%
YearEntered2000s	101	22
YearEntered1990s	123	27
YearEntered1980s	125	27
YearEntered1970s	93	20
YearEntered1960s	15	3
Have Rank	128	28%
Do Not have Rank	328	71.8%
Professor	52	49.5%
Associate Professor	18	17%
Assistant Professor	10	2.2%
Instructor	25	2.4%

The respondents who indicated they held academic rank were prompted to specify how much of their time was spent engaged in the following activities: teaching, researching, service and administration. The results are presented in Table 8.

Table 8

Percentage of Time Engaged in Selected Activities for Respondents with Academic Rank

Variable	<i>F</i>	%
Teach0-20	73	16
Teach21-40	5	1.1
Teach41-60	3	0.7
Teach61-80	6	1.3
Teach81-100	9	2.0
Res0-20	68	14.9
Res21-40	8	1.8
Res41-60	2	0.4
Serv0-20	47	10.3
Serv21-40	24	5.3
Serv41-60	6	1.3
Serv61-80	3	0.7
Serv81-100	2	0.4
Admin0-20	14	3.1
Admin21-40	9	2.0
Admin41-60	11	2.4
Admin61-80	18	3.9
Admin81-100	70	15.3

Responses to individual survey items and the composite means of the factors were also examined. Participants were asked to respond to the items related to barriers to advancement using the following scale: 1 represented “no problem at all”, 2 was “somewhat of a problem,” 3 for “a problem,” 4 for “a serious problem,” and 5 for “a very serious problem.” The facilitators to advancement items were coded 1 for “not a facilitator,” 2 for “somewhat of a facilitator,” 3 for “a facilitator,” 4 for “an important facilitator,” and 5 for “a very important facilitator.” Items related to the glass ceiling also were answered using a 5 point Likert scale, with 1 equal to “strongly disagree,” 2 for “disagree,” 3 represented “neutral or no opinion,” 4 for “agree,” and 5 for “strongly agree.” Items one and three (barriers exist, glass ceiling hinders) were reverse scored for analysis.

Means on individual barriers items ranged from 1.21 on “international experience” to 2.48 on “people recommend people like themselves” indicating participants generally identified the barriers as somewhat of a problem to a problem, but not as serious or very serious problems. Items related to the facilitators to advancement had means ranging from 2.78 on “help from mentor in establishing key relationships” to 4.12 on “having a good track record.” These indicate most items were considered facilitators to important facilitators to career advancement. A complete list of all items with means and standard deviations can be found in Appendix C. Table 9 represents the three items related specifically to the perception of the existence of a glass ceiling effect.

Table 9

Means and Standard Deviations of Glass Ceiling Effect Items

Item	<i>M</i>	<i>SD</i>
Barriers exist to the advancement of women	3.69	1.21
A positive attitude exists toward women	3.80	1.21
A glass ceiling hinders the advancement of women	3.74	1.13

Note. 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral or No opinion; 4 = Agree; 5 = Strongly Agree

As depicted, participants were between neutral and disagreeing that barriers to the advancement of women exist in their institution. Likewise, responses were similar on the item of a glass ceiling hindering the advancement of women in their institution. Finally, a positive attitude toward women in their institution garnered responses hovering between neutral and agreeing.

When examining the means of the factors that make up the scales of the survey, it can be seen that the internal structural variable has a mean of 2.08 (*SD* = .92) indicating, overall, participants saw these items as somewhat of a problem for career advancement. Relocation was considered less of a problem (mean = 1.54, *SD* = .67). With a mean of 1.87 and standard deviation of .92, organizational culture was considered closer to somewhat of a problem. Mentoring was seen to be a facilitator (mean = 3.12, *SD* = 1.09) while experience/job opportunities was seen to be more of an important facilitator to advancement. These variables are detailed in Table 10.

Table 10

Means and Standard Deviations of Barrier and Facilitator Variables

Variable	<i>M</i>	<i>SD</i>
Internal Structural	2.08	.92
Relocation	1.54	.67
Organizational culture	1.87	.92
Mentoring	3.12	1.09
Experience/Opportunities	3.69	.82

Note. Barriers: 1 = No problem; 2 = Somewhat of a problem; 3 = A problem; 4 = A serious problem; 5 = A very serious problem. Facilitators: 1 = Not a facilitator; 2 = Somewhat of a facilitator; 3 = A facilitator; 4 = An important facilitator; 5 = A very important facilitator

Considering the mean scores of the variables by gender reveals females have a higher mean score on the Internal Structural variable than males, indicating they perceive internal structural and job opportunities to be more of a barrier than males. The same is seen for Organizational Culture – women have a higher mean score on these items than males pointing to the perception of a greater barrier in this area. The means of the Relocation variable and the Mentoring and Experience/Opportunities variables are similar for both males and females. This information can be found in Table 11.

Table 11

Means and Standard Deviations of Barrier and Facilitator Variables by Gender

Variable/Gender	<i>M</i>	<i>SD</i>
Internal Structural – Male	1.87	.85
Internal Structural – Female	2.20	.95
Relocation – Male	1.29	.61
Relocation - Female	1.28	.56
Organizational Climate - Male	1.65	.75
Organizational Climate – Female	1.96	.98
Mentoring – Male	3.10	1.03
Mentoring - Female	3.11	1.13
Experience/Opportunities – Male	3.69	.77
Experience/Opportunities - Female	3.69	.85

Note. Barriers: 1 = No problem; 2 = Somewhat of a problem; 3 = A problem; 4 = A serious problem; 5 = A very serious problem. Facilitators: 1 = Not a facilitator; 2 = Somewhat of a facilitator; 3 = A facilitator; 4 = An important facilitator; 5 = A very important facilitator

The mean scores of the three items related to the perception of a glass ceiling effect revealed males were at the higher end of the scale between disagreeing and strongly disagreeing that barriers exist to the advancement of women and that a glass ceiling hinders the advancement of women in their organizations. Males also rated higher between agreeing and strongly agreeing that a positive attitude toward women existed in their institution. Listed in Table 12 are the mean scores and standard deviations by gender for these three items.

Table 12

Means and Standard Deviations of Glass Ceiling Items by Gender

Item/Gender	<i>M</i>	<i>SD</i>
Barriers exist – Male	4.28	.91
Barriers exist – Female	3.45	1.24
Positive attitude exists – Male	4.22	.92
Positive attitude exists – Female	3.62	1.16
Glass ceiling hinders – Male	4.31	.90
Glass ceiling hinders – Female	3.49	1.13

Note. 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral or No opinion; 4 = Agree; 5 = Strongly Agree

Gender Differences

Research Question Number One

The first research question sought to determine if there was a difference in the perception of the existence of a glass ceiling between males and females. Levene's test for homogeneity of variance was significant on the "a positive attitude toward women exists in my institution" item, $F(2,454) = 9.49, p < .001$ and the Barriers/Glass Ceiling variable, $F(2,454) = 11.11, p < .001$, therefore, the variance ratio was calculated yielding a result of 1.1, indicating the variance is essentially equal and the assumptions of the ANOVA have not been violated.

It was found there was a significant difference in perception on the "positive attitude toward women" item, $F(2,454) = 15.03, p < .001$, indicating males agreed more than females about the existence of a positive attitude. Post hoc analysis with Bonferroni's correction

required an alpha level of .025, which was met. The calculated effect size, $r = .25$, is considered to be small (Huck, 2004).

Examining the results of the ANOVA on the Barriers/Glass Ceiling variable, a significant difference in perception between males and females was found, $F(2,454) = 28.79, p < .001$ indicating males disagreed more than females that barriers exist and a glass ceiling hinders the advancement of women. Post hoc analysis revealed the alpha level requirement was met. Calculated effect size, $r = .34$, is medium (Leech, Barrett & Morgan, 2005).

Research Question Number Two

Factor analysis of the items making up the “Facilitators to Advancement” scale yielded two factors: mentoring and experience/job opportunities. These two variables were used in the analysis of variance to answer the second research question which sought to reveal if there was a difference in the perception of facilitators to advancement between males and females.

Levene’s test of homogeneity of variance was nonsignificant for the two variables: Mentoring, $F(2,454) = 2.49, p > .05$; Experience/Opportunities, $F(2,454) = 2.28, p > .05$, indicating assumptions of ANOVA were intact. It was found there was no significant difference in the perception of facilitators to advancement between the genders, as presented in Table 13.

Table 13

Results of ANOVA for Facilitators to Advancement

Variable	<i>SS</i>	<i>df</i>	<i>F</i>	<i>p</i>
Mentoring	.40	2	.17	.85
Experience/Opportunities	.04	2	.02	.97

Research Question Number Three

Barriers to advancement were the subject of research question number three: Is there a difference in the perception of barriers to advancement between males and females? For this question, the bivariate correlation of items revealed a high correlation between the variables Internal Structural and Relocation, $r = .72$. A high correlation between Internal Structural and Organizational Climate was also found ($r = .74$). The correlation between Relocation and Organizational Climate was equal to .50. When a high correlation between variables is present, the researcher should consider computing a composite variable (Leech, Barrett & Morgan, 2005), which was done by combining Internal Structural and Organizational Climate. However, because these variables represent a different construct (internal structural barriers/job opportunities, organizational culture) than relocation, the variables were not combined with the Relocation variable.

Levene's test for homogeneity of variance was nonsignificant for Relocation, $F(2,454) = 1.07, p > .05$. For Internal Structural/Organizational Climate, Levene's test was significant $F(2,453) = 5.82, p > .05$, therefore the variance ratio was calculated, yielding a result of 1.01. Based on this result, the variance was determined to be essentially equal, and the assumptions of ANOVA had not been violated.

A significant difference in perception between genders was found with Internal Structural/Organizational Climate, indicating females consider the items related to internal structural barriers/job opportunities and organizational culture to be somewhat more of a problem than do males, although effect size is small, $r = .17$. Post hoc analysis with Bonferonni's test revealed a significance level of .001. Regarding Relocation, there was no significant difference in perception by gender related to these items. These results are outlined in Table 14.

Table 14

Results of ANOVA for Barriers to Advancement

Variable	<i>SS</i>	<i>df</i>	<i>F</i>	<i>p</i>
Internal Structural/Organizational Climate	9.90	2	6.79	.001
Relocation	.81	2	.88	.42

Research Question Number 4

It was desired to determine how the individual characteristics of gender, marital status, age and race influence an individual's perception of the facilitators and barriers to advancement. Multiple regression analysis was conducted using the following models: gender (Block 1); gender and marital status (Block 2); gender, marital status and age (Block 3); and gender, marital status, age and race (Block 4).

Individual characteristics were nonsignificant in predicting an individual's perception of Mentoring with gender accounting for no variance ($R^2 = .00$) in the model, and adjusted $R^2 = -.002$, indicating the generalization to the population is less than would be expected by chance. In the second step, marital status did not add much value to the model, with variance (R^2

= .002) and adjusted R^2 remaining less than would be expected by chance ($R^2 = -.002$). The combination of gender, marital status and age increased the variance accounted for ($R^2 = .013$), while the final model with all variables entered accounted for 2.2% of the variance, with adjusted $R^2 = -.005$. Individual characteristics were also nonsignificant when considering Experience/ Opportunities, with adjusted $R^2 = -.014$ when all variables were entered into the model, indicating this is less than would be expected by chance. Means, standard deviations and intercorrelations can be found in Appendix D.

Perceptions of Internal Structural variable items were found to be significantly influenced by individual characteristics. In Block 1 of the model, gender accounted for only 2.4% of the variance in the model, but the ANOVA indicated the model was significant, $F(1,449) = 10.96$, $p < .01$. With gender and marital status in the model, variance accounted for increased to 2.5%, while the ANOVA remained significant, $F(2,448) = 5.76$, $p < .01$, with gender being a significant predictor. Block 3 of the model added age, which revealed gender and an age in the twenties ($b = .13$, $p < .01$), and an age in the sixties ($b = -.10$, $p < .05$) were found to be significant predictors. Race was added to the model in Block 4. This final model was found to be significant, $F(12,438) = 2.64$, $p < .01$, with gender and age in the twenties being the variables that significantly predicted perceptions of internal structural barriers in all steps of the model. In Appendix E, the means, standard deviations and intercorrelations are outlined, while the regression analysis summary results for internal structural barriers can be found in Table 15.

Table 15

Hierarchical Multiple Regression Analysis Summary for Individual Characteristics Predicting Perceptions of Barriers to Advancement: Internal Structural

Variable	<i>B</i>	<i>SEB</i>	β
Male	-.29	.10	-.14**
Single	.01	.11	.01
Twenties	.96	.33	.14**
Thirties	.13	.19	.03
Forties	.04	.11	.02
Sixties	-.22	.11	-.10
Seventies	.38	.38	.05
African-American	.04	.15	.01
Asian	-.54	.42	-.06
Hispanic	.15	.19	.04
Native American	-.63	.46	-.06
Other	.11	.28	.02
Constant	2.17	.08	

Note. $R^2 = .07$; Adjusted $R^2 = .04$; $F(12,438) = 2.64$, $p < .01$; ** $p < .01$

Age was found to be a significant predictor for Relocation, with age in the twenties ($b = .12$, $p < .045$ and age in the sixties ($b = -.15$, $p < .01$) significant in Block 3, suggesting that those who are in their twenties find relocation to be more of a barrier to advancement and those in their sixties perceiving relocation to be less of a barrier than those who are in other age ranges. In the final model with all variables entered, 5.3% of the variance was accounted for in the

model and adjusted $R^2 = .03$, with age in the twenties and sixties as significant predictors of perceptions of relocation as a barrier. The means, standard deviations and intercorrelations are listed in Appendix F, while the regression analysis summary for Relocation is outlined in Table 16.

Table 16

Hierarchical Multiple Regression Analysis Summary for Individual Characteristics Predicting Perceptions of Barriers to Advancement: Relocation

Variable	<i>B</i>	<i>SEB</i>	β
Male	-.01	.07	-.01
Single	.06	.08	.04
Twenties	.64	.25	.12*
Thirties	-.05	.14	-.02
Forties	.01	.08	-.14
Sixties	-.22	.08	-.14*
Seventies	.10	.28	.02
African-American	.07	.11	.03
Asian	-.23	.31	-.04
Hispanic	.07	.14	.03
Native American	-.33	.34	-.05
Other	.34	.21	.08
Constant	1.55	.06	

Note. $R^2 = .05$; Adjusted $R^2 = .03$; $F(12,437) = 2.05$, $p = .019$; * $p < .05$

Organizational culture as an impediment to advancement was addressed. For this group of participants, gender was found to be significant as a predictor of perceptions in all steps of the model. Variance accounted for in Block 1 of the model was 2.3%, increasing to 2.4% in Block 2. In the final two steps of the model, $R^2 = .42$ in Block 3 and in Block 4 of the model 5.8% of the variance was accounted for (adjusted $R^2 = .033$). In Appendix G the means, standard deviations and intercorrelations for Organizational Climate are illustrated, while the summary of the regression analysis is outlined in Table 17.

Table 17

Hierarchical Multiple Regression Analysis Summary for Individual Characteristics Predicting Perceptions of Barriers to Advancement: Organizational Climate

Variable	<i>B</i>	<i>SEB</i>	β
Male	-.28	.10	-.14*
Single	-.01	.11	-.004
Twenties	.42	.33	.06
Thirties	-.06	.19	-.02
Forties	-.04	.11	-.02
Sixties	-.20	.11	-.09
Seventies	.59	.38	.07
African-American	.21	.15	.07
Asian	-.22	.42	-.03
Hispanic	.32	.19	.08
Native American	-.72	.46	-.07

(table 17 continued)

Variable	<i>B</i>	<i>SEB</i>	β
Other	-.01	.28	.00
Constant	1.96	.08	

Note. $R^2 = .06$; Adjusted $R^2 = .03$; $F(12,438) = 2.3$, $p < .01$ * $p < .05$

For each of the five regression models created to answer research question number four, the tolerance statistic was >0.1 , indicating multicollinearity was not a problem for the models.

Research Question Number Five

Work profile characteristics were the subject of research question number five: For faculty and administrators, to what extent do work profile characteristics (hours per week worked, percentage of time spent teaching, researching and on service and administration and year entered academia) influence an individual's perception of the facilitators and barriers to advancement? The number of participants for this question was lower than in question four ($N = 72$), as only those respondents with rank were asked to indicate how much time they spent teaching, researching and on service and administration. As a result, there were too many independent variables per number of subjects to meet the assumptions of regression.

Although the models were mis-specified, they were still constructed in this manner: hours per week worked (Block 1); hours per week worked and percentage of time spent teaching (Block 2); hours per week worked, percentage of time spent teaching and researching (Block 3); hours per week worked, percentage of time spent teaching, researching and on service (Block 4); hours per week worked, percentage of time spent teaching, researching and on service and administration (Block 5); hours per week worked, percentage of time spent teaching, researching and on service and administration and year entered academia (Block 6).

None of the final models proved to be predictive of perceptions of facilitators or barriers to advancement. For the Mentoring variable, Block 6 of the model accounted for 4.3% of the variance (adjusted $R^2 = -.04$). The Experience/Opportunities variable model accounted for 5.2% of the variance, but the generalization of the model accounted for less variance than would be expected by chance (adjusted $R^2 = -.03$). The means, standard deviations and intercorrelations for the facilitators factors can be found in Appendix H.

Perceptions of barriers to advancement were not significantly predicted by the work profile characteristics models. Variance accounted for in the Internal Structural variable model equaled 4.7%, with adjusted $R^2 = -.04$ (less variance than would be expected by chance). The model for Relocation accounted for 7.3% of the variance, but the final model accounted for less variance than would be expected by chance, adjusted $R^2 = -.01$. The Organizational Climate model accounted for less variance than the previous two models, $R^2 = .03$, and the adjusted R^2 was also less than would be expected by chance (adjusted $R^2 = -.06$). There were no significant predictor variables in the models. Multicollinearity was not detected in any of the models, with all tolerance statistics greater than 0.1. Means, standard deviations and intercorrelations for the barriers models can be found in Appendix I.

Research Question Number Six

Whether or not individual characteristics predicted if an individual was denied a promotion was evaluated in this research question. Participants were first asked to indicate whether or not they had ever applied for a promotion they did not receive, of which 205 (44.9%) indicated they had. Next, participants were asked to choose the primary reason communicated to them as to why the promotion was not received. The results of this item are outlined in Table 18.

Table 18

Primary Reason Communicated to Respondents as to why Promotion was Denied

Reason	<i>N</i>	%
Educational Background	11	5.4
Relevance of Experience	57	27.8
Organizational Fit	23	11.2
Gender	1	.5
Race/Ethnicity	3	1.5
Family Responsibilities	2	1.0
Not Part of the Group	2	1.0
Disciplinary Fit	2	1.0
Other	32	15.6
No Reason Given	72	35.1

Those who indicated “other” as the primary reason communicated were prompted to type in the reason. Analyzing these data indicated four primary reasons: another candidate chosen (8); did not want an insider for the position (4); did not want the individual to leave the position

they currently occupied (4); and hired a pre-chosen candidate or someone the supervisor previously worked with at another institution (3). These reasons fall broadly into the internal structural and organizational culture barriers to advancement.

When asked to specify their perception of the reason they did not receive the promotion, differences were seen, with most responses relative to internal structural barriers, lack of opportunity/experience, personal characteristics and organizational culture barriers. These perceptions are detailed in Table 19.

Table 19

Respondent Perceptions of Reasons why Promotion was Denied

Reason	<i>N</i>	%
Educational Background	9	2.0
Relevance of Experience	29	6.3
Organizational Fit	31	6.8
Gender	17	3.7
Race/Ethnicity	12	2.6
Family Responsibilities	1	.20
Not Part of the Group	39	8.5
Disciplinary Fit	2	.40
Other	64	14

Of the 14% who indicated another reason for being denied a promotion, the responses were: politics (6); wanted an outsider (5); there was a more qualified applicant (5); hired someone supervisor previously worked with (5); someone was pre-chosen (5); did not want to

find someone to fill current position held (5); personal bias (3); do not know (3); age (3); experience (3); supervisor felt threatened (2); too honest (1); sexual orientation (1); underestimation of potential (1); and unmarried living together (1).

To specifically answer the research question, analysis was conducted on the total number of respondents using the same individual characteristics (gender, marital status, age and race) entered in the same order as in the previous regression models. The base model was significant ($p < .05$) for predicting those who applied for a promotion received one 55.2% of the time.

Using the Nagelkerke R squared value which assists in determining the significance of a model (Field, 2009), 4.2% of the variance was accounted for by the combination of all variables in the model. Block 4 of the model was able to correctly predict 24.8% of those who were denied a promotion. When gender, marital status, age and race are considered together, these variables were not significant in predicting whether or not an individual was denied a promotion ($\chi^2 = 14.27$, $df = 12$, $n = 451$, $p > .05$). Multicollinearity diagnostics revealed all tolerance statistics were $>.01$, indicating correlations between variables were not biasing the model. The odds ratios are presented in Table 20, which indicate those in their thirties, forties, sixties and seventies are more likely to be denied a promotion than those in their fifties. Based on the odds ratios, those of Native American race are more likely to be denied a promotion than Caucasians.

Table 20

Logistic Regression Predicting Individual Characteristics and Who Will Be Denied a Promotion (N = 74)

Variable	B	SE	Odds ratio	p
Male	-.26	.22	.77	.23
Single	-.10	.24	.91	.69
Twenties	-.39	.76	.61	.61
Thirties	.61	.43	1.84	.15
Forties	.43	.25	1.53	.09
Sixties	.38	.25	1.46	.13
Seventies	1.57	1.11	4.79	.16
African American	-.17	.34	.84	.61
Asian	-.61	.96	.54	.52
Hispanic	.07	.44	1.07	.87
Native American	.67	1.17	1.94	.57
Other	-1.16	.69	.31	.09
Constant	-1.15	2.28	.32	.62

Research Question Number Seven

Work profile characteristics were the subject of research question seven: for faculty and administrators, to what extent do work profile characteristics predict whether an individual is denied a promotion? The variables number of hours worked (Block 1), percentage of time spent teaching (Block 2), percentage of time spent researching (Block 3), percentage of time spent on service (Block 4), percentage of time spent on administration (Block 5) and year entered

academia (Block 6) were entered into the model. Because only those with rank were asked to respond to the percentage of time spent items, $N = 74$ for this model. All blocks of this model were found to be nonsignificant in predicting individuals denied a promotion based on their work profile characteristics ($\chi^2 = 4.4$, $df = 6$, $N = 74$, $p = .62$). Using Nagelkerke's statistic, the variance accounted for increased from less than 1% in Block 1 ($R^2 = .001$) to 7.7% with all variables in the model. The combination of variables can correctly predict 70.3% of those denied a promotion. Individuals spending 81-100% of their time on administration are 1.29 times more likely to be denied a promotion than those who spend less than 81% of their time on administration. Those who entered academia in the 1980s are 2.46 times more likely to be denied a promotion than those who entered before or after the 1980s. Multicollinearity was not an issue for these data. The odds ratios are presented in Table 21.

Table 21

Logistic Regression Predicting Work Profile Characteristics and Who Will Be Denied a Promotion (N = 74)

Variable	β	SE	Odds ratio	P
Hours Worked	-.11	.57	.90	.85
Teach	-.09	.67	.92	.90
Research	-1.05	.789	.86	.18
Service	-.16	.53	.86	.77
Administration	.26	.57	1.30	.65
Year Entered	.90	.56	2.46	.11
Constant	-.50	.73	.61	.50

Summary

Prior to distribution of the survey, face validity was established by a panel of community college faculty and administrators. A proportional random sample of 3,749 individuals was selected to participate in the study, of which, 544 (15%) completed the electronic survey. The respondents were primarily female (69.8%), Caucasian (81.2%) and married or partnered (79%). Mean age was 53.8 years, with the range of ages between 25 and 74 years. The majority of subjects (51.2%) had a master's degree as the highest level of education, while 40.3% reported having a doctorate. By position, 35.9% reported being an executive administrator; 20.8% reported being staff/administrators; 19.5% department heads/division chairs; 15.8% were deans and 7.4% faculty. Of those who had academic rank, 49.5% were full professors. An equal percentage of respondents (27%) entered academia in the 1980s or 1990s.

Factor analysis revealed three factors related to the barriers to advancement items and two factors related to facilitators to advancement items. Sixty-three percent of the variance could be explained by the three barriers factors, while 60.2% of the variance was explained by the facilitators factors. The reliability of the scales was considered high: Internal Structural $\alpha = .96$; Relocation $\alpha = .70$; Organizational Climate $\alpha = .83$. Facilitators scales were also reliable with Mentoring $\alpha = .90$ and Experience/Opportunities $\alpha = .94$.

In regard to the research questions related to gender differences, there was a significant difference in perception between the genders in the glass ceiling related item of a positive attitude exists toward women, with males agreeing more that a positive attitude existed. Males also significantly disagreed more than females that barriers and a glass ceiling existed that hindered the advancement of women.

There were no significant differences in perception between genders on the facilitators to advancement items or on relocation as a barrier, however, females significantly considered internal structural/job opportunities and organizational culture to be more of a barrier than did males.

Results of multiple regression analysis indicated individual characteristics were not significant predictors of perceptions of the facilitators to advancement. Gender was a significant predictor of the perceptions of internal structural and organizational barriers. Age in the twenties and age in the sixties were significant in predicting relocation as a barrier. Work profile characteristics were not significant predictors of perceptions of facilitators or barriers to advancement.

Logistic regression indicated neither individual nor work profile characteristics were significant in predicting whether or not an individual would be denied a promotion. However, those in their 30s, 40s, 60s and 70s were more likely to be denied a promotion than those in their fifties. As for race, those of Hispanic and Native American origin were more likely than Caucasians to be denied a promotion. Individuals who reported spending 81-100% of their time on administration were 29% more likely to be denied a promotion. Respondents who entered academia in the 1980s were 2.46 times more likely to be denied a promotion than those who entered in other decades.

As can be seen from these results, gender played a significant role in differences in perception of two barriers to advancement and was a significant predictor of perception of these two barriers to advancement. However, gender and other individual characteristics, nor work profile characteristics, were able to predict whether or not an individual was denied a promotion.

CHAPTER FIVE

Discussion

A detailed discussion of the interpretation of the results of this study and how they relate to the existing literature will be presented in this chapter. While a large amount of work exists related to gender differences in rank and salary, few studies explicitly related to the perception of the existence of a glass ceiling were found. Given the disproportionately fewer females in upper level administrative positions in higher education, and particularly in community colleges, this study sought to determine if the perception of barriers to advancement that exist in the corporate world exist in community colleges. Of greater impact, however, is how the results of this study can be used to better inform those who make policy and hiring decisions which ultimately affect the next generation. This chapter is organized as follows: delimitations and limitations; discussion of the purpose of the study; discussion of the results as related to the research questions; implications for policy and practice; and recommendations for future research.

Delimitations

Delimitations are described as factors that narrow the scope of a study (Creswell, 2003). The primary delimitation of this study was that the population consisted only of members of the American Association of Community Colleges. This population was chosen because the researcher was a member of the AACC and had access to the membership database. While a proportional random sampling of the membership was taken, the results of this study are only able to be generalized to the membership of the AACC, not to the collective faculty and administrators of all community colleges in the United States.

Limitations

Limitations are the factors that may be potential weaknesses of a study (Creswell, 2003).

There are several factors that represent weaknesses of this study. First, the response rate of 15%, while acceptable for an electronic survey, was a low response rate. The time of the year the study was conducted (summer) may have contributed to the low response rate of faculty ($N = 33$), as many faculty in community colleges may not teach in the summer session. However, administrators typically work year round, with summer often being a less demanding time of year, so the low response rate of administrators may not be attributable to time of year.

A second limitation was the number of female respondents ($n = 319$) compared to male ($n = 135$) respondents. Because the study sought to determine perceptions related to the glass ceiling, males may not have been motivated to complete the study if this was a topic that did not interest them. Additionally, the majority (81.2%) of respondents were Caucasian, which may also be a limitation of the study when analyzing racial components to perceptions and promotions.

Only respondents who had academic rank were asked to respond to the questions related to the percentage of time spent teaching, researching and on service and administration, therefore, the number was too few to adequately meet the assumptions of regression related to the number of independent variables and sample size. As a result, the models created to address research question five were mis-specified. Although these models were found to be non-significant, the interpretation of results for this question is limited.

The wording of the survey question related to promotion did not provide enough information needed when analyzing the data. It would have been helpful to know if an individual had ever applied for promotion, then, if so, how many times they had applied and how

many times they were denied. As the question was worded in this survey, it limited the ability to more accurately interpret the regression results.

A final limitation was the percentage of respondents who held the academic rank of professor (49.5%). Such a large percentage of full professors who have successfully been through the promotion process may have affected the results related to the ability to predict promotion.

Discussion of the Purpose of the Study

The purpose of this study was to determine the existence of a glass ceiling effect within community colleges by examining faculty, staff and administrator's perceptions of a glass ceiling as related to the advancement of women in their institutions. To gain a better understanding of perceptions and those factors which may affect them, the following research questions were examined.

1. Is there a difference in the perception of the existence of a glass ceiling between males and females?
2. Is there a difference in the perception of facilitators to advancement between males and females?
3. Is there a difference in the perception of barriers to advancement between males and females?
4. For faculty and administrators, to what extent do individual characteristics (gender, marital status, age and race) influence an individual's perception of the facilitators and barriers to advancement?

5. For faculty and administrators, to what extent do work profile characteristics (hours per week worked, year entered academia, percentage of time spent teaching, researching, and on service and administration) influence an individual's perception of the facilitators and barriers to advancement?
6. For faculty and administrators, to what extent do individual characteristics predict whether an individual is denied a promotion?
7. For faculty and administrators, to what extent do work profile characteristics predict whether an individual is denied a promotion?

Discussion of Results

Description of the Sample

The sample consisted of 453 respondents, of which 29.5% were male and 69.8% were female. The distribution of current position in a community college indicated 49.3% of male participants held executive administrator positions, while only 30.1% of female participants were executive administrators. A larger percentage (38.5%) of females was in mid-level positions, such as division/department heads and deans, than males (29.1%). More women (24.1%) were in staff/administrative positions than males (13.4%). While the percentage of women in executive positions was slightly higher in this study, it is still consistent with the reports of Monks and McGoldrick (2004) and the American Council on Education (2007) who report only 22% -23% of college presidencies were held by females. This is also consistent with the findings of the Department of Labor (1995) indicating women are concentrated in lower and mid-level positions which put them at a disadvantage for advancement.

Only 23% of respondents indicated they held academic rank. By gender, 20.7% of male respondents and 23.8% of female respondents were ranked. By individual rank, 39% of males were at the instructor level compared to 17.1% of females. Seven percent of males were assistant professors, and an additional 7% held the rank of associate professor. Females held a higher percentage of assistant (10.5%) and associate (21.1%) professorships. Full professorships were held by 51.3% of females and 46.4% males. Toutkoushian (1999) reported women were concentrated in lower academic ranks, which precludes their ability to ascend the career ladder. Menges and Exum (1983) also found women were promoted less frequently and were more likely to move from institution to institution. The findings of the current study indicated women hold a higher percentage of each academic rank than males. This could be due to the fact that more women teach in community colleges for longer periods of time than men (Nettles, Perna & Bradburn, 2000), accounting for this difference, or the faculty make-up in the four year institutions the Toutkoushian (1999) and Menges and Exum (1983) studies were conducted in could be significantly different than that of community colleges.

In review, the findings of this study were consistent with the literature in that women held a lower percentage of executive administrative positions than men, and a higher percentage of lower and mid-level positions. Contrary to the literature, women in this study held a higher percentage of academic ranks than men, including full professorships.

Research Question One: Gender Differences in Perceptions of the Existence of a Glass Ceiling

This question sought to determine if males and females employed in community colleges differed in their perceptions of the existence of a glass ceiling. Three items related to this question were asked: “Barriers exist to the advancement of women in my institution,” “In my organization a positive attitude exists toward women in upper management positions” and “A

glass ceiling hinders the advancement of women in my organization.” Overall responses to these items revealed participants were between neutral and disagreeing that barriers exist and a glass ceiling hinders advancement and between neutral and agreeing that a positive attitude toward women exists. However, when responses were examined by gender, a different picture emerged.

Descriptive data and the analysis of variance on these items revealed males disagreed to strongly disagreed more to the items of barriers existing and a glass ceiling hindering advancement than did women. This difference in perception was statistically significant, with a medium effect size. Daley (1998) found that women were more likely to perceive themselves as adversely affected by barriers than men. Likewise, MacCrae’s (2005) and Kjeldal, Rindfleish and Sheridan’s (2005) work also supports the existence of a glass ceiling due to the existence of internal structural barriers. The findings of this study are consistent with these previous studies in asserting there is a perception that barriers exist and a glass ceiling hinders the advancement of women.

Regarding a positive attitude existing toward women in upper management positions, a statistically significant difference in perception was found, although the effect size was small. The perception of males was stronger than females in declaring a positive attitude existed. Wrigley (2002) wrote of society and workplaces being a “good ole boys” network, which could certainly be the experiences of the women in this study. Gender role socialization also contributes to the perception of women feeling they are not as valued in the workplace as men (Wrigley, 2002).

While studies that refute the existence of a glass ceiling (Morgan, 1998; Kaufman-Rosen and Kalb, 1995; Powell and Butterfield, 1994) focus on equality in wages and promotion, these studies do not directly address the perception of the existence of a glass ceiling. Even if it can be

shown there is an equal rate of promotion or equivalent salary structure in an organization, perceptions may still exist that women are not able to advance thus potentially adversely affecting the work environment.

In summary, this study found females perceived there were barriers to advancement and a glass ceiling existed which differed significantly from the perceptions of males, who did not perceive these barriers were present or that a glass ceiling existed. Women also perceived that a less than positive attitude toward women in upper management positions existed. The existence of these perceptions plays a role in the organizational climate that exists in an institution, and when present, can continue to perpetuate the notion of a glass ceiling effect even if one does not truly exist.

Research Question Two: Gender Differences in the Perception of Facilitators to Advancement

Based on the factor analysis, items related to facilitators to advancement were identified to fall into the categories of mentoring and experience/job opportunities. Having a mentor who was helpful, gave advice and facilitated career opportunities were found to be items respondents of both genders reported as being facilitators to advancement. This is consistent with Anderson (2005) who found mentors to be a key to assisting women to rise above a glass ceiling. Glazer-Raymo (1999) also identified mentoring as a factor in the progress of women.

Experience and job opportunities were identified to be important facilitators to advancement by both males and females. Examples of this include being offered key job assignments, having job assignments with responsibility, early and significant responsibility and accountability for important tasks and breadth of assignments. Taking control of one's career by initiating career moves, having a clear idea of career goals, being assertive and taking risks were seen as being more important facilitators to advancement. Having a good track record and

credibility with peers was found to be most important as facilitators to advancement by participants in this study.

No significant differences in perception of facilitators to advancement between the genders were found in this study. Both genders indicated they believed taking control of one's career to be a facilitator to advancement, which is in slight contrast to the findings of Kulesa, Masson and Simonds (2005) who found males to have a greater concern for reward and career development than females.

Research Question Three: Gender Differences in the Perception of Barriers to Advancement

Three factors making up barriers to advancement were identified in this study: internal structural/job opportunities barriers, relocation and organizational climate. Of the three, there was no significant difference in perception between genders regarding relocation as a barrier. Neither males nor females identified relocation to be a barrier to advancement in their careers.

Examination of the analysis of variance on perceptions of internal structural/job opportunities and organizational culture as barriers to advancement revealed a significant difference in perception between genders, although with a small effect size. Females considered these factors to be somewhat more of a problem than did males. This is consistent with the findings of the Department of Labor study (1995) in which barriers to advancement were originally classified. Items specifically related to the internal structural/job opportunities factor encompassed lack of mentoring, poor career development, not getting jobs which prepare one for advancement, not having a senior manager to facilitate career progress, and not having opportunities for job assignments with responsibility. Jeavons and Sevastos (2003) identified that women were employed in positions lower than they were qualified for. While this study did not seek to determine whether or not an individual was qualified for a particular position, it was

noted that 49% of male respondents indicated they held executive administrator positions, while only 30% of females held those positions, indicating women are concentrated at lower levels of employment which, according to Daily, Certo and Dalton (1999) makes it harder to advance.

Organizational culture is a component of internal structural barriers. The climate in an institution related to networking, subjective decision making and treatment of women can affect the promotion potential of women (Van Vianen and Fischer (2002). Items in this study specifically related to organizational culture included feeling pressure to fit in or adapt to the culture, being excluded from social events and informal interactions and feeling like an outsider. Males indicated they did not consider feeling pressure to fit in to be a problem to their advancement, whereas women considered it to be somewhat of a problem. Being excluded from social interactions was somewhat more of a problem for females than males, as was feeling like an outsider. These findings are contrary to those of Hagedorn and Laden (2002) who found that males and females in community colleges perceived organizational climate similarly.

That females differed significantly in their perception of barriers to advancement than males is congruent with the finding from the first research question that women perceived barriers existed and a glass ceiling hindered their career advancement. These results lead to the conclusion there are factors present in the community colleges represented in this study which need to be addressed in order to assure equitable treatment and opportunities for all, regardless of gender.

Research Question Four: Individual Characteristics as Predictors of Perceptions of the Facilitators and Barriers to Advancement

Perceptions of facilitators to advancement (mentoring and experiences/opportunities) were not significantly influenced by individual characteristics (gender, marital status, age and race). As seen in the analysis of variance, both genders indicated the items related to facilitators were important to very important to career advancement. Eiser and Morahan (2006) wrote of the lack of mentors available to women and women's lack of inclusion in social networks of the professions in healthcare. Tharenou (2001) also imparted mentor support and career encouragement positively predicted advancement for females. The lack of predictability of perceptions of facilitators based on individual characteristics in this study is not surprising as most educators and administrators are likely aware of, and able to identify, those actions and opportunities which would assist in career advancement. From an early age in the educational system, children are encouraged to develop mentor relationships. Through assignments and projects, undergraduate and graduate education also stresses those actions that will be beneficial to an individual's career trajectory.

Perceptions of all three barriers (internal structural/job opportunities; relocation; organizational culture) were found to be significantly predicted by one or more of the individual characteristics. Perceptions of internal structural/job opportunities barriers were predictable by age in the twenties and gender. Being male had a negative relationship to perceptions, indicating males are less likely to consider internal structural barriers affect their advancement than females. According to the Department of Labor (1995), internal structural barriers, such as lack of mentoring, lack of job opportunities and assignments which prepare an individual to assume additional responsibility and accountability, are one of the tenets of the glass ceiling

phenomenon. In this study, more women acknowledged these items as being somewhat of a problem to a serious problem than did men, which is consistent with the perception of a glass ceiling.

Age in the twenties also predicted perceptions of internal structural barriers. Participants in their twenties in this study indicated poor career development and planning, few role models, not knowing the criteria for advancement, and not getting the right jobs for advancement early in career were more of a problem for them than those in the other age ranges. This is most likely because those in their twenties are just beginning their careers, may not have a clear idea of their career path and may be having difficulty navigating the environment and inner workings of an institution.

Perceptions of relocation as a barrier to advancement were significantly predicted by age in the twenties and age in the sixties. Those in their twenties viewed relocation as a barrier, whereas, those in their sixties did not. This is also explainable simply by considering the life cycle. Those in their twenties, fresh out of college, may not feel they are able to secure jobs that require relocation as these, perhaps more choice jobs, may be awarded to those with more experience. Individuals in their sixties may not view relocation as a barrier as they may be familiar with this as a possible requirement for advancement, and may have done so over the course of their careers.

Gender was a significant predictor of organizational culture as a barrier to advancement. Males were less likely to feel pressure to fit in, perceive being excluded from social events, and feel like an outsider than were females. This is consistent with the findings of the Merit Systems Protection Board (1992) in its report on the status of women in the federal government and the glass ceiling, where women excluded from networking opportunities perceived this exclusion to

affect their chances at future promotions. Johnsrud (1991) concluded that women who were included in networking by being sponsored by a male were more likely to be promoted than those who were not. Wrigley's (2002) study also described corporate culture as a factor leading to the perception of a glass ceiling. Women perceived work environments to be dominated by males which contributed to the limited opportunities for females to advance.

In summary, predicting perceptions based on individual characteristics revealed gender and age to be significant predictors of perceptions of the three identified barriers to advancement. Younger individuals were more likely to consider internal structural factors and relocation to be barriers than did individuals aged thirty and older. Females were more likely to consider internal structural factors and organizational culture to be barriers than did males.

Research Question Five: Work Profile Characteristics as Predictors of Perceptions of the Facilitators and Barriers to Advancement

Work profile characteristics (hours per week worked, percentage of time spent teaching, researching and on service and administration and year entered academia) were not predictive of perceptions of facilitators or barriers to advancement, with very little variance accounted for by any of the models tested. Previous research speaks to work profile characteristics as variables in the gender pay gap issue. Research output, teaching load and publications were cited by Ashraf (1996) as factors accounting for some of the variance. Toutkoushian and Conley (2005) also considered rank and duties as a reason for the gap. Another perspective on the pay gap is the cohort effect – the earnings gap is dependent upon when a woman entered academia, rather than the glass ceiling effect (Morgan, 1998).

The work profile characteristics studied in the current research project lend little explanation to the perceptions of facilitators and barriers to advancement. More in depth

questioning related to how work profile characteristics could help an individual advance, versus how they form their perceptions, may be warranted.

Research Question Six: Individual Characteristics as Predictors of Promotion

Gender, marital status, age and race were examined as predictors of promotion. More males indicated they had applied for a promotion they did not receive (48.1%) than did females (43.6%). Cutler and Jackson (2002) found only 20% of the females in their study had applied for a promotion. Another 25% of females stated they planned to apply for a promotion, compared to 50% of the males stating they planned to apply.

Participants who were denied a promotion were asked the primary reason communicated to them as to why they were denied the promotion. Of those who were given a reason for the denial, the majority indicated they were told they were denied because of the relevance of their experience (27.8%), the organizational fit (11.2%) or their educational background (5.4%). One participant indicated the reason communicated was related to gender, three indicated the reason was due to race and two indicated family responsibilities was the reason communicated. Were gender, race and family responsibilities truly communicated to these participants as reasons for denial, or did the participants misread the question? Lemons (2003) asserted an organization could be perceived to be unfair in promotion decisions due to the lack of opportunities and role models for females, regardless of the actions of the organization.

Respondents were also asked to indicate their perception of the reason they were denied the promotion. Responses differed from those of the reason communicated, with many perceptions related more to personal characteristics: 3.7% related gender; 2.6% indicated race; 1.5% perceived age and 3.4% indicated other personal characteristics as the reason for the denial.

Results of this study revealed that gender, marital status, age nor race predicted whether or not an individual was denied a promotion. This gender finding is consistent with Powell and Butterfield (1994) who purported the gender of the applicant did not have a significant effect on their being promoted, but contrary to that of Paulson-Gjerde (2002) who did find, although with a small effect size, women were less likely to be promoted than men.

One respondent sent a personal communication relating her experiences in community colleges. Having been a senior administrator, one position below the top level, she spoke of her innovations for which the top administrator, a male, received credit for many years. When she applied for the top position when it was available, she was told she did not have the experience needed. In her view, it is widely accepted that women lead many campuses in second tier positions, but are not recognized by those with hiring authority when they apply for top executive positions.

While none of the individual characteristics in the models for this research were significant in predicting those who were denied a promotion, odds ratios did reveal some observations worthy of note. Those in their thirties (1.84), forties (1.53), and sixties (1.46) were slightly more likely to have been denied a promotion than those in their fifties. Those in their seventies were 4.79 times more likely to be denied. Considering the span of an individual's career, those in their thirties and forties may apply for promotions they may not have enough experience or education to attain. Those in their sixties and seventies have had a number of years in which to apply for promotions, so simply by their longevity, they may have been denied more often than those in their fifties.

Examining race, Native Americans were 1.94 times more likely to indicate they were denied a promotion than Caucasians. In contrast to this finding, a personal communication from a participant of Native American origin, conveyed that females in Tribal Colleges in Indian Country are the leaders of those institutions, and thus, in her perception, do not have the same experiences as, perhaps, women in non Tribal Colleges do. It is not known whether or not those of Native American origin in this study were employed in Tribal or non Tribal colleges, so extrapolation of results to this comment was not possible.

While individual characteristics in this study were not significant predictors of promotion, this area is one in which more exploration needs to occur. Recommendations for future research will follow this discussion, elaborating on areas that could further enlighten the body of work related to equity.

Research Question Seven: Work Profile Characteristics as Predictors of Promotion

Examining the number of hours per week worked, the percentage of time spent teaching, researching, on service and administration and the year entered academia revealed these work profile characteristics were not significant in predicting whether or not an individual was denied a promotion. Powell and Butterfield (1994) reported that being employed in the department a position was located, the number of years at a high employment grade and high performance appraisal ratings were work related characteristics predictive of promotion. Female commitment to an organization, as evidenced by number of hours per week worked, was noted to be a reason for the underrepresentation of females in upper management (Dodd-McCue and Wright, 1996).

The data in this study did reveal that those who entered academia in the 1980s were 2.46 times more likely to be denied a promotion than those who entered in other decades. Again, because the question of the number of times an individual was denied a promotion was not

asked, it is difficult to aptly describe this phenomenon. This observation may be due to those entering academia in the eighties, chronologically are approximately in their fifties, and have applied for a number of promotions throughout their career compared to those who entered academia in other decades. Those who indicated they spent 81-100% of their time engaged in administrative activities were very slightly (1.30) more likely to have been denied a promotion. This may be because those who are in predominantly administrative positions may apply for promotions at a higher rate than those who are not.

Work profile characteristics identified in this study did not significantly predict whether or not an individual was denied a promotion. Refinement of the initial question related to promotion would provide more insight into the number of times an individual applied for a promotion, compared to the number of times they were granted or denied that position.

Implications for Policy and Practice

In this section how the results of this study may be used to inform policy and practice decisions in community colleges, and perhaps, in four year colleges and universities will be discussed. Although effect sizes were small to medium in the statistical findings of this study, the results revealed there was a statistically significant gender component to perceptions of the barriers to advancement and the existence of a glass ceiling effect, as well as gender being a predictor of these perceptions. Females were more likely to perceive barriers existed and the presence of a glass ceiling hindered their career advancement than did males.

Creating an internal structure and organizational climate that is conducive to all employees, regardless of gender, should be a primary concern of those in leadership positions in community colleges. Not only does the law prohibit discrimination based on gender, it is morally and ethically irresponsible to discriminate against individuals, whether knowingly or

unwittingly, based on gender. Promotion of positive, non-biased work atmospheres is one step toward creating an equitable environment. To that end, policy makers in individual institutions need to be more aware of the structure of their particular institutions. When a job posting is made available, there should be an explicit statement regarding the institution's adherence to EEOC principles. Those who are working in the human resources areas, and those who make up search committees, should have knowledge and training related to EEOC guidelines. This training should be an annual continuing education requirement for anyone associated with the hiring process.

Once an individual is hired, or in the institutional system, providing mentoring and professional development opportunities are important in assisting employees to develop their professional acumen. Regardless of position, faculty, staff or administrative, an orientation program should be in place, beginning with information about the governing board of the institution, the governance of the institution itself, and then the particular department or division in which the individual is employed. Additional programs focusing on professional development should be established at institutions that do not have them, and recruiting efforts should focus on attracting a diverse population of participants. If budgetary restraints exist that do not allow for creation of new programs, employees should be supported in their efforts to seek these opportunities on their own.

Another key component to creating an equitable internal structure is to publish and make known the parameters for evaluation and any performance standards that exist. Clear, open communication should exist regarding what is required for an individual to be considered for promotion opportunities. Career service centers that are often available to students in

community colleges should also be available to employees to assist them in writing a resume', interviewing skills or developing other aspects of their portfolio.

Organizational culture also needs to be addressed in order to create an atmosphere conducive to a productive work environment for all employees. Institutional governing boards must be responsive to the needs and perceptions of those in their system as it relates to organizational culture. Those in positions of authority in the individual institutions must accept ownership and accountability for the culture in their organization. A non punitive environment needs to be fostered to encourage those who encounter bias or discrimination to report it. Those who receive the reports must take due diligence to investigate and remedy any proven bias or discrimination.

The informal networking and climate of an organization is perhaps more difficult to control in terms of gender bias. However, executive administrators should lead by example and strive to set a tone of an open, accepting environment in their encounters with employees of an organization. Setting the bar by personal example can be the best way to cultivate a non-biased atmosphere.

In the absence of any of these institutional remedies, all individuals, but especially females, who are interested in career advancement should be proactive in their approach. Seeking out a mentor in the organization and/or in the field/discipline, enrolling in continuing education programs and seeking out opportunities that will enhance knowledge and skills are important actions to take for career development. Becoming familiar with policies and procedures and seeking information when needed are also actions which can assist in navigating organizational structure and culture.

Recommendations for Future Research

The findings of this study did lend credence to the hypothesis that gender does influence perceptions of the barriers to advancement and that there is a difference in perception of the existence of a glass ceiling based on gender. However, much still needs to be explored to fully identify the specifics related to the development of these perceptions. This section will identify additional research studies which may serve to add additional insight to the body of knowledge that exists in this area of study.

- Expand the definition of individual characteristics to incorporate more personal attributes and relate those to perceptions of barriers and facilitators to advancement and the existence of a glass ceiling. This will allow for more in depth understanding of the area under study.
- Examine perceptions of barriers and facilitators to advancement and the existence of a glass ceiling of individuals working in institutions of different types (using Carnegie's classification) to determine if institutional type plays a role in perceptions, and if so, how perceptions might differ.
- Examine the perceptions of barriers and facilitators to advancement and the existence of a glass ceiling of individuals working in institutions with female versus male chancellors/presidents to determine if the gender of the executive administrator influences perceptions in the institution.
- Using qualitative research, examine the perceptions of barriers and facilitators to advancement and the existence of a glass ceiling to more fully explore the phenomenon.

- Conduct in depth qualitative and quantitative research into the denial of promotions to determine if institutional type, gender of executive administrator or personal characteristics play a role in denials.
- Use quantitative research with a larger number of faculty participants to determine if faculty perceptions of barriers to advancement and the existence of a glass ceiling differ from those of administrators.
- Explore the availability and content of leadership development programs to determine perceived and actual effectiveness in advancing the careers of women into executive positions
- Using qualitative research, expand the definition of work profile characteristics to discern how those characteristics could help an individual advance their career.
- Refine the approach to prediction of facilitators, either by garnering a larger sample size or redefining the work profile characteristics. Given the work profile regression models were mis-specified, further work on prediction of perceptions of facilitators is warranted.

Conclusion

It has been almost 50 years since President John F. Kennedy established the President's Commission on the Status of Women. Since that time, strides have been made in ensuring equality for women in education, the workplace and under the law. However, despite these gains, women remain underrepresented in the executive suites of corporations and academic institutions in the United States. The existence of a glass ceiling as a barrier to advancement of women was confirmed in the mid 1980s and has remained intact ever since.

Community colleges, as the building blocks of the workforces of many cities and towns, need to be a microcosm of the societies in which they exist. Those societies are predominantly female, with the majority of the students in the higher education system being female. Thus, the administrations of these institutions should reflect this demographic. The findings of this study serve to let us know that there is still more work to be done in leveling the playing field for women and erasing the perception that a glass ceiling hindering the advancement of women exists.

References

- American Association of Community Colleges. (2009a). *CC Stats*. Retrieved September 2, 2009, from <http://www2.aacc.nche.edu/AboutCC/Trends/Pages/enrollment.aspx>
- American Association of Community Colleges. (2009b). *CC Stats*. Retrieved September 2, 2009, from <http://www2.aacc.nche.edu/AboutCC/Trends/Pages/cecharacteristics.aspx>
- Anderson, D.R. (2005). The importance of mentoring programs to women's career advancement in biotechnology. *Journal of Career Development (Sage)*, 32(1), 60-73.
- Ashraf, J. (1996). The influence of gender on faculty salaries in the United States, 1969-1989. *Applied Economics*, 28(7), 857-864.
- Babco, E. L., & Jesse, J. K. (2005). Employment in the life sciences: A mixed outlook. *Bioscience*, 55(10), 879-886.
- Bain, O., & Cummings, W. (2000). Academe's glass ceiling: Societal, professional-organizational, and institutional barriers to the career advancement of academic women. *Comparative Education Review*, 44(4), 493-514.
- Baker, B., Wendt, A. & Slonaker, W. (2002). An analysis of gender equity in the federal labor relations career field. *Public Personnel Management*, 31(4), 559-567.
- Banks, P. (2003). *The Implications of Staff and Line Jobs for the Glass Ceiling*. Paper presented at the American Sociological Association, 2003 Annual Meeting, Atlanta. Retrieved March 9, 2009 from SocINDEX database.
- Barbezat, D.A. & Hughes, J.W. (2005). Salary structure effects and the gender pay gap in academia. *Research in Higher Education*, 46(6), 621-640.
- Bauer, Jr, R. J., & Dahlquist, J. R. (1999). Recognizing and eliminating gender bias in finance education. *Financial Practice & Education*, 9(1), 83-91.
- Begley, M.M. (2005). Corporate America's glass ceiling. *Business West*, 21(14), 18-20. Retrieved January 17, 2009 from Regional Business News database.
- Bellas, M.L. (1997). Disciplinary differences in faculty salaries. *Journal of Higher Education*, 68(3), 299-321.
- Bergen, D. J., & Williams, J. E. (1991). Sex stereotypes in the United States revisited: 1972-1988. *Sex Roles*, 24, 413-423.

- Bible, D., & Hill, K.L. (2007). Discrimination: Women in business. *Journal of Organizational Culture, Communications & Conflict*, 11, 65-76. Retrieved February 15, 2009 from Business Source Complete database.
- Blau, F.D., & Devaro, J. (2007). New evidence on gender differences in promotion rates: An empirical analysis of a sample of new hires. *Industrial Relations*, 46(3), 511- 550. Retrieved March 9, 2009 from Business Source Complete database.
- Bowling, C.J., Kelleher, C.A., Jones, J., & Wright, D.S. (2006). Cracked ceilings, firmer floors, and weakening walls: Trends and patterns in gender representation among executives leading American state agencies, 1970-2000. *Public Administration Review*, 66, 823-836. Retrieved January 25, 2009 from Business Source Complete database.
- Brown, D. & Woody, B. (2007). Glass ceilings in academia: African American women social scientists. *Research in race & ethnic relations*, 14, 209-234. Retrieved March 16, 2010 from SocINDEX Database.
- Burns, J. E. (1964). Equal pay act of 1963 now in effect. *Industrial management*, 6, (11), 1.
- Cataldi, E.F., Fahimi, M. & Bradburn, E.M. 2004 national study of postsecondary faculty (NSOPF: 04) Report on faculty and instructional staff in Fall 2003. *U.S. Department of Education*. Retrieved 08/01/2007, from ERIC database (ED485364).
- Chernesky, R.H. (2003). Examining the glass ceiling: Gender influences on promotion decisions. *Administration in Social Work*, 27, 13-18. Retrieved February 15, 2009 from Academic Search Complete database.
- Chih-Wei, H., & Winslow, E. (2006). Gender representation in the federal workforce. *Review of Public Personnel Administration*, 26(3), 276-294. Retrieved March 9, 2009 from Business Source Complete database.
- Chliwniak, L. (1997). Higher education leadership: Analyzing the gender gap. ERIC Digest. Retrieved 08/01/2007, from ERIC database (ED410846).
- Cotter, D.A., Hermsen, J.M., Ovadia, S. & Vanneman, R. (2001). The glass ceiling effect. *Social Forces*, 80, (2), 655-681.
- Creative Research Systems. (2009). *Sample size calculator*. Retrieved November 25, 2009 from <http://www.surveysystem.com/sscalc.htm>.

- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Cutler, M.M., & Jackson, A.L. (2002). A 'glass ceiling' or work/family conflicts? *Journal of Business & Economic Studies*, 8(2), 73-83. Retrieved January 17, 2009 from Business Source Complete database.
- Daily, C.M., Certo, S.T., & Dalton, D.R. (1999). A decade of corporate women: Some progress in the boardroom, none in the executive suite. *Strategic Management Journal*, 20, 93-100. Retrieved January 17, 2009 from Business Source Complete database.
- Daley, D.M. (1998). Attribution theory and the glass ceiling: Career development among federal employees. *International Journal of Organization Theory & Behavior*, 1, 93-117. Retrieved January 17, 2009 from Business Source Complete database.
- Dencker, J.C. (2006). *Gender Differences in Career Trajectories: A Longitudinal Study of Promotion Patterns in a Large US Firm*. Paper presented at the Conference of the American Sociological Association, 2006 Annual Meeting, Montreal. Retrieved March 9, 2009 from SocINDEX database.
- Department of Labor (1991). *The glass ceiling initiative. A report*. Washington, DC: U.S. Government Printing Office.
- Department Of Labor (1995). *Good for business: Making full use of the nation's human capital. The environmental scan. A fact-finding report of the Federal Glass Ceiling Commission*. Washington, DC: U.S. Government Printing Office.
- Dodd-McCue, D., & Wright, G. (1996). Men, women, and attitudinal commitment: The effects of workplace experiences and socialization. *Human Relations*, 49(8), 1065-1091. Retrieved March 5, 2009 from PsycINFO database.
- Eddy, P. L. (2002). Presidency. In A. M. Martinez Alemán, & K. A. Renn (Eds.), *Women in higher education: An encyclopedia* (pp. 498-502). Santa Barbara: ABC CLIO.
- Edmonds, K. (2010). *New survey suggests more work needed to broaden the pool of women and minorities in line for college presidencies*. Retrieved March 10, 2010 from <http://www.acenet.edu/AM/Template.cfm?Section=Search&template=/CM/HTMLDisplay.cfm&ContentID=25556>
- Eiser, B.J.A., & Morahan, P. (2006). Fixing the system: Breaking the glass ceiling in health care. *Leadership in Action*, 26(4), 8-13. Retrieved March 9, 2009 from Academic Search Complete database.

- Equal Employment Opportunity Commission. (2006). Retrieved September 25, 2007, from Equal Employment Opportunity Commission Web Site:
<http://www.eeoc.gov/stats/enforcement.html>
- Equal Employment Opportunity Commission. (2010a). *Sex Based Charges FY 1992-FY 1996*. Retrieved March 3, 2010 from www.eeoc.gov/eeoc/statistics/enforcement/sex-a.cfm
- Equal Employment Opportunity Commission. (2010b). *Sex Based Charges FY 1997-FY 2009*. Retrieved March 3, 2010 from www.eeoc.gov/eeoc/statistics/enforcement/sex.cfm
- Field, A. (2009). *Discovering statistics using SPSS*. (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Fink, A. (2006). *How to conduct surveys: A step-by-step guide* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Frankforter, S. A. (1996). The progression of women beyond the glass ceiling. *Journal of Social Behavior & Personality*, 11(5), 121-132.
- Franzosa, S. D. (1993). Shaking the foundations: How schools shortchange girls. *NWSA Journal*, 5, 325-335.
- Frederickson, H.G. (1980). *New public administration*. University, Alabama: The University of Alabama Press.
- Frederickson, H.G. (1990). Public administration and social equity. *Public Administration Review*, 50(2), 228-238.
- Frederickson, H.G. (1997). *The spirit of public administration*. San Francisco: Jossey-Bass Publishers.
- Fuller, S. (2005). *Gender, Education, and Job Instability: Exploring Job Mobility and Wage Growth Over Time*. Paper presented at the American Sociological Association, 2005 Annual Meeting, Philadelphia. Retrieved March 9, 2009 from SocINDEX database.
- Giapponi, C. C., & McEvoy, S. A. (2005-2006). The legal, ethical, and strategic implications of gender discrimination in compensation: Can the Fair Pay Act succeed where the Equal Pay Act failed? *Journal of Individual Employment Rights*, 12, 137-150.

- Ginther, D. K., & Hayes, K. J. (2003). Gender differences in salary and promotion for faculty in the humanities 1977-95. *Journal of Human Resources*, 38(1), 34-73.
- Glazer-Raymo, J. (1999). *Shattering the myths: Women in academia*. Baltimore: The Johns-Hopkins University Press.
- Gravetter, F.J. & Wallnau, L.B. (2004). (6th ed.). *Statistics for the behavioral sciences*. Florence, KY: Wadsworth.
- Gutner, T. (2002). The rose-colored glass ceiling. *Business Week*, 9/2/2002, Issue 3797, 101.
- Hagedorn, L.S. & Laden, B.V. (2002). Exploring the climate for women as community college faculty. *New Directions for Community Colleges*, 118, 69-78. Retrieved March 9, 2009 from ERIC database.
- Hallam, C. B. (1973). Legal tools to fight sex discrimination. *Labor Law Journal*, 24(12), 803-809.
- Hanna, C. (1988). The organizational context for affirmative action for women faculty. *Journal of Higher Education*, 59, 390-411.
- Hansot, E., & Tyack, D. (1988). Gender in American public schools: thinking institutionally. *Signs: Journal of Women in Culture & Society*, 13(4), 741-760.
- Hill, Jr, M. (1978). Sex discrimination under Title VII and the Constitution: A legal analysis. *Labor Law Journal*, 29, 570-581.
- Huck, S. (2004). *Reading statistics and research* (4th ed.). Boston: Pearson.
- Hymowitz, C., & Schellhardt, T. D. (1986, March 24). The glass ceiling. *The Wall Street Journal*.
- Igwebuike, J. G. (2006). Legal and policy implications for faculty diversification in higher education. *Negro Educational Review*, 57(3/4), 189-201.
- Ivie, R. (2005). Women in physics and astronomy in the U.S. *AIP Conference Proceedings*, 795, 51.
- Jeavons, S., & Sevastos, P. (2003). A matched cohort study of career progression: Glass ceiling effect or gender inequality? *Australian Journal of Psychology*, 55, 130-134. Retrieved January 17, 2009 from Academic Search Complete Database.
- Johnsrud, L. K. (1991). Administrative promotion. *Journal of Higher Education*, 62(2), 119-149.

- Johnston, W. B. (1987). *Workforce 2000: Work and workers for the 21st century*. Indianapolis: The Hudson Institute.
- Jordan, C.E., Clark, S.J. & Waldron, M.A. (2007). Gender bias and compensation in the executive suite of the Fortune 100. *Journal of Organizational Culture, Communications, & Conflict*, 11, 19-29. Retrieved March 9, 2009 from Business Source Complete database.
- Kaplin, W. A., & Lee, B. A. (2006). *The law of higher education* (4th ed.). San Francisco: Jossey-Bass.
- Kaufman, G., Isaksen, S.G., & Lauer, K. (1996). Testing the 'glass ceiling' effect on gender differences in upper level management: The case of innovator orientation. *European Journal of Work & Organizational Psychology*, 5(1), 29-42. Retrieved March 12, 2009 from Business Search Complete database.
- Kaufman-Rosen, L. & Kalb, C. (1995). Holes in the glass ceiling theory. *Newsweek*, 125(13), 24-25.
- Kay, F. M., & Hagan, J. (1995). The persistent glass ceiling: gendered inequalities in the earnings of lawyers. *British Journal of Sociology*, 46(2), 279-210.
- Kjeldal, S., Rindfleish, J. & Sheridan, A. (2005). Deal-making and rule-breaking: behind the façade of equity in academia. *Gender & Education*, 17, 431-447. Retrieved February 15, 2009 from Academic Search Complete database.
- Kulesa, P., Masson, R., & Simonds, K. (2005). *Predictors of Organizational Commitment by Gender and Management Level*. Paper presented at the American Sociological Association, 2005 Annual Meeting, Philadelphia. Retrieved March 9, 2009 from SocINDEX database.
- Lal, B., Yoon, S., & Carlson, K. (1999). How large is the gap in salaries of male and female engineers. *SRS Issue Brief*. Retrieved 9/25/2007, from ERIC database (ED432474).
- Leech, N.L., Barrett, K.C., & Morgan, G.A. (2005). *SPSS for intermediate statistics: Use and interpretation*. (2nd ed.). London: Lawrence Erlbaum Associates, Publishers.
- Lemons, M.A. (2003). Contextual and cognitive determinants of procedural justice perceptions in promotion barriers for women. *Sex Roles*, 49, 247-264. Retrieved January 17, 2009 from Academic Search Complete database.
- Lindsay, B. (1999). Women chief executives and their approaches towards equity in American universities. *Comparative Education*, 35(2), 187-199.

- Lyness, K.S., & Thompson, D.E. (2000). Climbing the corporate ladder: Do female and male executives follow the same route? *Journal of Applied Psychology*, 85, 86-101.
- MaCorr, Inc. (2009). *Sample size calculator*. Retrieved November 25, 2009 from http://www.macorr.com/ss_calculator.htm
- Macrae, N. (2005). Women and work: A ten year retrospective. *Work*, 24(4), 331-339. Retrieved March 12, 2009 from Business Source Complete database.
- Martin, B. A. (1989). Gender differences in salary expectations when current salary information is provided. *Psychology of Women Quarterly*, 13(1), 87-97.
- Mason, M.A., & Goulden, M. (2002). Do babies matter? The effect of family formation on the lifelong careers of academic men and women. *Academe*, 88(6), 21-27. Retrieved March 9, 2009 from ERIC database.
- Maume, D. (2004). Is the glass ceiling a unique form of inequality? Evidence from a random effects model of managerial attainment. *Work and Occupations*, 31(2), 250-274. Retrieved March 16, 2010 from <http://wox.sagepub.com/cgi/content/abstract/31/2/250>
- Menges, R. J., & Exum, W. H. (1983). Barriers to the progress of women and minority faculty. *The Journal of Higher Education*, 54(2), 123-144.
- Merit Systems Protection Board (1992). *A question of equity: Women and the glass ceiling in the federal government. A special study. A report to the President and the Congress of the United State*. Washington, D.C.
- Millar, M. (2004). HR's gender pay gap shames profession. *Personnel Today*, 9/21/04, 1.
- Monks, J., & McGoldrick, K. (2004). Gender earnings differentials among college administrators. *Industrial Relations*, 43(4), 742-758.
- Morgan, L. A. (1998). Glass-ceiling effect or cohort effect? A longitudinal study of the gender earnings gap for engineers, 1982 to 1989. *American Sociological Review*, 63, 479-483.
- Mortenson, T. G. (1997). *Postsecondary Education Opportunity. The Mortenson Research Seminar on Public Policy Analysis of Opportunity for Postsecondary Education, 1997, n55-66*, . Retrieved 08/31/2007, from ERIC database (ED416754).
- Mowry, M.J. (2008). Breaking the glass ceiling. *Business NH Magazine*, 25(6), 45. Retrieved January 17, 2009 from Regional Business News database.

- National Committee On Pay Equity. (2006). *The wage gap over time: in real dollars, women see a continuing gap*. Retrieved September 26, 2007, from National Committee on Pay Equity Web Site: <http://www.pay-equity.org/info-time.html>
- National Center for Education Statistics. (1997a). *1993 National Study of Postsecondary Faculty*. Retrieved August 30, 2007, from U.S. Department of Education Web Site: <http://nces.ed.gov/pubs97/97470.pdf>
- National Center for Education Statistics. (1997b). *College Enrollment and Enrollment Rates of Recent High School Completers, by Sex: 1960 through 2006*. Retrieved March 3, 2010 from www.nces.ed.gov/programs/digest/d07/tables/dt07_191.asp
- National Center for Education Statistics. (2002). *Digest of Education Statistics*. Retrieved August 30, 2007, from U.S. Department of Education Web Site: <http://nces.ed.gov/pubs2003/2003060c.pdf>
- National Center for Education Statistics. (2005). *Digest of Education Statistics*. Retrieved August 30, 2007, from U.S. Department of Education Web Site: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006030>
- National Center for Education Statistics (2008a). *Employees in Degree-Granting Institutions by Sex, Employment Status, Control and Type of Institution, and Primary Occupation: Selected Years, Fall 1987 through Fall 2007*. Retrieved October 29, 2010 from http://nces.ed.gov/programs/digest/d08/tables/dt08_243.asp
- National Center for Education Statistics (2008b). *Percentage of Full-time Instructional Staff with Tenure for Degree-Granting Institutions with a Tenure System, by Academic Rank, Sex, and Control and Type of Institution: Selected Years 1993-94 through 2005-06*. Retrieved October 29, 2010 from http://nces.ed.gov/programs/digest/d08/tables/dt08_264.asp
- National Center for Education Statistics (2008c). *Postsecondary Institutions in the United States: Fall 2007, Degrees and Other Awards Conferred: 2006-07, and 12 Month Enrollment: 2006-07*. Retrieved September 2, 2009 from <http://nces.ed.gov/pubs2008/2008159rev.pdf>
- National Center for Education Statistics (2008d). *Total Undergraduate Fall Enrollment in Degree-Granting Institutions, by Attendance Status, Sex of Student, and Control of Institution: 1967 through 2007*. Retrieved October 29, 2010 from http://nces.ed.gov/programs/digest/d08/tables/dt08_205.asp
- National Center for Education Statistics (2008e). *Total Graduate Fall Enrollment in Degree-Granting Institutions, by Attendance Status, Sex of Student, and Control of Institution: 1967 through 2007*. Retrieved October 29, 2010 from http://nces.ed.gov/programs/digest/d08/tables/dt08_206.asp

- National Center for Education Statistics. (2009). *Condition of Education 2009*. Retrieved September 2, 2009, from U.S. Department of Education Web Site: <http://nces.ed.gov/fastfacts/display.asp?id=72>
- Nelson, P. (2003). Gender pay gap narrows for top-level HR workers. *Personnel Today*, 4/22/2003, 3.
- Nettles, M. T., Perna, L. W., & Bradburn, E. M. (2000). Salary, promotion, and tenure status of minority and women faculty in U.S. colleges and universities. National study of postsecondary faculty, 1993 (NSOPF:93). Statistical analysis report. Retrieved 09/16/2007, from ERIC database (ED440608).
- Newman, M.A. (1996). Equal employment opportunity and glass ceilings: A contradiction in terms? *Public Administration Quarterly* (19), 4, 420-434.
- Parsad, B., & Glover, D. (2002). Tenure status of postsecondary instructional faculty and staff: 1992-98. Statistical analysis report. Retrieved March 12, 2009, from ERIC database (ED468361).
- Paulson-Gjerde, K.A. (2002). The existence of gender-specific promotion standards in the U.S. *Managerial & Decision Economics*, 23(8), 447-459. Retrieved March 12, 2009 from Business Source Complete database.
- Payroll Manager's Report. (2007). Is there gender discrimination in payroll professionals' compensation? 7(8), S1-S4.
- Pichler, S., Simpson, P.A., & Stroh, L.K. (2008). The glass ceiling in human resources: Exploring the link between women's representation in management and the practices of strategic human resource management and employee involvement. *Human Resource Management*, 47(3), 463-479. Retrieved March 12, 2009 from Business Source Complete database.
- Porto, B. L. (2005). Changing the game plan: A participation model of college sports. *Phi Kappa Phi Forum*, 85(3), 28-31.
- Powell, G.N. & Butterfield, D.A. (1994). Investigating the "glass ceiling" phenomenon: An empirical study of actual promotions to top management. *Academy of Management Journal*, 37(1), 68-86. Retrieved March 9, 2009 from Business Source Complete database.
- Probert, B. (2005). 'I just couldn't fit it in': Gender and unequal outcomes in academic careers. *Gender, Work and Organization*, 12(1), 50-83.
- Raosoft Incorporated. (2009). *Sample size calculator*. Retrieved November 25, 2009 from www.raosoft.com/samplesize.htm

- Rieder, C. H. (1978). Federal legislation and sex fairness in career education. *Journal of Career Education*, 5(2), 68-77.
- Roos, P.A., & Gatta, M.L. (2006). *Gender (In)Equity in the Academy*. Paper presented at the Conference of the American Sociological Association, 2006 Annual Meeting, Montreal. Retrieved March 9, 2009 from SocINDEX database.
- Schubert-Madsen, C. L., & Schubert, G. W. (1991). *North Dakota Law Review*. Thomson/West.
- Scott, M.S. (2001). For women, the glass ceiling persists. *Black Enterprise*, 32(1), 30.
- Sheehan, K. (2001). Email survey response rates: A review. *Journal of Computer Mediated Communication*, 6,(2). Retrieved November 19, 2009 from www.worldcat.org/scpa/oclc
- Southern Regional Educational Board. (2009). SREB Fact Book on Higher Education. Retrieved September 2, 2009, from Southern Regional Education Board Web Site: <http://www.sreb.org/main/EdData/FactBook/FB2009/08-Faculty09.pdf>
- Tai, A.R. & Sims, R.L. (2005). The perception of the glass ceiling in high technology companies. *Journal of Leadership and Organizational Studies*, 12(1). Retrieved September 1, 2009 from Business Source Complete database.
- Tharenou, P. (2001). Going up? Do traits and informal social processes predict advancing in management? *Academy of Management Journal*, 44(5), 1005-1017. Retrieved March 12, 2009 from Business Source Complete database.
- Toutkoushian, R.K. (1999). The status of academic women in the 1990s: No longer outsiders, but not yet equals. *The Quarterly Review of Economics and Finance*, 39(5), 679-698.
- Toutkoushian, R., & Conley, V. (2005). Progress for women in academe, yet inequities persist: Evidence from NSOPF: 99. *Research in Higher Education*, 46(1), 1-28.
- Umbach, P. D. (2006, May). *Gender equity in the academic labor market: An analysis of academic disciplines*. Paper presented at the meeting of the 46th Annual Forum of the Association for Institutional Research. Retrieved 09/15/2007, from ERIC database (ED493514).
- Van Vianen, A. E., & Fischer, A. H. (2002). Illuminating the glass ceiling: the role of organizational culture preferences. *Journal of Occupational & Organizational Psychology*, 75(3), 315-337.
- Vogt, W.P. (2007). *Quantitative research methods for professionals*. Boston: Pearson

- Wickwire, K.S., & Kruper, J.C. (1996). The glass ceiling effect: An approach to assessment. *Consulting Psychology Journal: Practice and Research*, 48(1), 32-29.
- Williams, J.C. (2005). The glass ceiling and the maternal wall in academia. *New Directions for Higher Education*, 130, 91-105. Retrieved March 9, 2009 from Academic Search Complete database.
- Williams, J. E., & Bennett, S. M. (1975). The definition of sex stereotypes via the adjective check list. *Sex Roles*, 1, 327-337.
- Wise, L.R. (1990). Social equity in civil service systems. *Public Administration Review*, 50 (5), 567-575.
- Wrigley, B.J. (2002). Glass ceiling? What glass ceiling? A qualitative study of how women view the glass ceiling in public relations and communications management. *Journal of Public Relations Research*, 14(1), 27-55. Retrieved July 17, 2009 from Business Source Complete database.
- Wood, R. G. (1993). Pay differences among the highly paid: the male-female earnings gap in lawyers' salaries. *Journal of Labor Economics*, 11(3), 417-431.
- Yasin, J., & Helms, M.M. (2007). Population, employment, and marital status trends: Predicting the number of women in managerial positions. *Journal of Organizational Culture, Communications & Conflict*, 11(2), 37-51. Retrieved February 15, 2009 from Business Source Complete database.

Appendix A

Factor Loadings for Barriers Items

Item	Factor Loadings		
	1	2	3
Feeling pressure to fit in or adapt to the culture			.69
Being excluded from social events and informal interactions with colleagues, either on or off the job			.76
Not enough mentoring	.75		
Poor career development and planning processes	.75		
Not getting the right jobs early in your career	.64		
Needing to gain international experience in order to advance		.68	
Few role models	.56		
Limited access to informal networks	.42		
Not having a senior manager who facilitates your career progress	.87		
Not knowing what the criteria are for advancement	.88		
Lack of opportunities to move across functions or businesses	.87		
Not being considered for jobs that require relocation (domestic)		.44	
Feeling like you are an outsider			.63
Not getting access to the right people (or not knowing the right people)	.56		
Being unsure about how to initiate a job change	.73		
Difficulty getting access to critical assignments	.65		
Difficulty getting international assignments		.78	
Not feeling comfortable asserting your views because of possible consequences	.58		

(Appendix A continued)

Item	Factor Loadings		
	1	2	3
Not receiving enough meaningful feedback about your strengths and weaknesses	.74		
Not being considered when promotions for bigger jobs arise	.75		
Feeling that you can't make mistakes and learn from them without threatening your job or your future	.56		
Difficulty getting access to opportunities	.84		
Feeling like you are held to a higher standard than others	.48		
Difficulty getting access to job assignments with bottom line responsibility	.61		
People tend to recommend and select people like themselves	.49		
Not being offered challenging assignments	.48		

Appendix B

Factor Loadings for Facilitators Items

Item	Factor Loadings	
	1	2
Having a good track record		.72
Developing relationships with senior managers		.46
Initiating your own job changes		.70
Moral support and encouragement from your mentor or manager during stressful times	.78	
Being offered key job assignment	.43	
Developing an informal network	.46	
Initiating moves across functions and businesses		.43
Help from your mentor in establishing key relationships	.84	
Credibility with your peers		.62
Having a clear idea of your own career goals		.65
Advice from your mentor about how to solve difficult business problems	.85	
Having job assignments with bottom line responsibility		.56
Being assertive		.73
Taking personal risks		.77
Having senior manager(s) who facilitate(s) your career progress	.77	
Early, significant responsibility and accountability for important tasks		.48
Having role models	.79	
Having a mentor or someone who provides good advice on career opportunities	.93	
Working for managers who take an interest in your career	.86	

Appendix C

Means and Standard Deviations for Barriers, Facilitators and Glass Ceiling Items

Item	<i>M</i>	<i>SD</i>
Barriers to Advancement Items		
Feeling pressure to fit in or adapt to the culture	1.93	1.07
Being excluded from social events and informal interactions with colleagues, either on or off the job	1.72	1.0
Not enough mentoring	2.27	1.23
Poor career development and planning processes	2.25	1.24
Not getting the right jobs early in your career	1.85	1.12
Needing to gain international experience in order to advance	1.21	.61
Few role models	2.08	1.16
Limited access to informal networks	2.01	1.10
Not having a senior manager who facilitates your career progress	2.29	1.37
Not knowing what the criteria are for advancement	2.09	1.27
Lack of opportunities to move across functions or businesses	2.28	1.27
Not being considered for jobs that require relocation (domestic)	1.33	.78
Feeling like you are an outsider	1.95	1.13
Not getting access to the right people (or not knowing the right people)	1.93	1.11
Being unsure about how to initiate a job change	1.83	1.06
Difficulty getting access to critical assignments	1.84	1.15
Difficulty getting international assignments	1.30	.77

(Appendix C continued)

Item	<i>M</i>	<i>SD</i>
Not feeling comfortable asserting your views because of possible consequences	2.25	1.29
Not receiving enough meaningful feedback about your strengths and weaknesses	2.28	1.19
Not being considered when promotions for bigger jobs arise	2.11	1.29
Feeling that you can't make mistakes and learn from them without threatening your job or your future	2.09	1.26
Difficulty getting access to opportunities	2.11	1.25
Feeling like you are held to a higher standard than others	2.15	1.32
Difficulty getting access to job assignments with bottom line responsibility	1.78	1.08
People tend to recommend and select people like themselves	2.48	1.36
Not being offered challenging assignments	1.64	1.04
Facilitators to Advancement Items		
Having a good track record	4.12	1.07
Developing relationships with senior managers	3.84	1.06
Initiating your own job changes	3.70	1.23
Moral support and encouragement from your mentor or manager during stressful times	3.04	1.36
Being offered key job assignments	3.40	1.26
Developing an informal network	3.44	1.22
Initiating moves across functions and businesses	3.02	1.34
Help from your mentor in establishing key relationships	2.78	1.38

(Appendix C continued)

Item	<i>M</i>	<i>SD</i>
Credibility with your peers	4.14	1.05
Having a clear idea of your own career goals	3.81	1.14
Advice from your mentor about how to solve difficult business problems	2.91	1.39
Having job assignments with bottom line responsibility	3.41	1.51
Being assertive	3.59	1.12
Taking personal risks	3.65	1.14
Having senior manger(s) who facilitate(s) your career progress	3.13	1.42
Early, significant responsibility and accountability for important tasks	3.54	1.19
Having role models	3.02	1.32
Having a mentor or someone who provides good advice on career opportunities	2.97	1.43
Working for manager(s) who take an interest in your career	3.24	1.39
Information about organizational politics from your mentor or manager	3.10	1.35
Breadth of assignments or experiences	3.74	1.13
Items Related to the Glass Ceiling		
Barriers exist to the advancement of women in my institution	2.31	1.21
In my organization a positive attitude exists toward women in upper management positions	3.80	1.13
A glass ceiling hinders the advancement of women in my organization	2.26	1.13

Appendix D

Means, Standard Deviations, and Intercorrelations for Perceptions of Facilitators and Predictor Individual Characteristics

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
Perceptions of Mentoring	3.12	1.09	-.01	.05	.03	.03	-.01	.04	.07	-.03	.05	.03	.08*	.01
Predictor Variable														
1. Gender	.30	.46	-	-.10	.02	.03	-.02	.12	-.03	-.07	.12	.06	-.06	-.04
2. Marital Status	.21	.41		-	.10	.03	.01	-.13	.04	.09	-.002	.05	.01	-.01
3. Twenties	.02	.13			-	-.04	-.07	-.07	-.02	.07	.15	.04	-.01	-.02
4. Thirties	.06	.24				-	-.14	-.14	-.03	.08	.06	.10	.07	-.04
5. Forties	.23	.42					-	-.29	-.06	-.04	.04	.04	.01	-.02
6. Sixties	.22	.42						-	-.06	-.06	-.01	-.01	.01	-.05
7. Seventies	.01	.11							-	-.04	-.01	-.03	-.01	-.02
8. African-American	.09	.29								-	-.03	-.08	-.03	-.05
9. Asian	.11	.10									-	-.03	-.01	-.02
10. Hispanic	.05	.22										-	-.02	-.04
11. Native American	.01	.09											-	-.02
12. Other	.02	.15												-

* $p < .05$

(Appendix D continued)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
Perceptions of Experience/ Opportunities	3.70	.82	.002	.02	-.01	.04	-.03	.06	.01	.05	.03	-.04	.03	-.02
Predictor Variable														
1. Gender	.30	.46	-	-.10	.02	.03	-.02	.12	-.03	-.07	.12	.06	-.06	-.04
2. Marital Status	.21	.41		-	.10	.03	.01	-.13	.04	.09	-.002	.05	.01	-.01
3. Twenties	.02	.13			-	-.04	-.07	-.07	-.02	.07	.15	.04	-.01	-.02
4. Thirties	.06	.24				-	-.14	-.14	-.03	.08	.06	.10	.07	-.04
5. Forties	.23	.42					-	-.29	-.06	-.04	.04	.04	.01	-.02
6. Sixties	.22	.42						-	-.06	-.06	-.01	-.01	.01	-.05
7. Seventies	.01	.11							-	-.04	-.01	-.03	-.01	-.02
8. African-American	.09	.29								-	-.03	-.08	-.03	-.05
9. Asian	.01	.10									-	-.03	-.01	-.02
10. Hispanic	.05	.22										-	-.02	-.04
11. Native American	.01	.09											-	-.02
12. Other	.02	.15												-

Appendix E

Means, Standard Deviations, and Intercorrelations for Perceptions of Barrier Internal Structural and Predictor Individual Characteristics

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
Perceptions of Internal Structural Barrier	2.08	.92	-.15**	.05	.13**	.03	.03	.14**	.05	.04	.06	.04	-.06	.02
Predictor Variable														
1. Gender	.29	.46	-	-.10	.02	.03	-.02	.12	-.03	-.07	.12	.06	-.06	-.01
2. Marital Status	.21	.41		-	.10	.03	.01	-.13	.04	.09	-.00	.05	.01	-.01
3. Twenties	.02	.13			-	-.04	-.07	-.07	-.02	.07	.15	.04	-.01	-.02
4. Thirties	.06	.24				-	-.14	-.14	-.03	-.08	.06	.10	.07	-.04
5. Forties	.23	.42					-	-.29	-.06	-.04	.04	.04	.01	-.02
6. Sixties	.22	.42						-	-.06	-.06	-.01	-.01	.01	-.05
7. Seventies	.01	.11							-	-.04	-.01	-.03	-.01	-.02
8. African-American	.09	.29								-	-.03	-.08	-.03	-.05
9. Asian	.01	.10									-	.03	.01	.02
10. Hispanic	.05	.22										-	-.02	-.04
11. Native American	.01	.22											-	-.02
12. Other	.02	.15												

** $p < .01$

Appendix F

Means, Standard Deviations, and Intercorrelations for Perceptions of Barrier Relocation and Predictor Individual Characteristics

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
Perceptions of Relocation	2.08	.92	-.15**	.05	.13**	.03	.03	-.14**	.05	.04	-.06	.04	-.06	.02
Predictor Variable														
1. Gender	.29	.46	-	-.10	.02	.03	-.02	.12	-.03	-.07	.12	.06	-.06	-.01
2. Marital Status	.21	.41		-	.10	.03	.01	-.13	.04	.09	-.00	.05	.01	-.01
3. Twenties	.02	.13			-	-.04	-.07	-.07	-.02	.07	.15	.04	-.01	-.02
4. Thirties	.06	.24				-	-.14	-.14	-.03	-.08	.06	.10	.07	-.04
5. Forties	.23	.42					-	-.29	-.06	-.04	.04	.04	.01	-.02
6. Sixties	.22	.42						-	-.06	-.06	-.01	-.01	.01	-.05
7. Seventies	.01	.11							-	-.04	-.01	-.03	-.01	-.02
8. African-American	.09	.29								-	-.03	-.08	-.03	-.05
9. Asian	.01	.10									-	-.03	-.01	-.02
10. Hispanic	.05	.22										-	-.02	-.04
11. Native American	.01	.22											-	-.02
12. Other	.02	.15												-

** $p < .01$

Appendix G

Means, Standard Deviations, and Intercorrelations for Perceptions of Barrier Organizational Climate and Predictor Individual Characteristics

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
Perceptions of Organizational Climate	1.86	.92.	-.15**	.04	.07	-.004	.004	-.12**	.08*	.08*	-.04	.07	-.07	.003
Predictor Variable														
1. Gender	.30	.46	-	-.10	.02	.03	-.02	.12	-.03	-.07	.12	.06	-.06	-.04
2. Marital Status	.21	.41		-	.10	.03	.01	-.13	.04	.09	-.002	.05	.01	-.01
3. Twenties	.02	.13			-	-.04	-.07	-.07	-.02	.07	.15	.04	-.01	-.02
4. Thirties	.06	.24				-	-.14	-.14	-.03	.08	.06	.10	.07	-.04
5. Forties	.23	.42					-	-.29	-.06	-.04	.04	.04	.01	.02
6. Sixties	.22	.42						-	-.06	-.06	-.01	-.01	.01	-.05
7. Seventies	.01	.11							-	-.04	-.01	-.03	-.01	-.02
8. African-American	.09	.29								-	-.03	-.08	-.03	-.05
9. Asian	.01	.10									-	-.03	-.01	-.02
10. Hispanic	.05	.22										-	-.02	-.04
11. Native American	.09	.09											-	-.02
12. Other	.02	.15												-

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

Appendix H

Means, Standard Deviations, and Intercorrelations for Perceptions of Facilitators and Predictor Work Profile Characteristics

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Perceptions of Mentoring	3.11	1.00	-.07	-.05	-.01	-.001	.09	-.14
Predictor Variable								
1. Hours Worked	.74	.44	-	.07	-.16	-.03	.003	-.18
2. Time Spent Teaching	.20	.40		-	.12	.02	.36	.25
3. Time Spent Researching	.12	.33			-	.08	.15	.15
4. Time Spent Service	.45	.50				-	.38	-.01
5. Time Spent Administration	.58	.50					-	.05
6. Year Entered Academia	.70	.46						-
Perceptions of Experience/Opportunities	3.58	.79	-.12	.04	.09	.01	.16	-.05
Predictor Variable								
1. Hours Worked	.74	.44	-	.07	-.16	-.03	.003	-.18
2. Time Spent Teaching	.20	.40		-	.12	.02	.36	.25
3. Time Spent Researching	.12	.33			-	.08	.15	.15
4. Time Spent Service	.45	.50				-	.38	-.01
5. Time Spent Administration	.58	.50					-	.05
6. Year Entered Academia	.70	.46						-

Appendix I

Means, Standard Deviations, and Intercorrelations for Perceptions of Barriers and Predictor Work Profile Characteristics

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Perceptions of Internal Structural Barrier	2.11	.96	-.12	.08	.17	.003	-.02	.06
Predictor Variable								
1. Hours Worked	.74	.44	-	.07	-.16	-.03	.003	-.18
2. Time Spent Teaching	.20	.40		-	.12	.02	.36	.25
3. Time Spent Researching	.12	.33			-	.08	.15	.15
4. Time Spent Service	.45	.50				-	.38	-.01
5. Time Spent Administration	.58	.50					-	.05
6. Year Entered Academia	.70	.46						-
Perceptions of Relocation	1.6	.88	-.06	.20	.20	-.02	.10	.07
Predictor Variable								
1. Hours Worked	.74	.44	-	.07	-.16	-.03	.003	-.18
2. Time Spent Teaching	.20	.40		-	.12	.02	.36	.25
3. Time Spent Researching	.12	.33			-	.08	.15	.15
4. Time Spent Service	.45	.50				-	.38	-.01
5. Time Spent Administration	.58	.50					-	.05
6. Year Entered Academia	.70	.46						-

(Appendix I continued)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Perceptions of Organizational Climate	1.99	.95						
Predictor Variable								
1. Hours Worked	.74	.44	-	.07	-.16	-.03	.003	-.18
2. Time Spent Teaching	.20	.40		-	.12	.02	.36	.25
3. Time Spent Researching	.12	.33			-	.08	.15	.15
4. Time Spent Service	.45	.50				-	.38	-.01
5. Time Spent Administration	.58	.50					-	.05
6. Year Entered Academia	.70	.46						-

Appendix J

Permission to Use Scales from APA



AMERICAN
PSYCHOLOGICAL
ASSOCIATION

Cheryl E. Myers
University of New Orleans
Educational Leadership, Counseling and Foundations
1437 Athis St.
New Orleans, LA 70122

INVOICE NO. N/A
Federal Tax I.D. 53-0205890
Date: October 14, 2009

IN MAKING PAYMENT REFER TO THE ABOVE INVOICE NUMBER

APA Permissions Office
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Washington, DC 20002-4242
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Request is for the following APA-copyrighted material: Appendixes A and B (scales) from:

- Lyness, K. S., & Thompson, D. E. (2000). Climbing the corporate ladder: Do female and male executives follow the same route? *Journal of Applied Psychology*, 85, 86-101. doi: 10.1037/0021-9010.85.1.86

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File: Myers, Cheryl

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ACCEPTED AND AGREED TO BY:

Cheryl E. Myers

Applicant

October 16, 2009

Date

PERMISSION GRANTED ON ABOVE TERMS:

Donna Thompson

for the American Psychological Association

October 14, 2009

Date

_____ I wish to cancel my request for permission at this time.

jf

Appendix K

Permission to Use Scales from Authors

From: Karen Lyness [Karen.Lyness@verizon.net]
Sent: Sunday, October 18, 2009 3:49 PM
To: Cheryl Elizabeth Myers
Cc: 'Karen Lyness'
Subject: RE: Glass Ceiling - Doctoral Student Request

Dear Cheryl:
Thank you for forwarding the APA document granting you permission to use the scales from the Lyness & Thompson (2000) article in your dissertation research.

I am writing to give you my permission to use our items in your research, which is consistent with what APA has agreed to. Also, you must make it clear that we developed the items, and that you are using them with our permission. The appropriate citation is:

Lyness, K. S., & Thompson, D. E. (2000). Climbing the corporate ladder: Do female and male executives follow the same route? *Journal of Applied Psychology*, 85, 86-101.

I agree with the conditions in the attached APA agreement that your use of the items is limited by the terms specified. I expect you to adhere to all of these conditions.

Good luck with your dissertation!

Best,

Karen S. Lyness, Ph.D.
Professor & Doctoral Program Head
Industrial & Organizational Psychology
Department of Psychology, Box B 8-215
Baruch College, City University of New York
One Bernard Baruch Way
New York, NY 10010
phone: (846) 312-3842
fax: (846) 312-3781
email: Karen.Lyness@verizon.net

From: Cheryl Elizabeth Myers [mailto:cemyers@uno.edu]
Sent: Friday, October 16, 2009 4:15 PM
To: Karen Lyness
Subject: RE: Glass Ceiling - Doctoral Student Request

Greetings Dr. Lyness,
In our previous communication, you asked me to forward the permission from the APA to use your "Items and Scales Measuring Perceived Barriers to Advancement" and the "Items and Scales Measuring Perceived Facilitators of Advancement" published in your article in the *Journal of Applied Psychology*, Vol. 85, No.1.

Attached please find the approved permission form. Part of the agreement requires that I also have your permission to use the scales. I would greatly appreciate if you would reply with your consent so that I have this for my records.
Thank you,

Appendix L

Email Request to Participate in Survey

Perceptions of the Glass Ceiling in Community Colleges Survey Invitation
noreply@qualtrics.com [noreply@qualtrics.com]

Sent: Tuesday, June 01, 2010 8:08 PM

To: Cheryl Elizabeth Myers

June 1, 2010

Dear Community College Colleague,

I am a graduate student under the direction of Dr. Marietta Del Favero in the College of Educational Leadership, Counseling and Foundations at the University of New Orleans. I am conducting a research study to explore the perception of a glass ceiling effect in community colleges in the United States.

I am requesting your participation which will involve approximately 10-15 minutes of your time. Your participation in this study is voluntary. If you choose not to participate there will be no penalty. The survey is anonymous and includes questions which may be considered personal or sensitive. You may exit the survey at any time if uncomfortable with answering any of the questions. The results of the study may be published but your name will not be known.

If you have any questions concerning the research study, please contact me at cemyers@uno.edu. If you have questions about your rights as a research participant, please contact Dr. Ann O'Hanlon (504-280-6531) at the University of New Orleans.

Completion of the survey will be considered your consent to participate.

To participate in the survey, follow the link below. Please complete the survey by June 15, 2010.

Sincerely,

Cheryl E. Myers

Follow this link to the Survey:

[Take the Survey](http://neworleans.qualtrics.com/WRQualtricsSurveyEngine)

Or copy and paste the URL below into your internet browser:
<http://neworleans.qualtrics.com/WRQualtricsSurveyEngine>

Appendix M

Survey Instrument

Qualtrics Survey Software



Barriers to Advancement/Facilitators of Advancement

The following items and scales are used with permission from the authors. Copyright (2000) by the American Psychological Association. Reproduced with permission. The official citation that should be used in referencing this material is Lyness, K.S. & Thompson, D.E. (2000). Climbing the corporate ladder: Do female and male executives follow the same route? *Journal of Applied Psychology*, 85, 86-101. doi: 10.1037/0021-9010.85.1.86. No further reproduction or distribution is permitted without permission from the American Psychological Association.

Please rate the extent to which the following factors have been a problem in your own career advancement in community colleges.

	No problem at all	Somewhat of a problem	A problem	A serious problem	A very serious problem
Feeling pressure to fit in or adapt to the culture					
Being excluded from social events and informal interactions with colleagues, either on or off the job					
Not enough mentoring (e.g., counseling about career opportunities)					
Poor career development and planning processes					
Not getting the right jobs early in your career (that you need for later advancement)					
Needing to gain international experience in order to advance					
Few role models					
Limited access to informal networks					
Not having a senior manager who facilitates your career progress					
Not knowing what the criteria are for advancement					
Lack of opportunities to move across functions or businesses					
Not being considered for jobs that require relocation (domestic)					
Feeling like you are an outsider					
Not getting access to the right people (or not knowing the right people)					
Being unsure about how to initiate a job change					
Difficulty getting access to critical developmental assignments (e.g., serving on highly visible task forces or committees)					
Difficulty getting international assignments					
Not feeling comfortable asserting your views because of possible consequences					

https://new.qualtrics.com/ControlPanel/PopUp.php?PopType=SurveyPrintPreview&WID=_blank (1 of 7) [10/8/2010 10:01:14 AM]

Not receiving enough meaningful feedback about your strengths and weaknesses

Not being considered when promotions for bigger jobs arise

Feeling that you can't make mistakes and learn from them without threatening your job or your future

Difficulty getting access to opportunities

Feeling like you are held to a higher standard than others

Difficulty getting access to job assignments with bottom line responsibility

People tend to recommend and select people like themselves

Not being offered challenging assignments

Please rate the extent to which the following factors have facilitated your own career advancement in community colleges.

	Not a facilitator	Somewhat of a facilitator	A facilitator	An important facilitator	A very important facilitator
Having a good track record					
Developing relationships with senior managers					
Initiating your own job changes					
Moral support and encouragement from your mentor or manager during stressful times					
Being offered key job assignments					
Developing an informal network					
Initiating moves across functions and businesses					
Help from your mentor in establishing key relationships					
Credibility with your peers					
Having a clear idea of your own career goals					
Advice from your mentor about how to solve difficult business problems					
Having job assignments with bottom line responsibility					
Being assertive					
Taking personal risks					
Having senior manager(s) who facilitate (s) your career progress					
Early, significant responsibility and accountability for important tasks					
Having role models					
Having a mentor or someone who provides good advice on career opportunities					
Working for manager(s) who take an interest in your career					
Information about organizational politics from your mentor or manager					
Breadth of assignments or experiences					

Barriers exist to the advancement of women in my institution.

Strongly Disagree

Disagree

Neither Agree nor Disagree

Agree

Strongly Agree

In my organization a positive attitude exists toward women in upper management positions.

Strongly Disagree

Disagree

Neither Agree nor Disagree

Agree

Strongly Agree

A glass ceiling hinders the advancement of women in my organization.

Strongly Disagree

Disagree

Neither Agree nor Disagree

Agree

Strongly Agree

This is a hierarchy depicting possible levels of advancement. Place yourself in the category which best describes how you identify yourself in your current position.

Staff/

Administrator

Faculty

Division/Department

Head

Dean

Executive Administrator

What year did you begin working in an academic setting?

Do you have academic rank?

Yes

No

What is your current rank?

Instructor

Assistant Professor

Associate Professor

Professor

Please indicate the percentage of your job duties spent on the following activities.

	0-20%	21-40%	41-60%	61-80%	81-100%
Teaching					
Research					
Service					
Administration					

Have you ever applied for a promotion you did not receive?

Yes

No

The primary reason communicated to you as to why you did not receive the promotion was related to

Educational Background

Relevance of Experience

Organizational Fit

Gender

Race/Ethnicity

Relocation Requirement

Travel Requirement

Family responsibilities

Not part of the group

Disciplinary fit

No reason given

Other (please indicate)

Your perception of the reason you did not receive the promotion is related to

Educational Background

Relevance of Experience

Organizational Fit

Gender

Race/Ethnicity

Relocation Requirement

Travel Requirement

Family responsibilities

Not part of the group

Disciplinary Fit

Other (please indicate)

What is your current level of education?

High School Diploma

Associate Degree

Bachelor's Degree

Master's Degree

Doctoral Degree

What is your gender?

Male

Female

What year were you born?

What is your marital status?

Single

Married/

Partnered

Do you have children?

Yes

No

Please indicate the number of hours per week you spend working in your current position.

Please indicate your race/ethnicity.

African-American

Asian

Caucasian

Hispanic

Native American

Other

Please indicate the primary classification of your institution.

Community College

Technical College

Community/Technical College

In which state are you currently employed?

Survey Powered By Qualtrics

Appendix N

IRB Approval

**University Committee for the Protection
of Human Subjects in Research
University of New Orleans**

Campus Correspondence

Principal Investigator: Marietta Del Favero
Co-Investigator: Cheryl E. Myers
Date: May 14, 2010
Protocol Title: "Perceptions of the Glass Ceiling Effect in Community Colleges"
IRB#: 02May10

The IRB has deemed that the research and procedures described in this protocol application are exempt from federal regulations under 45 CFR 46.101 category 2 due to the fact that this research will involve the use of interview procedures. Although information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects, any disclosure of the human subjects' responses outside the research wouldn't reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Exempt protocols do not have an expiration date; however, if there are any changes made to this protocol that may cause it to be no longer exempt from CFR 46, the IRB requires another standard application from the investigator(s) which should provide the same information that is in this application with changes that may have changed the exempt status.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best wishes on your project!

Sincerely,

Robert D. Laird, Chair
UNO Committee for the Protection of Human Subjects in Research

VITA

The author was born in New Orleans, Louisiana. She earned her Bachelor's degree in nursing from Louisiana State University Medical Center in 1986. After embarking on a career in adult medical-surgical nursing, she earned her Master's degree in nursing from Louisiana State University Medical Center in 1994, at which time she began a career in nursing education. In 2001, the author began taking courses in the graduate program in Educational Leadership and Administration in the College of Education at the University of New Orleans. She subsequently was accepted into that doctoral program and completed this dissertation as a graduation requirement.