2017

The Role of Gender in Hiring Officials' Perceptions of Chief Information Officer Candidates

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Abstract

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MA, Brooklyn College, City University of New York, 2007

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Dissertation Submitted in Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Policy and Administration

Walden University

July 2017

Abstract

Few women in academia occupy the leadership role of chief information officer (CIO), yet little is known about the underlying causes for gender disparity in this role. The purpose of this causal comparative study was to investigate whether gender stereotypes may impact perceptions about managerial characteristics of CIO candidates in academic settings. The theoretical foundation for this study was Schein's "Think Manager, Think Male*"* paradigm and Acker's gendered organization theory. Data were acquired from 48 hiring officials from four-year public, private, and nonprofit colleges, universities, and research institutions in the Northeastern region of the United States who completed the Schein Descriptive Index. Data were analyzed using ANOVA to determine whether gender of the hiring authority was associated with the perceived managerial skills of male, female, and non-gender-specific CIO candidates. Data analysis revealed no significant difference in male and female hiring officials' ratings of male, female, and non-gender-specific CIO candidates. The findings demonstrated the theoretical construct of Schein's "Think Manager, Think Male" paradigm are outdated and Acker's gendered organization theory persistently exists where males' dominant in organizations and roles deemed masculine. Implications for positive social change in the area of public policy are increasing awareness to hiring officials and women seeking the role of CIO in academia about other factors such as age, ethnicity, and experience that may affect candidate selection in the role of CIO.

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Dedication

I dedicate this dissertation to my daughters, Chandra Katreece Roberts and Charm Kateera Roberts! I love you. I would also like to dedicate this dissertation to my grandparents, Robert T. Van Ness and Catherine Van Ness.

Acknowledgements

First, I give thanks to God for giving me the strength and perseverance for putting me on this path. There were days I wanted to give up, but He knew what was in store at the end of the journey. A new beginning lies ahead.

To Drs. Hilda Shepeard and Ernesto Escobedo, thank you for your guidance, patience, expertise, and understanding during this process. Dr. Shepeard, I appreciate your critical review and feedback, which pushed me toward excellence. Dr. Escobedo, I appreciate your support in my intellectual development as a scholarly writer.

Dr. Sharonica Johnson, I appreciate your mentorship and encouraging words. Your insightful comments and feedback supported my growth as a scholarly writer. I am especially grateful for the friendship we have forged during the journey.

I want to give a special thanks to my family and friends. Shonna Willis-Neilen, Angralon Denise Dixon, and Cheryl Sylvester, thank you for your love and support. There were days when I would speak and I knew you had no clue what I was speaking about but, you listened attentively anyway. I appreciate you.

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Chapter 1: Introduction to the Study

Researchers lack adequate knowledge about the role of gender in the selection process for leadership positions in U.S. higher education institutions. Specifically, they do not fully understand whether male and female hiring officials differ in their perceptions of applicants for chief information officer (CIO) positions, particularly in information technology (IT) departments. Higher education and the role of CIO are male dominate.

According to Schein (1973), individuals typically perceive males as having more requisite managerial characteristics than females. These descriptive characteristics, attitudes, and temperaments are used by Schein to categorize individuals in general; some are positive in connotation, some are negative, and some are neither positive or negative (Schein, 1973). Schein concluded that a high percentage of males in managerial positions believe that females are less suitable for managerial roles because of the masculine attributes embodied by these roles. For example, females were less suitable for managerial roles because they possessed attributes that were more feminine such as timid, uncertain, and sympathetic. Hence, managerial position requires more attributes that are characteristic to males than females. This notion is prevalent in the IT field because technology is associated to masculinity. Therefore, examining male and female hiring officials differ in their perceptions of applicants for chief information officer (CIO) positions, particularly in information technology (IT) departments.

A minimal percentage of females that exist in leadership positions (Lennon, 2013). In this study, I examined if the gender contributes to the lack of females in the

leadership positions in higher education. I wanted to advance knowledge in the area of public policy and administration to address the challenges of gender disparity in leadership positions in higher education, particularly the role of CIO. Study findings may contribute to more knowledge of gender bias in hiring decisions, particularly in academic organizations. With this knowledge, hiring officers may be less likely to discriminate based on gender. Implications for positive social change in the area of public policy are increasing awareness about other factors such as age, ethnicity, and experience that may affect candidate selection into the role of CIO. Following this introduction, the background of the study, problem statement, purpose statement research questions, theoretical foundation, nature of the study, definitions, assumptions, scope and delimitations, limitations, significance, and a summary appear in Chapter 1.

Background

Many females in male- dominated organizational environments encounter marginalization and gender stereotypes that affect others' perceptions of their effectiveness as leaders (Lennon, 2013). These factors contribute to females' underrepresentation in leadership positions across industries, especially those where males are dominant. Male dominant industries include academia, arts and entertainment, business and commercial banking, law, medicine, and the military. Across industries, few females hold senior leadership positions (Lennon, 2013). Few females work in senior leadership positions at 4-year academic institutions in the role of CIO in the United States (Brown, 2008, 2011, 2013). The CIO is a leadership position that reports to the chief executive officer (CEO). The CIO role is to educate executive management and

employees the business value and risks of an IT infrastructure. In academia, the CIO reports to either the President or Vice President of Administration and Finance. Although, the CIO has an integral role within an academic institutions organizational structure, CIO leadership roles are occupied with males in excess of females (Brown, 2008, 2011, 2013).

Hence, workplace diversity in educational leadership is essential for institutional growth and sustainability. Few females in the U.S. exist in academic leadership positions in comparison to males (Dean, Bracken, & Allen, 2009). The underrepresentation of females in the role of CIO in academia limits workplace diversity that is necessary for success in higher education which serves diverse student populations (Brown & McClure, 2010). Males occupy most leadership roles in technology and academia, respectively (Lennon, 2013). Females comprise only approximately 24% of academic leadership positions in the U.S., according to Lennon (2013). In the broader business sector, the percentage of women in these positions is also low. According to Catalyst (2014), in the U.S. only 5% CEOs are female, 8% are top earners, 16% hold board seats, 14% are executive officer, and 51% exist in management and professional occupations. However, females only make up 46% of the U.S. workforce. Females only account for 20% of leadership roles in the technology sector and only 9% of the leadership roles are CIO positions (Lennon, 2013).

The underrepresentation of females in the role of CIO is prevalent across industries. Boardroom Insiders (2012) found that females held only 20% of CIO positions in Fortune 250 companies. However, the underrepresentation of females in

CIO positions is not isolated to other business sectors. It is existent in higher education. In 2008, researchers with the Center for Higher Education Chief Information Officer Studies (CHECS) reported that 26% females were CIOs (Brown, 2008). According to CHECS, in 2011 the percentage of female CIOs was 23%, a figure that remained consistent for the past 2 years. In 2013, researchers with CHECS reported that 21% of universities' CIOs were females (as cited in Brousell, 2013).

The representation of females in CIO roles in academia continues to decline. In conducting this study, I hoped to address the gap in literature regarding the role of gender and perceived requisite managerial characteristics in hiring practices for CIOs in information technology organizations (ITOs) in academia in the United States. Implications for positive social change in the area of public policy are increasing awareness about other factors such as age, ethnicity, and experience that may affect candidate selection in the role of CIO.

Prior research in academia focused on the underrepresentation of females in the educational leadership role of president, provost, dean, and chairperson (Raveling, 2013; Singell & Tang, 2013). However, based on my review of the literature, there is limited research on why so few females work in the position of CIO in higher education. Based on findings from a study of three female CIOs, Drury (2008) concluded that higher education IT is an environments silence and marginalizes females. Brown and McClure (2010) identified factors contributing to the decline of female CIOs in academia. These include the retirement of current female CIOs, a lack of females in technology leadership ranks past the age of 40, and less desire on the part of women to achieve CIO roles.

However, prior researchers do not clarify whether gender and perceived requisite managerial characteristics of hiring officials affect CIO candidate selection.

CIOs must exhibit leadership effectiveness (Janz & Honken, 2013; Lim, Stratopolous, & Wirjanto, 2013; Sevel & Rahman, 2014). Adams and Weiss (2011) concluded that aspiring technology leaders who hope to lead others effectively be technologically adept, change agents, and business experts. Furthermore, Chinn and Mooney (2009) assert CIOs' roles have evolved over the past 25 years; to be effective CIOs must be business strategists and technology centric. Females excel in leadership competencies at higher percentages than males (Folkman, 2012). Folkman (2012) noted that females outrank males in leadership competencies such as collaborating and working in teams, championing change, driving business results, and building relationships. However, female representation in leadership positions is minimal across sectors (Lennon, 2013). Acker (1990) concluded the existence of gendered organizations continue limit females ability to obtain leadership positions.

Gender inequality exists in gendered organizations and social institutions (Acker, 1990; Britton, 2000; Connell, 1987; Smith, Brief, Christian, Salvador, & Netchaeva, 2013). Britton (2000) identified organizations and occupations are gendered when they are dominated by either males or females, embody masculine or feminine symbols, or a clear division of labor and hierarchy is exists between females or males (Britton, 2000). Lord and Preston (2009) indicated the inequality of females in leadership positions in Australian university systems occurs because of gendered organizational practices. However, gendered organizational practices are evident in the technology sector and

cause a gender gap (Harriger and Farnsley, 2009). Likewise, McEldowney, Bobrowski, and Gramberg (2009) noted that many variables impede prospective female leaders from obtaining leadership positions. Conclusively, Silva, Carter, and Beninger (2012) defined "hot jobs" as high-paying, competitive, leadership positions that lead to career advancement. However, females are hired for fewer of these jobs than males. As a result, females are underrepresented in leadership positions.

Academia – Females in Leadership

Madden (2005) asserted the sociocultural dynamic of higher education is male dominant in which males hold a greater percentages of leadership positions. Consequently, workplace diversity is inequitable because females are underrepresented in leadership positions in academia. Lord and Preston (2009) explained gendered organizational practices in the Australian University system preserve the inequality of females in leadership roles because females are invisible. Drury (2009) noted female CIOs in academia encounter gender inequality due to sexism and gender discrimination. As a result, cultures in academia need to become more female friendly to provide equitable leadership opportunities (Drury, 2009). Thus, if females are invisible, encounter sexism and discrimination the likelihood of ascending to the role of CIO is unlikely. Likewise, Brown and McClure (2010) noted their concern for the percentage of female CIO's in academia because the percentage continues to decline. Respectively, Lennon (2103) found only 24.53% females occupy positional leadership roles in academia occupation of CIO in academia.

Females in Technology Leadership

McKinney, Wilson, Brook, O'Leary-Kelly, and Hardgrove (2008) noted males outnumber females in IT leadership positions. Respectively, Anderson and Buzzanell (2007) noted females do not exist in technology leadership positions because females encounter gender bias. As a result, females struggle in leadership positions in technological organizations. Additionally, females' inclusion into the male dominant field of IT and high technology fields has limited success (Adams & Weiss, 2011). Adams and Weiss noted gendered paths to technology leadership careers impact females in technology.

Interestingly Clark (2012) indicated females achieve IT leadership success in academia obtaining the role of CIO at a higher percentage than other industries. Cultural differences in academia in comparison to the corporate sector have created a wider pathway for females to obtain the CIO office (Clark, 2012). Clark further noted pathway and pipeline obstacles that hinder the advancement of females in IT leadership. Specifically, females who pursue top a management careers experience a division of labor that lead to gender segregation in leadership (Clark, 2012).

Leadership Effectiveness- Academia, Gender, and Technology

In regards to academia, Allison (2010) argued future CIO's must possess political skills and competencies to drive institutional success. The Center for CIO Leadership study (IBM, 2009) noted CIO leadership effectiveness consists of four critical competencies. The competencies identified were leadership, business strategy and process, innovation and growth, and organization and talent management (Anonymous,

2008). Barsh and Lee (2012) asserted the promotion of females to senior leadership roles is imperative for successful organizational performance. Females in the position of CIO in academia continue to decline (Brousell, 2013; Brown & McClure, 2010).

With regard to leadership effectiveness, Folkman (2012) concluded females excel in higher percentage ratings in leadership competencies than men. Females possess higher ratings in leadership effectiveness than males; but remain underrepresented in leadership roles. Dominici, Fried, and Zeger (2009) noted remain underrepresented in academic leadership positions in academia. Likewise, Wentling and Thomas (2009) contend workplace cultures in IT hinder the career advancement of females. Therefore, implications for positive social change in the area of public policy are increasing awareness about other factors such as age, ethnicity and experience that may affect candidate selection in the role of CIO.

Problem Statement

Females' ability to obtain the leadership role of chief information officer (CIO) in academia is challenging. More research was required to understand whether there are gender differences in hiring officials' perceptions of male and female candidates for CIO positions in U.S. academic institutions to explain why so few females exist in the role. Limited scholarly information exists regarding this phenomenon. The study examined if a hiring officials gender affects perceptions of requisite managerial characteristics when selecting a CIO candidates in academia. Literature showed academia and technology are gendered organizations with barriers to advancement for aspiring females who possess interest in becoming a CIO (Britton, 2013; Dominici, Fried, & Zeger, 2009; Drury, 2008;

Drury, 2009; Lord & Preston, 2009; Madden, 2005). However, the nature and extent of the effect of gender and perceptions of requisite managerial characteristics are unknown during the CIO candidate selection process in academia. The social problem this study addressed is the lack of gender diversity in the occupation of CIO in academia. Implications for positive social change in the area of public policy are increasing awareness about other factors such as age, ethnicity and experience that may affect candidate selection in the role of CIO.

Purpose of the Study

The purpose of this causal comparative study was to examine the role of gender in hiring officials' perceptions of requisite managerial characteristics among candidates for CIO positions in academia. The independent variables were hiring official gender and candidate gender; the dependent variables were the 92 perceived requisite managerial characteristics.

Research Question and Hypotheses

RQ: What is the effect of a hiring official's gender on his or her perceptions of requisite managerial characteristics when selecting CIO candidates in academia?

$H_1$1: The gender of a hiring official significantly affects his or her perceptions of requisite managerial characteristics when selecting CIO candidates in academia.

$H_0$1: The gender of a hiring official does not significantly affect his or her perceptions of requisite managerial characteristics when selecting CIO candidates in academia.

Theoretical Framework

The theoretical framework of this study was grounded in Schein's (1973) "Think Manager, Think Male" paradigm and Acker's (1990, 1992) gender organization theory. Schein's "Think Manager, Think Male" paradigm explained sex-role stereotypes heighten the belief that females are less qualified than males for senior management positions. Gendered organization theory notes an organization or any analytic unit is gendered when it contains distinct male and female (masculine and feminine) symbols, beliefs, and practices that advantage or disadvantage either genders particularly females (Acker, 1990, 1992; Billmora et al., 2010; Britton, 2000).

Schein's "Think Manager, Think Male" Paradigm

Schein (1973) originated the "Think Manager, Think Male" (masculine) paradigm in the early 1970s. During the early 1970s, only 5% managers were females in organizations. Schein examined psychological barriers that hindered females from moving into middle management positions (Coder & Spiller, 2013). Based on the results of Schein's study 87% of companies employed females in 5% or lesser middle management positions. Schein tested this theory by creating the 92-item Schein Descriptive Index (SDI) (1973). Requisite managerial characteristics are descriptive characteristics, attitudes and temperaments male middle managers perceive to exist among successful middle managers which are more commonly ascribed to males in general than females in general (Schein, 1973).

Schein (1975) conducted a follow-up study to replicate the initial 1973 study. Schein's 1975 study provided similar results to the study conducted in 1973. Schein

(1975) found successful middle managers are perceived to possess characteristics, attitudes, and temperaments more commonly ascribed to males in general than females in general. Schein (1975) explained females are perceived as less qualified for management positions in comparison to males due to sex role stereotypes imposed during the selection, promotion, and placement process. Schein (2007) further evaluated the "Think Manager, Think Male" paradigm to assess if attitudes changed three decades later. Schein reported female managers and female management study participants noted to no longer gender stereotype management positions (Schein, 2007).

Acker's Gender Organization Theory

Organizations and workplace environments perpetuate gender expectations that advantage males and disadvantage females (Acker, 1990, 1992). Acker explained class is correlated to gender, and class relations are gendered. Acker concluded a class structure is created between males and females through the labor market, workplace relations, and wage relations that are affected by symbols of gender, gender identity processes, and material inequalities. A gendered institution is an organization or analytic unit that encompasses gender processes, practices, images and beliefs, and distributions of power existent within an organization or another analytic unit is a gendered institution (Acker, 1992). Consequently, masculine processes and symbols dominate, contributing to the underrepresentation and marginalization of females in male dominant environments, fields, and roles. Furthermore, organizations such as law, politics, religion, and the academy were developed on the beliefs of males resulting in the perpetuation of male dominance where males continue to lead. Britton (2000) explained male dominance in

industries and work environments continue to perpetuate male ideas and symbols that create barriers of access for females to enter leadership positions. Thus, gender cultures, behaviors, and stereotype's foster gender discrimination impeding females' advancement to leadership positions (Lord & Preston, 2009). However, in minimal cases males are underrepresented in female dominant roles.

Hence, Schein's (1973) 'Think Manager, Think Male" paradigm and Acker's (1990, 1992) gender organization theory are applicable to this study. Both theories concentrate on gender advantages and disadvantages in the workplace based on gender perceptions, cultures, practices, and ideas. Gender perceptions, cultures, behaviors, and ideologies present barriers to the selection, promotion, and placement of females who seek leadership positions.

Nature of the Study

The nature of this study was causal comparative research. A causal comparative research design was selected because this study determined the reasons or causes for an existing condition. A causal comparative design established a cause and effect relationship comparing the relationship among two or more groups. The independent variables were hiring official gender and candidate gender; the dependent variables were the 92 perceived requisite managerial characteristics. A participant information form was used to collect data from male and female hiring officials. Participants indicated their gender of the form. Three versions of the Schein Descriptive Index (1973) (male, female, non-gender specific) were distributed randomly to participants to collect data on requisite managerial characteristics. Data were examined using descriptive and inferential

statistics, specifically, *t* tests, chi square, and a 2-factor ANOVA. Statistical analysis were completed on the 92-item SDI to compare group ratings between male and female hiring officials. Additional detail regarding the research design and rationale is included in Chapter 3.

Definition of Terms

Chief information officer (CIO): Person responsible for planning, choosing, buying and installing a company's computer and information-processing operation. They oversee the development of corporate standards, technology architecture, technology evaluation and transfer, sponsor the business technology planning process, manage client relations, align IT with the business, and develop IT financial management systems (Gartner, 2013).

Gender stereotyping: Gender stereotypes promote gender bias because of the negative performance expectations that result from the perception that there is a poor fit between what women are like and the attributes believed necessary for successful performance in male gender-typed positions and roles (Heilman, 2012).

Assumptions

This study was based on three assumptions. The SDI (1973) would accurately measure the effect of a hiring official's gender on his or her perceptions of requisite managerial characteristics when selecting CIO candidates in academia. All participants answered the questionnaire honestly and voluntarily. This study would increase awareness about gender and other factors such as age, ethnicity, and experience that may affect candidate selection in the role of CIO.

Scope and Delimitations

Specific aspects of the research problem this study addressed were the effects of a hiring officials' gender and perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. This specific focus was selected because academia and the role of CIO are gendered in that males dominate leadership roles in academia, dominate the CIO role in academia, and dominate the CIO role across industries. The population included in this study was CIO hiring officials from colleges, universities, and research institutions. Specifically, it included a sample of CIO hiring officials from four- year public, private, and non-profit colleges, universities, and research institutions in the Northeast region of the US. The study excluded CIO hiring officials from two-year community colleges. CIO hiring officials from two-year community colleges were not included because two-year community college goals vary in comparison to four- year colleges, universities, and research institutions and may not require an individual in the role of CIO. Additionally, administrative personnel from four- year public, private, and non-profit colleges, universities, and research institutions were not included from the study because administrative support staff tend not to participate in hiring candidates. CIO hiring officials outside of academia and higher education were also excluded from the study because this study solely examined the research and social problem in academia.

The theoretical framework most related to the area of study that was not investigated is Shinar's (1975) masculinity-femininity paradigm which focuses on leadership stereotypes related to occupation on a single masculinity-femininity

dimension. Schein's (1973) "Think Manager, Think Male" paradigm and Acker's (1990, 1992) Gender Organization Theory was included as these theoretical frameworks are related to the study. Although this study included a population from four- year public, private, and non-profit colleges, universities, and research institutions in the Northeast region of the US results were not generalized to the same sample populations in the remaining US regions. This is a generalization because academia and the role of CIO is academia is male dominate. Results can be generalized to industries other than academia because the role of CIO is male dominated across industries.

Limitations

This study was limited a minimal sample of hiring officials participation. If more hiring officials participated, altered results might have emerged that would have affected the outcome of the SDI comparative ratings among male and female respondents. Additionally, if an increased sample of hiring officials' participated adequate, *t* tests, 2-factor ANOVA, and chi-square tests may have produced additional results. An increased response rate may have been obtained if hiring officials were contacted by phone and agreed to participate by completing a hard-copy surveys as opposed to being contacted by business email.

The last limitation of this study involved using a causal comparative research design method. This was a limitation because casual comparative research is similar to correlational research. Although the relationship between two or more variables was identified, it did not necessarily mean a causal connection between the variables was established. This was a limitation because there were several reasons why multiple

variables were related or influenced each other. Second, collecting quantitative data limited the ability to observe hiring officials' perceptions of requisite managerial characteristics during the candidate selection process. Future research should consider these limitations.

Biases that influenced the study outcomes include social desirability bias. Mitchell and Jolly (2012) noted this occurs when participants provide responses that make them look good as opposed to providing honest responses. Although, the study was not anonymous participants were given the option to provide a non-work affiliated email address to receive the survey link code for completion. Therefore, responses gathered from participants would not be affiliated with their place of employment. This approach minimized social desirability bias because the respondent did not have to worry about providing responses that would make them look good in their employers' eyes; but, provide honest responses.

Significance

There has been little evidence-based research done to understand whether there are gender differences in hiring officials' perceptions of male and female candidates for CIO positions in U.S. academic institutions to explain why so few females exist in the role. The contribution of scientific data regarding gender differences in hiring officials' perceptions male and female CIO candidates has increased awareness that other factors such as age, ethnicity and experience that may affect candidate selection in the role of CIO. Specifically, findings in this study advanced knowledge in the area of public policy and administration to address the challenges of gender disparity in leadership positions in

higher education, particularly the role of CIO. Study findings may contribute to more knowledge of gender bias in hiring decisions, particularly in academic organizations. With this knowledge, hiring officers may be less likely to discriminate based on gender. As a result, research results of this study can improve organizational hiring practices and policies in the area of diversity recruitment.

Summary

Prior research reflects a disparity between male and female occupants in the role of CIO in academia. Organizations and occupation dominated by one sex versus another are considered gendered organizations (Acker, 1990, 1992; Blackmore, 2013; Britton, 2000; Huffman, 2013). A vast amount of theoretical research denotes both academia and technology are gendered organizations which result in barriers that hinder female advancement to leadership roles (Abu-Tineh, 2013; Britton, 2013; Drury, 2008, 2009; Dominici et al., 2009; Lord & Preston, 2009; Madden, 2005; Silander, Haake, & Lindberg, 2013). Additionally, prior studies indicated a relatively small percentage of females exist as CIO's in academia (Brown, 2008, 2011, 2013; Brown, W. & McClure, P. 2009, 2010).

The theoretical framework of this study was grounded in Schein's (1973) "Think Manager, Think Male" paradigm and Acker's (1990) gender organization theory. The research design method was causal comparative research. The Schein Descriptive Index (1973) and a participant information form were employed to collect data from male and female CIO hiring officials' to examine the effect of gender and requisite managerial characteristics when selecting a CIO in academia. In summary, the theoretical

frameworks and research design were appropriately established to address the research problem. Chapter 2 provides a detailed review of the literature.

Chapter 2: Literature Review

Introduction

Females' ability to obtain the leadership role of chief information officer (CIO) in academia is challenging. More research was required to understand whether there are gender differences in hiring officials' perceptions of male and female candidates for CIO positions in U.S. academic institutions to explain why so few females exist in the role. Limited scholarly information exists regarding this phenomenon. Literature showed academia and technology are gendered organizations with barriers to advancement for aspiring females who possess interest in becoming a CIO (Britton, 2013; Dominici, Fried, & Zeger, 2009; Drury, 2008; Drury, 2009; Lord & Preston, 2009; Madden, 2005). The purpose of this causal comparative study was to examine the role of gender in hiring officials' perceptions of requisite managerial characteristics among candidates for CIO positions in academia.

Implications for positive social change in the area of public policy are increasing awareness about other factors such as age, ethnicity, and experience that may affect candidate selection in the role of CIO. Specifically, findings in this study advanced knowledge in the area of public policy and administration to address the challenges of gender disparity in leadership positions in higher education, particularly the role of CIO. Study findings may contribute to more knowledge of gender bias in hiring decisions, particularly in academic organizations. With this knowledge, hiring officers may be less likely to discriminate based on gender. As a result, research results of this study can improve organizational hiring practices and policies in the area of diversity recruitment.

Many researchers have found evidence showing that higher education and information technology are gendered organizations where females encounter barriers hindering advancement (as cited in Abu-Tineh, 2013; Britton, 2013; Drury, 2008, 2009; Dominici et al., 2009; Lord & Preston, 2009; Madden, 2005; Silander, Haake, & Lindberg, 2013). Researchers with CHECS reported the percentage of female CIOs was 26 (Brown, 2008). In 2011, the percentage of female CIOs in academia was 23. In 2013, the percentage of female CIOs decreased to 21. The paucity of female CIOs in academia is problematic because it contributes to a lack of gender diversity (Brown, 2008, 2011, 2013). Hence, a lack of workplace diversity limits organizational effectiveness (Guillame et al., 2013).

More research was required to understand whether there are gender differences in hiring officials' perceptions of male and female candidates for CIO positions in U.S. academic institutions to explain why so few females exist in the role. Lennon (2013) concluded IT and academia are male dominant environments. Challenges females encounter in IT have undergone study in the last decade. In spite of obstacles, some females have assumed CIO roles in academia (Drury, 2008, 2009, 2011). However, the percentage of female CIOs in academia is less than half that of their male counterparts (Brown, 2008, 2011, 2013). Hence, examining the role of gender in hiring officials' perceptions of requisite managerial characteristics among candidates for CIO positions in academia was required. This chapter includes the literature search strategy, theoretical foundation, literature review related to key variables, and a summary and conclusions.

Literature Search Strategy

The literature review process included online and physical library resources. Research databases used include Emerald Management Journal, SAGE Premier 2010, SocIndex, ProQuest Central, JSTOR, Academic Search Complete/Premier, and ProQuest Dissertations and Theses. I used the following search terms: CIOs, higher education leadership, glass ceiling, females and information technology, gender organizations, gender bias, and feminism. I search resources published between the years of 1973-2016.

I extensively reviewed literature on Schein's (1973) "Think Manager, Think Male" paradigm and Acker's (1990, 1992) gender organization theory. I consulted multiple books to gain more knowledge about feminism, higher education leadership, and females in leadership. The literature review includes peer-reviewed literature, journal articles, business publications, and statistical reports from a period of 1973-2016. I retrieved peer-reviewed literature from the following journals: *Management Education*, *Diversity Management*, *Occupational and Organizational Psychology*, *Management*, *Diversity in Higher Education*, *Information Systems Education*, *Human Resource Management*, *Vocational Behavior*, *Economic Psychology*, *Business and Psychology*, and *Leadership Studies*. Statistical reports included in the literature review were retrieved from the U.S. Labor and Census Bureaus and Departments of Commerce and Education.

Theoretical Framework

The theoretical frameworks included in this study were Schein's (1973) "Think Manager, Think Male" paradigm and Acker's (1990, 1992) gender organization theory.

Schein's "Think Manager, Think Male" Paradigm

According to Hobbler, Lemmon, and Wayne (2011) Schein (1973) originated the "Think manager, Think male (masculine)" paradigm in the early 1970's at a time when females held about five percent of managerial positions in organizations. Schein examined psychological barriers that hindered females from advancing to middle management positions in the insurance field. Schein reported 87% of companies had females in five percent or less middle management positions (Coder & Spiller, 2013). As a result, Schein (1973) examined the theory that sex role stereotypes act as an impediment for female ascension to managerial positions. In order to test this theory, Schein (1973) created the 92-item Schein Descriptive Index (1973). Schein (1973) created descriptive items for the SDI from four sex role stereotype studies originated in the 1950's and 1960's (Coder & Spiller, 2013). These studies included participants' ages 5-6 years' old, college students, and adults. Additionally, results of these studies reflected thoughts of gender roles and stereotyping from the 1950's and 1960's. Schein noted requisite managerial characteristics are descriptive characteristics, attitudes and temperaments male middle managers perceive to exist among successful middle managers that are commonly ascribed to males in general than females in general. Interestingly thoughts regarding gender roles and stereotyping remained evident five to fifteen years later.

The first study Schein's (1973) conducted included 300 male managers. Male managers were requested to describe thoughts of females in general, males in general and successful middle managers in general (Schein, 1973). The study revealed 60 of the 86

descriptive items characterized of middle managers were similar to males in general rather than females in general. Additionally, only eight of the descriptive items revealed females in general resembled successful managers (Coder & Spiller, 2013). Coder and Spiller (2013) noted the eighteen remaining descriptive items did not reveal a relationship between sex role stereotypes and perceptions of managerial characteristics. Schein's initial study found sex-role stereotypes heighten perceptions of females as being less qualified in comparison to males for upper management positions (Coder & Spiller, 2013). Moreover, Schein noted perceived characteristics of successful middle managers include characteristics, attitudes and temperaments commonly used to describe males than females (Coder &, Spiller, 2013).

Schein (1975) conducted a follow-up study to replicate the initial 1973 study. Schein's (1975) population sample consisted of 167 female managers of various departments within 12 insurance companies throughout the US. Respondent were 23 to 62 years old with a median age of forty-three. Respondent years of experience ranged from one to 32 years with a median of 6.5 years (Schein, 1975). Schein's follow-up study revealed similar results to the original 1973 study. The 1975 study revealed successful middle managers are perceived to have characteristics, attitudes, and temperaments commonly ascribed to males in general rather than females in general. Schein revealed a significant resemblance between ratings of male and managers (r^1=.54; $p<.01$) and a significant resemblance between ratings of females and managers (r^1=.30; $p<.01$). The degree of resemblance between females and managers was significantly less ($p<.05$) than between males and managers (Schein, 1975). Additionally, Schein (1975)

found 39 of the 81 descriptive items were more comparable to ratings of males than females. However, fourteen descriptive items rated managers as more comparable to females than males (Coder & Spiller, 2013). Schein (1975) indicated there is a correlation between sex role stereotypes and requisite management characteristics that hinder upward mobility of females to managerial positions. The parallel between sex role stereotypes and requisite managerial characteristics fosters a view of females being less qualified than males for managerial positions. This is an implication that female hiring officials are equally as likely to male hiring officials to select, promote, and place males into managerial roles rather than females.

Schein (2007) contended female presence in leadership roles is required to "…enhance the rights, freedoms, and opportunities of all females globally" (p. 6). However, three decades after Schein's (1973, 1975) study Schein (2007) noted females continue to encounter gender stereotyping that impedes their ascension to managerial and leadership positions. Schein (2007) examined the "Think Manager, Think Male" paradigm to assess if attitudes changed three decades later. Schein (2007) concluded both female managers and female management students discontinued to gender stereotype management positions (Schein, 2007). According to Schein, both view females and males equally probable to have characteristics required to be successful managers. The expectation is female managers would treat both males and females equally during the selection, placement, and promotion process (Schein, 2007). However, decade's later males in corporate America continue to view females as less qualified for managerial positions. Globally, it was found male management students in

the US, UK, Germany, China, and Japan view females as less likely than males to possess requisite management characteristics (Schein, 2007). In summary, gender and sex-role stereotypes continue to play a role in requisite managerial characteristics of both males and females. Schein (1973) noted requisite managerial characteristics are descriptive characteristics, attributes and temperaments male middle managers perceive to exist among successful middle managers that are commonly ascribed to males than female in general. These descriptive characteristics, attitudes, and temperaments were used to categorize individuals in general-some positive in connotation, negative or neither positive or negative (Schein, 1973). Schein concluded a high percentage of males in managerial positions believe that since the managerial job embodies masculine attributes females are less suitable for managerial roles. Consequently, the managerial position requires more attributes that are characteristic to males than females.

Acker's Gender Organization Theory

According to Acker (1990) feminist theory of organizations was not adequate in examining organizations as gendered processes. Therefore, a methodical theory of gender and organizations were required for a myriad of reasons (Acker, 1990). The theory was required because evidence of gender segregation of work is created through organizational processes, income and status inequity between males and females (Acker, 2990). Furthermore, Acker (1990) noted with organizational processes are created with cultural images of gender and reproduced within organizations create gendered organizations (Acker, 1009). As a result, Acker concluded individual gender identity are elements of organizational processes and pressures whereby feminist projects seek to

ensure organizations are democratic and supportive of human goals (Acker, 1990). Acker noted organizations as a gendered process focus on gender and sexuality that is obscured through a lens of gender neutrality and asexual discourse. In the study, Acker suggests various ways gender, the body (male/female) and sexuality (masculine/feminine) are control mechanisms in organizations that direct processes and practices. Furthermore, Acker explained labor market structures, workplace relations, controls within work processes and wage relations are impacted by symbols of gender, gender identity, and material inequalities between males and females. Hence, the result adversely affects either gender, specifically females. Consequently, these structural processes perpetuate a class structure within organizational environments (Acker, 1990).

Acker (1990) noted organizations embody gendered processes with five constructs. First, gender divisions exist within labor, allowed behaviors, physical space locations, power, including maintenance of these dissections in institutionalized structures of labor, family and state (Acker, 1990). Second, expressive symbols and images that reinforce or oppose gender divisions in the form of language, ideology, culture, dress, the press, and television aid to gender and sexuality differences between males and females (Acker, 1990). Third, gendered social structures and interactive relationships between males and females, and, females and males enact patterns of dominance and submission (Acker, 1990). Fourth, organizational processes and practices contribute to gender aspects of individual identity (Acker, 1990). Last, gender is the fundamental implication of created and conceptualized processes within ongoing social

structures (Acker, 1990). Acker explained these social structures frame complex organizations.

Gender and Organizational Power

Acker (1990) noted female jobs are ranked based on sexuality, procreation, and emotions. Females are devalued based on gender and sexuality assumptions that lead to the belief they are unable to conform to the job (Acker, 1990). This results in gender segregation that perpetuates the underrepresentation of females in top management positions, skilled labor, or in male dominant work environments (Acker, 1990). Acker (1992) reported institutionalized structures in the US and other societies are organized along the lines of gender. Gender dominates in law, politics, the economy, the academy, the state, and religion (Acker, 1992). Institutions created by males based on male ideologies, images, symbols, processes, and practices were defined with the absence of females; thus, they are gendered (Acker, 1992).

In a epistemology study of gendered organizations Britton (2000) noted between 1994 and 1997 social science literature yielded 335 citations to gender including jobs, policies, institutions, employment, and workers. Britton explained three of the most common ways an organization or occupation is considered gendered. In the Britton study, it was explained an organization or occupation is inherently gendered when the organization or occupation is conceptualized or structured based on distinctive terms of masculine and feminine resulting in distinct gendered characteristics that are valued and evaluated differently. An organization or occupation is gendered if it is male or female dominant (Britton, 2000; Whitehead, 2013). Furthermore, Britton noted an organization

or occupation is gendered when described and conceived on symbolic and ideological discourse drawn from hegemonic defined masculinities. Britton concluded each level in which organizations or occupations are gendered require further understanding to establish less oppressively gendered organizations.

An organization or occupation is considered gendered if it is male or female dominant (Acker, 1990, 1992; Britton, 2000; Whitehead, 2013). The continuous underrepresentation of females in male dominant organizations or occupations perpetuates gender inequality which impedes the ability of females to enter organizations or occupations contribute to a lack of gender diversity. Nonetheless, this does not negate female dominance within certain organizations or occupations. However, male dominance in organizations and occupations is in excess in comparison to female dominance within organizational or occupational constructs. Females encounter barriers of entry and inequalities in male dominant organizations and occupations (Cha & Weeden, 2012; Hess, 2013; Wajcman, 2013). Gender continues to play a role in perceived requisite managerial characteristics as it relates to the placement, selection, and promotion of males and females (Fullagar, Sumer, Sverke, & Slick, 2003; Schein, 1973, 1975, 2007), specifically in gendered organizations or occupations where males dominate (Acker, 1990, 1992; Britton, 2000; Whitehead, 2013).

This study examined the perceptual differences of male versus female CIOs' hiring officials' selection processes in academia, particularly ITOs in the United States (US). The theoretical frameworks of Schein's (1973) "Think Manager, Think Male" paradigm and Acker's (1990, 1992) gender organization theory examined whether there

are gender differences in hiring officials' perceptions of male and female candidates for CIO positions in U.S. academic institutions to explain why so few females exist in the role.

Literature Review Related to Key Variables, and/or Concepts

Think Manager, Think Male

Unter and McLean (2010) reported public management students perceive sex role stereotypes and characteristics contribute to managerial success. The population consisted of public management students from a small, public southern university administration program (Unter & McLean, 2010). The sample consisted of 21 students from two separate courses in which one course was taught by a Caucasian, female instructor, and the other by a Black male instructor. The study revealed male public management students perceive successful middle managers possess characteristics more commonly ascribed to males in general as opposed to females in general. However, results for females were statistically insignificant for this sample. Female public management students were not, in general, sex stereotyping the managerial positions. Although female students did not sex stereotype the managerial position, male students view successful middle managers as those with traits ascribed to men. Additionally, "…male public management students cling to an antiquated view of "Think Manager, Think Male" in their views of requisite management characteristics" (Unter & McLean, 2010, p. 131). Consequently, males tend to gender stereotype managerial roles.

Berkery, Morley, and Tiernan (2012) noted males continue to gender stereotype the managerial role in favor of males. As a result, Berkery et al. (2012) examined the

relationship between gender role stereotypes and requisite managerial characteristics. The aim of the study tested Lord and Maher's (1991) recognition-based processes in efforts to determine if females in leadership positions decrease the "Think Manager, Think Male" phenomenon (Berkery et al., 2012). In Berkery et al.'s study, data was collected using the 92-item Schein Descriptive Index (1973). The sample included 1,042 graduate and 194 post-graduate students from a large University in the Republic of Ireland. Surveys were administered over a three-week period. Of the 1,285 surveys collected, 1,232 were usable. Berkery et al. randomly distributed three versions of the SDI to the participants. The three versions were males in general, females in general and successful managers in general. The data revealed 430 (34.8%) respondents rated males in general, 394 (31.9%) rated females in general, and 412 (33.3%) rated successful managers in general (Berkery et al., 2012). Additionally, the data revealed a strong significant resemblance between the overall ratings of males and managers (r^1=0.639), $p<0.001$) with the resemblance of females and managers significantly weaker (r^1=0.315, $p<0.001$) (Berkery et al., 2012). Consequently, the study revealed participants categorized the managerial role in favor of males. Interestingly, the data revealed the gender of the respondent had an effect on the relationship between gender stereotypes and requisite management positions. However, female respondents did not categorize the managerial role based on gender. Berkery et al. concluded findings from the study were similar to prior studies that denote males continue to categorize the managerial role in favor of males but females view the management role as suitable for males and females. Although findings were consistent with prior research studies of this type studies do not

exist in examining CIOs' hiring officials' in academia to analyze the impact of gender and requisite managerial characteristics when selecting a CIO. Berkery et al. noted males gender type the managerial role in favor of males in the nursing and midwifery profession. Gender stereotyping in the military is not evident.

Stone (2008) noted a lack of support for gender stereotyping among male and female Active Duty Air Force personnel. In a quantitative study, Stone examined leadership perceptions to analyze males in their perception of females as less effective leaders. The SDI and demographic survey was used for data collection. Surveys were distributed to 1158 participants and 179 were returned. The sample of usable surveys totaled 169, with 116 male participants and 53 female participants. Three distinct versions of the SDI were randomly distributed to male and female participants (men in general, females in general, successful leaders). Participants received alternate versions of the study using the random effects model. Stone noted of the 169 participants 44 completed the males in general SDI version, 66 completed the females in general SDI version and 59 completed the successful leader SDI version. Interestingly 66.9% participants reported they had only one to three female supervisors or commanders in their career in the Air Force. In calculating the means for all the survey versions Stone found males and females both rated males and females in general as similar to the ideal of the successful leader. The mean item rating for the SDI was computed for female participants rating females in general with a mean of 3.24 (*SD*=.49) and males rating males in general with a mean of 3.37 (*SD*=1.1). In regards to gender, Stone reported both males and females found similarities between both genders and successful leaders. The

study revealed a significant relationship between ratings of males in general and successful leaders by both male and female participants (r^1=.432; p<.01). Respectively, males indicated a relationship between male and successful leaders in addition to a relationship between females and successful leaders (r^1=.41; p<.01, and r^1=.396; p<.01) (Stone, 2008). Interestingly female participants indicated a relationship between females and successful leaders (r^1=.433; p<.01, and r^1=.471; p<.01). Stone revealed a lack of support for gender stereotyping as a factor among male and female Active Duty Air Force personal due to similar beliefs in leadership perceptions of males and successful leaders; and, females and successful leaders they study provides a foundation to assess issues females encounter in military leadership roles.

Bosner (2008) reported females continue to lag behind their male counterparts in gaining equitable earning and positions in corporate America. Bosner noted females encounter stereotypes in business and on college campuses, which hinder professional growth. In a quantitative study, Bosner examined how gender stereotypes and self-perceptions create stereotypical hurdles among 338 students enrolled in undergraduate business courses at two western NY colleges. The SDI (1973) was employed to gain comparative data on attitudes toward themselves, the same sex, and the typical males and females in terms of positive personality traits of successful managers. Consequently, findings that males rate themselves no differently than females' student counters Schein's (1975) study where significant self-scores among males were higher than females. Limitations noted were that the results cannot be generalized because the population sample consisted of participants from only two schools. Additionally, the survey

instrument poses limitations because respondents may interpret 1-word descriptions differently. Nonetheless, the study revealed both males and females display some gender stereotyping as well as both genders support common stereotypes which perceive males as assertive and emotionally sound as opposed to females being viewed as helpful.

Olanrewaju and Yetunde (2011) explained gender role orientation has a significant effect on the evaluation of class leaders. Olanrewaju and Yetunde indicated, "Upon meeting someone for the first time, people automatically ascribe sex-stereotypical personality to that person, whether true or not, because the individual belongs to the group of male or females" (p. 68). The researchers quantitatively examined the effect of gender, gender role orientation, and attachment of labels on the evaluation of class leaders. The random sample included 194 participants which were students at the University of Ado-Ekiti in Nigeria. There were 116 females and 78 male participants with an average of 20 years old. Data was collected using the Schein Descriptive Index (1973) and the Bern Sex Role Inventory (1974). The researchers tested seven different hypotheses using a 2x4x5 ANOVA. The study employed five variations of the SDI. The study revealed a statistical analysis of no significant interaction effect of gender and gender role orientation of the evaluation of class leaders [$F (3, 187) = 1.30, p > .05$] and no significant interaction effect of gender, attachment of labels and gender role orientation on the evaluation of leaders [$F (9, 187) = .60, p > .05$]. Consequently, the study shows there is no significant main effect of gender on the evaluation of class leaders which is contrary to findings of prior research. Schein (2001) found characteristics associated with leadership were more likely to be held by males than

females. Hence, the gender of the leader and gender of the perceivers affected the outcome of the assessment. Olanrewaju and Yetunde concluded the gender of the perceiver and the perceived had no effect on the evaluation of class leaders. However, the researchers noted the data revealed potential results from the respondents' exposure to males and females in leadership positions within the sample site.

Elsaid and Elsaid (2012) reported females globally continue to encounter barriers that hinder the ability to obtain managerial positions. The managerial role continues to be sex-stereotyped in favor of males (Elsaid & Elsaid, 2012). Sex role stereotyping of management positions in favor of males create the negative perceptions regarding female capability of performing in the role (Elsaid & Elsaid, 2012). A quantitative analysis was employed to analyze how both males and females embody sex-stereotypical views of managerial positions and how females are viewed in managerial roles. Elsaid and Elsaid compared the status of females in managerial positions in Egypt and the US. Data was collected using the Schein Descriptive Index and the Females as Managers Scale (WAMS) to study the status of females in managerial positions particularly in Egypt, a Muslim, Arab, and Middle Eastern Country. The study consisted of two sample populations. The Egyptian sample included 404 males and 149 female undergraduate freshmen. The students were enrolled in a school of business at a large Egyptian university. Additionally, the Egyptian sample was divided into two groups, English and Arabic. There were 202 males and 64 female participants in the English group. There were 202 males and 85 female participants in the Arabic group. Comparatively, the US sample consisted of 190 males and 134 female undergraduate students. This population

sample was students enrolled in a school of business in a large Midwestern university in the US. Surveys were distributed identically to both sample populations in the US and Egypt. The data from the Egyptian sample revealed for males a positive significant resemblance (0.36) between the ratings of males and middle managers and a negative significant resemblance (-0.14) between the ratings of females and middle managers (Elsaid & Elsaid, 2012). However, females reported a larger positive significant resemblance (0.47) between the ratings of male and middle managers than those of males and a more negative significant resemblance (-0.38) between the ratings of females and middle managers than those of males (Elsaid & Elsaid, 2012). Hence, the findings of study indicate females are rate themselves harsher than males. The data from the US sample found a large positive significant resemblance for males (0.64) between the ratings of males and middle managers and a moderate positive significant resemblance (0.48) between the ratings of females and middle managers (Elsaid & Elsaid, 2012). However, for females a smaller positive significant resemblance (0.52) between ratings of males and middle managers than of males and a larger positive significant resemblance (0.61) between the ratings of females and middle managers than of males (Elsaid & Elsaid, 2012). Consequently, findings gathered from the US sample are similar to the findings of Schein et al. (1989). Elsaid and Elsaid concluded perceptions of gender must be considered in a global economy to address the underrepresentation of females in managerial roles.

Coder and Spiller (2013) noted gender stereotypes and leadership characteristics have been a withstanding subject in management literature. However, the literature

foundation was developed on a questionable basis (Coder & Spiller, 2013). Coder and Spiller noted three contradictory views regarding the impact of gender, gender roles, and leadership development found within current educational literature (Coder & Spiller, 2013). It was further noted the current literature poses a "shaky foundation" on the impact on leadership development education. In the study Coder and Spiller explained changes in society have created issues with the Schein Descriptive Index and the Bern Sex Role Inventory. The world has changed vastly since the development and use of both instruments (Coder & Spiller, 2013). Consequently, questions arise based on the relevancy of adjectives included in the instruments. Both instruments were created in an era when males were in management but females were secretaries. Nonetheless, Coder and Spiller noted Schein's (1973) work has been cited over 900 times. Additionally, the study Schein conducted in 1975 study was cited over 600 times (Google Scholar, March 2014). Schein is referenced in numerous journals including the Journal of Management, the Journal of Applied Psychology, the Academy of Management Journal, and the Academy of Management Review (Coder & Spiller, 2012).

Paris and Decker (2012) reported managerial pro-male bias is evident although students are exposed to diversity curricula. In this study, Paris and Decker examined 605 male and 506 female undergraduate and graduate students. The purpose of the study assessed if exposure to a diversified curriculum in a business management program lessened gender stereotypes in management. Data was collected using the Schein Descriptive Index (1973) to compare sex role stereotypes and the characteristics of successful middle managers. Paris and Decker distributed three versions of the

instrument to participants. Participants were instructed to rates attributes of females, males and successful middle managers. The study sample was divided into three distinct groups of (a) lower division general education students (b) entry level business students, and (c) upper level business students (Paris & Decker, 2012). It was found lower division general education students reported a strong significant relationship exists between females and managers (r^1=0.68; $p < 0.05$) and males and managers (r^1=0.61; $p < 0.001$; Paris & Decker, 2012). Thus, indicating females were perceived to possess managerial characteristics in excess of males. It was found entry-level business student reported a significant relationship exists between females and managers (r^1=0.39; $p < 0.05$) and males and managers (r^1= 0.57; $p < 0.05$) with males possessing more managerial attributes (Paris & Decker, 2012). Hence, entry-level male business students found only males possess requisite managerial characteristics ascribed to successful managers. Last, upper level business students reported managers possess more characteristics commonly ascribed to males in general (r^1= 0.55; $p < 0.05$) than females in general (r^1 = 0.28; $p<0.05$; Paris & Decker, 2012). Additionally, upper level male business students perceive females possess characteristics required for managerial success. However, upper level male business students perceive they possess requisite managerial characteristics. Interestingly, females in this group perceived reported males and females possess attributes for managerial success but at a lesser degree than males. Consequently, Paris and Decker (2012) confirmed perceptions of male business students regarding gender stereotypes that support findings of prior research studies that confirmed the “Think Manager, Think Male” paradigm continues to exist. Additionally,

this study concludes exposure to business education specifically a curriculum that emphasizes diversity does not alleviate stereotyping managerial roles in favor of men.

Booysen and Nkomo (2008) explained perceptions of requisite managerial roles favoring male is an idea that is not isolated countries included in prior research. Therefore, the researchers examine how race and gender affects females in managerial roles in South Africa using the Schein Descriptive Index (SDI) (1972). Data was gathered using the 92-item SDI from a random sample of 592 participants. The population consisted of black men, white men, black females, and white females. The findings revealed the "Think Manager, Think Male" paradigm is apparent among white and black men. However, it is not apparent for white and black females. A statistical data analysis using intra-class coefficients revealed a correlation between males and managers with the highest for black males (.784 < p .01) then by white males (.683 < p.01), white females (.563 p <.01) and black females (.505 < p.01; Booysen & Nkomo, 2008). However, black females perceived the highest resemblance between females and manager (.641 p< .01), followed by white females (.410 p< .01) then white males (.410 p< .01) and black males (.272 p < .05). Consequently, male managers by race gender stereotype the managerial role in favor of men. As a result, male preference and favoritism for managerial roles impedes the selection, promotion, and placement of females seeking to ascend to managerial or leadership roles.

Koenig et al. (2011) applied a meta-analysis to examine culturally masculine leadership stereotypes. The three paradigms examined were Schein's (1973) "Think Manager, Think Male" paradigm, Powell and Butterfield's (1979) agency communion

paradigm and Shinar's (1975) masculinity-femininity paradigm (Koenig et al., 2011). Koenig et al. noted Schein's 40 studies 51 effect sizes compared the similarity of male and leader stereotypes with the similarity of female and leader stereotypes. Intra-class correlations revealed of .25 for the females-leaders' similarity and intra-class correlations of .62 for male leaders in the "Think Manager, Think Male" paradigm. Koenig et al. indicated Powell and Butterfield' s (1979) twenty-two studies yielded a 47 effect sizes which compared stereotypes of leaders and the agency-communion paradigm. It was found g=1.55 indicating greater agency then communion in the agency communion paradigm (Koenig et al., 2011). Koenig et al. reported Shinar's 7 studies consisted of 101 effect sizes represented stereotypes of leadership related to occupation on a single masculinity-femininity dimension. It was found g=.092 which notes greater masculinity than the androgynous scale point in the masculinity-femininity paradigm. The meta-analysis of all three paradigms revealed an overall masculinity of leader stereotypes.

Gendered Organizations

Powell (2010) noted gender is a variable that impacts situational factors in which effective leaders adapt to gender linked characteristics to apply to circumstances to exert effective leadership. Dye and Mills (2011) noted gendered organizations encompass a prolongation of gender inequality throughout organizations and social institutions. Additionally, Britton (2000) indicated the commonality of gender being a "constitutive element of social constructs" (p. 418) in social institutions and practices. In agreement with Acker and Connell (1987), Britton identified three ways in which organizations can be seen as gendered. First, if an organization is considered ideal-typical bureaucratic

(Britton, 2000). Second, if the organization and/or occupation are dominated by males or females (Britton, 2000). Third, if the organization embodies masculine or feminine symbols or ideologies that can be defined as hegemonic (Britton, 2000). Prior research indicates information technology and academia are gendered organizations (Drury, 2008, 2009, 2011; Dominici et al., 2009; Lord & Preston, 2009; Madden, 2005; Lennon, 2013). Both are male dominate and perpetuate an underrepresentation of females in senior leadership roles.

Lord and Preston (2009) noted gendered organizational practices in the Australian University system promote inequality for females in leadership positions. In the study, Lord and Preston explained females continue to remain underrepresented in senior university faculty and administrative roles. In order to understand gendered organizational practices that negatively impact female leadership experiences, Lord and Preston conducted an auto-ethnographic study through the method of storytelling. Although, the risk of completing this study was the exposure of vulnerability and gendered practices examining this culture in the university system exposes challenges that can be addressed to ensure female leadership experiences are fair and just (Lord & Preston, 2009). This approach was selected to connect individual experiences with feminist and female leadership literature to gain insight on gendered practices and recommend change. The study revealed the experiences articulated were not uncommon or individualized. Lord and Preston noted these experiences were evident of systematic masculine, gendered organizational cultures that force females into survival mode. Gendered organizational practices revealed females experience dismissive comments, are

seen as invisible, and have authority questioned by male counterparts (Lord & Preston, 2009). Males in equal or similar leadership positions did not experience this gendered behavior. However, Lord and Preston explained females in leadership roles in the Australian University system had to adopt strategies to be effective leaders. Adoption strategies include the development of female support networks, identify the gendered practices, recruit trusted male colleagues to recognize behavior to promote change, and stand up against the gendered system through the development of programs to address gendered practices (Lord & Preston, 2009). Nonetheless, gendered organizations impact the ability of females to lead effectively. Lord and Preston (2009) reported a systematic issue based on social and behavioral cultures that require attention to ensure female leadership experiences in higher education are equitable to male counterparts.

Townsend and Twombly (2007) noted the community college climate for diversity is relatively good for females; but genderedness remains evident. In the Townsend and Twombly study it was reported a high percentage of female students and female faculty and administrators exist in community colleges. However, diversity issues remain evident (Townsend & Twombly, 2007). The climate for diversity dimensions' framework was explored to examine the four areas of diversity within the community college setting. The four areas of diversity were inclusion/exclusion, structural diversity, psychological climate, and behavioral dimensions (Hutchinson, Raymond & Black, 2008). Townsend and Twombly reported community college leaders must provide greater efforts toward "…equitable educational and workplace site for females" (p. 215). In agreement with Smith, Smith, and Verner (2013) as it relates to efforts on increasing

the percentage of females in senior leadership roles. Townsend and Twombly noted efforts to increase female enrollment in male dominated degree programs is pertinent to align with the community college societal mission to serve females. Despite finding the climate for diversity in community colleges relatively good, more is required to ensure equitable opportunities were provided to females (Townsend & Twombly, 2007).

The American Community Survey (2009) reported 13.3% males and 6.6% females ages 25 and older hold a bachelor's degree in computer and information science; and, 29.4% males and 23.1% females in business/management. In alignment with Zweben (2012) females lag disproportionately in comparison to males in earning computing degrees. Smierciak (2010) noted females continue to lag in earning advanced degrees in business, science and engineering. However, females have the ability to surpass male counterparts if provided equitable support and opportunity (Smierciak, 2010).

Synder and Dillow (2012) reported female attainment of master's degrees has grown over the past three decades. Females comprise sixty percent of student's earning master's degrees (Synder & Dillow, 2012). However, females continue to lag behind males in fields that are male dominant. According to the 2012, Current Population Survey females are underrepresented in baccalaureate degree attainment and in the areas of computer science, information and technology fields in comparison to males. Data revealed 372 thousand females with baccalaureate degrees work in computer science as well as information and technology. However, 614 thousand males with the same degree work in the industry.

Cohen (2013) reported females have made educational strides over the past 50 years in obtaining degrees. However, they continue to lag behind males in obtaining degrees in engineering and physical science. Engineering and physical science are STEM (Science, Technology, Engineering, and Technology) fields that perpetuate male dominance (Adams & Weiss, 2011; Weiss & Adams, 2011). Therefore, closing the gap is pertinent to increase gender diversity.

The National Center for Education Statistics (2010) reported degrees conferred in information resources management – CIO discipline – were earned by 120 males/31 females (bachelors); 166 males/50 female (masters); and, 33 male/13 female (doctoral). Coincidentally, in business administration and management degrees conferred were 69, 247 males/67, 679 females (bachelors), 61, 799 males/46, 897 females (masters); and, 635 males/386 females (doctoral). A disparate percentage of females earning degrees in information resources management/CIO training and business administration/management are evident. However, females supersede males in degree attainment in the discipline of higher education/higher education administration with one male/11 female (bachelors), 749 male/1,661 female (masters); and, 158 male/266 female (doctoral).

Harriger and Farnsley (2008) noted the existence of a gender gap in the IT industry. However, Harriger and Farnsley reported this issue can be resolved if academia and business sectors forge collaborative partnerships that would benefit academia, females, and the IT industry (Harriger & Farnsley, 2008). In a Purdue University study it was reported industry partners engage with underrepresented students directly through

student organizations. Industry partners act as role models, mentors, share experiences and speak with students about IT careers. Companies also provide students and faculty with organizational tours. These tours are a mechanism to highlight how females contribute to the organization. Furthermore, Harriger and Farnsley noted academia has a role in creating partnerships with the IT industry to connect with organizations in which there are mutual program interests. Academia should seek the partnership of organizations that are in sync from an industry perspective with a university's academic programs (Harriger & Farnsley, 2008). Harrriger and Farnsley indicated, "…developing effective academy – industry partnerships can lead to collaborative opportunities that would benefit all constituents" (p. 39). Although this study did not convey the percentage of female students who benefited from the academy – industry partnership, it did contribute to the body of knowledge as a potential remedy to increase gender diversity in the IT industry. However, gender diversity is impacted based on factors that impede females' ability to lead effectively.

McEldowney, Bobrowski, and Gramberg (2009) reported factors which impact the next generation of female leaders and consequences of effective leadership. Although females outnumber males in degree attainment the path to leadership roles remains a challenging (Lennon, 2013: McEldowney et al., 2009). As a result, females remain underrepresented in senior leadership positions across industries (Lennon, 2013; McEldowney et al., 2009). Data was collected through semi-structured open-ended interviews consisting of 50 cases from female college students who attended Auburn University Female Leadership Institute (McEldowney et al., 2009). Participant

demographics included a variety of socioeconomic and ethnic backgrounds across a range of academic programs. The study revealed young female leaders in this generation experience a variety of factors perceived to hinder their ability to lead effectively (McEldowney, et al., 2009). McEldowney et al. noted females encounter discrimination that leads to disrespect and negative stereotyping that contributes to the lack of effective leadership exhibited by female leaders. Furthermore, McEldowney et al. noted prejudice and negative stereotyping are a core cause of discrimination that results in bias. Furthermore, it leads to perceptions of incompetence. Male domination was also reported as a factor affecting young females' path to ascend to leadership roles (McEldowney et al., 2009). This factor directly impacts the self-esteem of females in leadership roles which result in feelings of insecurity in leadership positions which relates to female perceptions on how they are respected in the workplace. Limitations of the study included a limited sample size and diversity of participants. Data was collected from only 50 participants in the Southeast region of the US. Therefore, the study cannot be generalized. Nonetheless, McEldowney et al. contributed to the body of knowledge in that it challenges young female leaders still need to overcome impediments that hinder professional growth and leadership ascension. Hence, understanding these challenges will aid in closing the gap female representation in leadership roles.

Ibarra, Ely, and Kolb (2013) noted females encounter unseen areas with rising leadership ranks. However, Ibarra et al. noted organizations could contribute to female leadership success by ensuring females are self-aware and recognized for leadership attributes. These organizational actions will support female leadership ascension.

Second-generation bias can be defined as a woman's feeling or belief they do not quite belong in certain places or in certain roles (Vaz, 2013). This type of bias in the workplace has the ability to hinder the leadership development identity of all females within an organization (Ibarra et al, 2013). In the Ibarra et al. study it was noted organizations can combat unseen barrier of second-generation bias by educating and increasing awareness to both males and females, create identity safe workspaces for females to transition to large roles, and usher the leadership development efforts of females driven by a leadership purpose. Ibarra et al. explained organizations play an integral role in diminishing these barriers to promote gender diversity to anchor females to ascend to the top. Therefore, the continued underrepresentation of females in senior leadership roles bolsters a belief and ideologies that do not support leadership growth.

Ely et al. (2011) explained culture and organizational gender bias interfere with the leadership development of females. In the Ely et al. study leadership development was conceptualized as identity work. Data revealed gender dynamics impact the leadership development of females for various reasons. The lack of females in senior leadership roles equate being female as a liability as opposed to an asset (Ely et al., 2011). As a result, potential female leaders are discouraged from seeking advice and support from other senior females. Female leadership development is hindered because traditionally males are seen as a benefit to leadership roles due to created paths toward leadership where males are kept in mind (Ely et al., 2011). Consequently, based on gender bias in dynamics females are not worthy of leadership development to advance to senior leadership positions. Ely et al. explained female leadership development consist of

proper socialization leadership roles with gaining a leader identity and understanding the impact of second-generation bias to close the gap in senior leadership positions.

Stone (2013) noted career interruption is a factor in contributing to the consistent gender gap in top-level positions. Females contend with misconceptions when they "opt out" or exit from senior leadership positions which result in stereotypes. Stone (2013) explored factors as to what drives high achieving females to quit. Qualitative data was collected from 54 females that lived in various cities across the US and worked in a variety of professions. Female participants were predominantly white, with some being Asian and Hispanic. The criteria for participation were females that "opt out" which include being married with children less than 18 years old and worked previously in a professional or managerial job. Stone reported five misconceptions regarding why high achieving females quit. Of the five misconceptions, two are pertinent to this study. First, the misconception as to why females quit due to family is incorrect. Stone reported females quit jobs because of workplace inflexibility. The second misconception that females quit due to incompetence is an accurate. Stone noted females' participants were just as, if not more competent than male counterparts in male dominant fields. Nonetheless, although the study revealed misconceptions of why females "opt out" or quit stereotypes are shaped against females when they do quit and opting out results in a persistent gender gap in top level positions because competent females quit jobs due to cultural and organizational barriers in the workplace (Stone, 2013). The myths identified potentially impact female selection to top-level positions because females encounter gender bias in relation to requisite managerial characteristics at various career stages.

Silva, Carter, and Beninger (2012) explained “hot jobs” are jobs with high accountability and visibility which predict career advancement. However, females get less of these jobs in comparison to males (Silva et al., 2012). Silva et al. defined “hot jobs” or jobs with high accountability and visibility are considered jobs that are high visible projects, mission critical roles, and opportunities that provide international experience. Data collection occurred using a mixed method approach. Soares, Bartkiewicz, Mulligan-Ferry, Fendler, and Kin (2013) collected quantitative data using the Catalyst Survey from 1660 MBA alumni. In 2010, there were 1,479 survey responses and 914 responses 2011. Open-ended survey questions were used for data collection in 2011. The study revealed three distinct reasons that hinder the advancement of females. First, it was found males work on larger and more visible projects which carry more risk to the organization. This includes working on projects with greater budgets and with C – suite (senior executive level) visibility. Second, males were also given greater access to roles that were considered mission-critical. This includes being in roles with profit/loss responsibility, managing director reports, and assuming budget responsibility greater than $10 million. Last, although both males and females were afforded equal exposure to work on global teams, males reported greater opportunities to work in other parts of the world whether through extensive travel or relocation. Silva et al. (2012) concluded organizations could close the gender gap to ensure females are provided equitable opportunities to advance by effectively leveraging leadership development activities through formal development programs. The study did not report the total percentage of male and female respondents; but did reveal the underrepresentation of females in

obtaining “hot jobs” that lead to career advancement. Females are not afforded equitable opportunities to advance to senior leadership roles in comparison to males because females are not offered “hot jobs” (Silva et al., 2012). Although this study captured data from MBA alumni, it is inferred females are equally qualified with education and skill; but still are not given equitable opportunity.

Biernat, Tocci, and Williams (2011) explained patterns of gender bias hinder females from meeting gender expectations which result in poor performance evaluations. In the study, Biernat et al. reviewed performance evaluations from 2006 of 268 junior (150 male/84 female) attorneys which were evaluated by senior lawyers. Junior attorneys were predominately white males. Biernat et al. reported male junior attorneys received more favorable numerical ratings than female junior attorneys on performance evaluations. As a result, male junior attorneys were likelier headed toward partnership. Although this study examined performance evaluations of the male and female junior attorneys in a finance law firm it suggests patterns of gender bias are evident in masculine natured organizations. This is similar to technology and academia in that both are male dominant fields where females are underrepresented in senior leadership high profile roles.

Hatchell and Aveling (2008) noted a gender-based imbalance in the sciences ultimately drive highly achieving females to abandon his chosen scientific field. A waste of human capital exists when females are underrepresented in the sciences especially when they are not visible in the upper level science professions (Hatchell & Aveling, 2008). In Hatchell and Aveling study, gender-based harassment was examined to

understand why three is a consistent underrepresentation of females in the science field. A phenomenological study was used to explore discrimination experience of seven females who completed a Ph.D. in the sciences in Australian Universities. Hatchell and Aveling want to give voice to these experiences as opposed to quantifying gender-based harassment. Data was gathered from open ended face-to-face interviews and surveys. Discriminating experiences in the form of sexual discrimination, sexualization, male privileging, and evidence of the glass ceiling perpetuate the underrepresentation of females (Hatchell & Aveling, 2008). Additionally, females were disadvantaged if they acted to feminine and if they did not act females. This correlates to female experiences of the double bind when working in male dominant environments. Females expressed feelings of being tolerated, but not seen is serious scientists (Hatchell & Aveling, 2008). Although this study focused on female experiences derived when working in the science field which is male-dominant, these experiences are similar to females in technology roles across industries specifically in academia (Drury, 2008, 2009, 2011; Lord & Preston, 2009). Guillame et al. (2013) noted workplace diversity enhances organizational effectiveness is when persons vary in gender, ethnicity, functional background or any other contributing factor. However, gender diversity is lacking in the CIO role of academia which presents an issue of diversity within the occupation which deems the occupation gendered (Drury, 2008; Drury, 2009; Drury, 2011).

Kulik and Roberson (2008) explained recruitment, diversity training, and formal/informal mentoring play a role in an individual's career progression. These factors also increase retention. Samnine, Boekhorst, and Harrison (2013) noted talent

acquisition should consist of job applicants with varying levels of cultural identity. Absence of cultural identity impedes equitable representation within organizations that leads to the underrepresentation of various groups.

Technology and academia are career fields where female underrepresentation in top leadership roles is evident. Lennon (2013) indicated, "Yet at the highest levels of leadership, females, though now over half college graduates, continue to be underrepresented" (p. 7). Females are as equally competent as their male counterparts upon completing their educational trainings. However, females continue to be underrepresented in leadership roles across industries. In the Lennon study, academia and technology were two of the fourteen distinct fields where females are underrepresented in senior leadership roles. Lennon examined a broad range of industries to analyze where females and specifically females of color, sit in leadership. Lennon examined industries executive leadership, board of directors and trustees, and any awardees with distinctions. In academia, Lennon reported females comprise almost 25% of leadership positions. Furthermore, at four-year institutions females are financially compensated approximately 20% less than their male counterparts. However, the high levels of participation of females receiving 59% of all degrees conferred in 2009 – 2010 (NCES, 2012) does not equally compare to percent of females in leadership roles. In technology, Lennon reported females encompass roughly 20% of all leadership roles. In 2012, less than 10% of CIOs were female, down from 12% in 2010 and 11% in 2011 (Lennon, 2013). Females are absent in leadership roles in academia and technology (Lennon, 2013). This is a direct impact on innovative workplace diversity due to a

gender imbalance (Guillame et al., 2013). Although females earn degrees in a variety of academic areas, they do not ascend to leadership roles at the same rate as male counterparts.

In the Eisner (2013) study, leadership styles were examined based on published interviews from male and female CEO's in Corner Office magazine. The study aimed to assess if male and female CEO's conform to gender predicted patterns of leadership. Eisner explained gender linked patterns are position-based or personal-based power. Eisner examined eighty interviews from male and female CEO's. Both males and females possess both position based and personal based power (Eisner, 2013). Furthermore, both males and females concentrate on people/relationship and task/result aspects of work (Eisner, 2013). The results concluded that males and females are more likely to have a personal-based power; but males are likelier to have each type of power base. Female gender-linked power base is least present in leadership style in position-based power. Although, the study examined previous interviews in regards to male/female leadership style female power-based is least present in position-based power; but females emphasize people/relationship aspects of work more than task/result aspects of work. Interestingly, the data analyzed in this study is important considering people/relationship aspects of leading and managing may not prevail as effective in male dominant organizations geared to emphasizing the necessity of driving toward task/result outcomes.

The 8th Annual 2013 Harvey Nash CIO Survey examined the multi-faceted role of CIO's globally, across industry, and in the US. Interestingly, the survey consisted of

2,029 participants. However, only eight percent respondents were female, an increase from one percent in 2012 and 2011 globally. In an examination of leadership roles of females in information technology it was found 14% of organizations employ no females in the IT department at all and only four percent CIO's indicated their teams are gender balanced consisting of 50% or more females are employees. The study captured data from a wide range of sectors including technology, financial services, health care, manufacturing, and the business/professional service sector. In comparison to the 8% global average of female CIO's, 9% exists in the financial services, 8% in technology, six percent in retail/leisure, and 9% in the business sector. The survey reported responses from more than 300 U.S. CIO's that identified the need to promote diversity in the IT field. Sixty-one percent respondents noted females are underrepresented in IT roles, 75% believe there is a lack of qualified females for IT leadership roles, and 17% indicated females encounter unintentional bias during the candidate selection process. Although, the academic, K -12, and post-secondary education sectors were not included in the study the data revealed an underrepresentation of females in the CIO role across a wide variety of sectors.

Drury (2008) explained sex roles and gender bias are factors that influence females working in the field information technology. Drury further noted, sex role and gender biases results in less females ascending to upper-level management or CIO roles in information technology in academia. Drury reported females leave the industry or retreat to careers in IT where they do not sit at the executive table. Academia, also male dominant, lacks females in the role of CIO. Despite the underrepresentation of female

CIO's in information technology and academia small percentages of females ascend to the role of CIO in academia (Brown, 2008, 2011, 2013).

Females continue to remain underrepresented in the male dominant environment of information technology. According to Computer World (2012), of the 100 information technology honorees, about 20 were females. This is less than half of the selected population to be honored. Honorees were individuals from technology and business organizations who exemplify exceptional technology leadership and IT management. Of the twenty females, none were CIO's from academia. Females remain underrepresented as CIO's in technology and business organizations (McEldowney et al., 2009). Gendered organizations contribute to the continued underrepresentation of females in male dominant organizations and occupations (Acker, 1990, 1992; Britton, 2000; Whitehead, 2013).

Matsa and Miller (2011) indicated females ascend to leadership roles when females exist at the top of the organization. The evidence of females in senior leadership roles within an organization allows other females to ascend to senior leadership levels (Matsa & Miller, 2011). Furthermore, Matsa and Miller noted females obtain lower keel and middle management leadership roles, but encounter systematic demand based institutional barriers such as the glass ceiling which hinder their ability to advance to senior leadership roles. In the Matsa and Miller study, the effects of gender composition of organizations top management were examined to analyze female representation. Matsa and Miller analyzed data from 1997 to 2009 on corporate board members and senior executives from US companies. Demographic data such as name, title, salary, and

sex of the five senior executives were analyzed to assess female representation. Included in the study were 1,500 Standard & Poor's companies. Matsa and Miller reported 64% of the companies had at least one female on their corporate board. However, twenty-four percent of the organizations in Matsa and Miller study revealed females were represented as one of the top five executives. Matsa and Miller noted companies with more female board members had more female top executives; thus, yielding changes to membership at the executive level. Matsa and Miller reported the achievement of females to executive levels is directly connected to the amount of females as board of directors. Moreover, it was reported gender and discrimination in correlation to sex of board members impact selection, promotion, and placement of females to senior leadership roles (Matsa & Miller, 2011).

McKinney, Wilson, Brooks, O'Leary-Kelly, and Hardgrave (2008) noted females confront fewer employment opportunities and achievements in the same job in comparison to males in America. This is true specifically in information technology where males outnumber females in IT leadership positions (McKinney et al., 2008). Educational experiences, lack of interest in computer science, and a level of discomfort encountered by females impact the entry or sustainability in IT leadership roles. McKinney et al. explained these assumptions in the IT environment which is a hegemonic male dominated environment. McKinney et al. examined the experiences and attitudes of male and female information technology professionals using a web-based survey for data collection. The study sample consisted of 815 male and female respondents from multiple IT industries in the US. McKinney et al. reported a lack of

gender differences exist between male and female IT professionals. Furthermore, females that were part of the sample were not significantly different from males as it relates to their identification with IT (McKinney et al., 2008). Male and female IT professionals have comparable experience and attitudes in the IT profession (McKinney et al., 2008). Consequently, these results reflect adversely in comparison to prior research. Interestingly, of the 815 respondents, 61% were male and 80% were Caucasian; thus, perpetuating the underrepresentation of females in the IT profession.

Females in Leadership

Tuana (2011) noted the rise of the feminist movement in a political context emerged to feminist philosophical scholarship in the US where philosophers were concerned with unfair practices which emerged from feminism. Feminist philosophical scholarship focused on inequalities in equal opportunity, abortion, affirmation, sex, marriage, and gender (Tuana, 2011). In congruence with sex roles and gender bias in society, females encounter inequalities in equal opportunities in gendered organizations. Gender socialized cultures and behaviors exist in the workplace that impedes females from rising to leadership roles. Additionally, socialized cultures and behaviors have contributed to continuous inequalities within gendered organizations and institutions.

Cheung and Halpern (2010) indicated the Western male is viewed as the proto-typical leader. However, an alternative model to this view was used to examine females who ascend to top professions. Cheung and Halpern noted three elements of this alternative model to include traits of relational leadership, teamwork, and unanimity. These elements are considered an effective mechanism that females with familial

responsibilities apply to diminish barriers and lead effectively in the workplace. In the Cheung and Halpern study, a qualitative analysis consisting of semi-structured interviews was employed to gain a perspective from a sample of sixty-two females in the highest levels of their profession. The participants were previously or currently married with significant family obligations including; but not limited to taking care of children, and/or a disabled or elderly sibling or parent. Participants included individuals from China, Hong Kong, and the U.S. that worked in senior positions of the legislature, government ministers, business executives, college presidents, chief of police, and other senior positions were part of the study (Cheung & Halpern, 2012). Cheung and Halpern selected three specific societies to compare cultural context and socioeconomic climate. The study revealed female ascension to senior positions occurs for a vast amount of reasons. Females were able to rise to top-level positions in the specified societies for a myriad of reasons. Females considered themselves expert at multitasking creating links between work and family with a clear identification of goals to address work and family needs distinctly (Cheung & Halpern, 2010). Family support was identified as a critical success factor to reach top-level positions with the involvement of reliable and stable help at home. Cheung and Halpern noted Chinese and American females leaders did not succumb to the elements of sexism. High levels of confidence strengthened these female leaders to dispel masculine roles and behaviors exhibited by males which aided to their ascension to top leadership positions (Cheung & Halpern, 2010). Cheung and Halpern concluded females can rise to top-level positions in male dominant fields. This ascension is evident among three specific societies where females combine professional and

personal values in conjunction with goals to reach the top while remaining confident without embracing male leadership attributes. Limitations of the study include gaining data from females in top-level positions in three specific societies. As a result, the results cannot be generalized. Nonetheless, females ascend to top leadership roles.

Laud and Johnson (2012) reported gender is no longer a factor in upward mobility tactics and strategies within the selection process. In the Laud and Johnson study, a mixed method approach was used to assess strategies of upward mobility tactics used by males and females who advance to leadership roles. Interview data was collected from 187 CEOs, presidents, C-level officers, managing directors, EVP's, chancellors, senior and mid-level managers comprised of males and females from a variety of industries. Laud and Johnson reported both male and females use similar strategies when competing for top positions in organizations without regard to gender bias. Both genders firmly believe individual success depends on organizational factors (Laud & Johnson, 2012). Limitations of the study include the percentage of participants' gender was not identified. This prevails as a limitation because although the study indicates both genders apply the same strategies to ascend to top leadership positions, it negates to state the percentage of males and females that exists in senior leadership roles. Laud and Johnson explained top tactics and strategies employed by males and females to advance upward are interpersonal, motivational, planning, leadership style, and training and education. Although similar tactics and strategies are utilized, females remain underrepresented in top leadership roles.

Judge, Livingston, and Hurt (2012) reported on how gender roles and agreeableness determine wage. The concept of agreeableness with defined as displayed characteristics of modesty, trust and straightforward (Judge et al., 2012). Data collection occurred through a series of four studies. The first study consisted of 560 survey participants between the ages of 12-16 years old employed working a minimum of 1000 hours per year, but not enrolled in college. The second study consisted of 1,681 participants between the ages of 25 – 75. This group of participants worked full-time away from home and enrolled in the National Survey of Midlife Development in the US. Data collection occurred through phone interview and mailed surveys. The third study included 1,691 participants who were part of Wisconsin Longitudinal Study (WLS) employed full time and earned a positive income for the year. Data regarding value and compensation was gathered through interviews. The fourth study consisted of 460 business management undergraduates from a southeastern university. This group of participants read assessments of eight inexperienced candidates for a job opening to determine career growth in the positions. Studies were conducted from 1992-2008. The data revealed participants with heightened agreeableness tendencies negatively impacts the earnings of males than for females. However, Judge et al. noted agreeableness increases the gender wage gap with agreeable males earning more than agreeable females. Judge et al. noted agreeableness affects both males and females from high earning potential. Females are further impacted by the gender wage gap if they are disagreeable (Judge et al., 2012). This study highlights barriers encountered by females'

agreeableness or disagreeableness within an organizational context. As a result, the earning potential of females is impacted (Judge et al., 2012).

Barbulescu and Bidwell (2012) explained three factors that drive male and female job applicant decisions. These factors are preferences with exact rewards, job assimilation and the idea the application will succeed (Barbulescu & Bidwell, 2012). In the Barbulescu and Bidwell study, the difference in jobs that females and males apply was examined in an effort to understand gender segregation and managerial roles. The theory of gender role socialization was applied to understand the differences that drive the job application process in males and females. Survey data was collected from 1,255 MBA students from a large elite international school. Of the 1,255 participants, only 278 were females. Barbulescu and Bidwell reported applicant decisions embodied by females included females apply to jobs with anticipated work life balance; but, males apply to jobs with poor anticipated work life balance and perceive jobs stereotyped as masculine would not be applied to due to thoughts of not receiving a job offer. Barbulescu and Bidwell concluded gender role socialization impacts the choices males and females make when applying for managerial jobs.

Dentith, Brady, and Hammet (2006) explained feminist theory in three broad perspectives. Liberal feminism is evident if females are provided the same rights and access to opportunities as men; they will be in control of their own destiny (Dentith et al., 2006). Radical feminism is evident when female oppression is a result of male dominance in society in which females' must rid themselves of this oppression (Dentith et al., 2006). Post-modern feminism seeks to understand gender as a social construct by

questioning what is currently known (Dentith et al., 2006). Each perspective is applicable to gendered organizations and females' underrepresentation in male dominant fields.

Anderson and Buzzanell (2007) explained female roles in the technological contexts are gendered and females struggle in positions of leadership in technological organizations. In the study, Anderson and Buzzanell applied a grounded theory approach to explore encountered experiences of females' leaders in a Macintosh computer user group. Female leaders in male dominant technology environments encounter rigidity between both instrumental and relational concerns (Anderson & Buzzanell, (2007). "Females leaders are expected to engage in a complex and shifting mixture of identities that invoke their statuses as females (seen as primarily relational) and as leaders (seen as primarily instrumental) separately in some cases and simultaneous in others" (Anderson & Buzzanell, 2007, p. 38). This impacts the leadership dynamic of females' leaders in male dominated environments. Acceptance of female leadership was welcomed when feminine behaviors in appearance and hospitality were exhibited. However, females were unwelcomed by some males when there was a display of power and authority through the exertion of imposing change was exhibited.

Drury (2008) noted females' higher education Chief Information Officer's face sexism. Information technology and higher education are both male dominated environments. As a result, females encounter gender bias and discrimination. In order for females to reach the executive level in higher education information technology Drury

(2008) indicated, "…IT cultures in higher education become more female friendly" (p. 7) as an approach to providing females with equal leadership opportunities.

Madden (2005) noted issues regarding gender and leadership in higher education need a resolution to eliminate difficult experiences encountered by females. In the Madden study, literature related to gender, higher education administration, and leadership to apply feminist psychology frameworks was examined to understand and explore resolutions to promote feminist leadership behaviors as a method to resolve these issues. Madden explored five principles of feminist psychology framework. The five principles were explored by Madden were (a) sociocultural contextual influences in leadership situations, (b) power dynamics exist in sociocultural structures, (c) people are active agents coping with environmental change, (d) multiple perspectives are of greater use than interpreted dichotomies, and (e) collaboration is effective (Madden, 2005). Madden explained within the principle of sociocultural context leader situations are influenced by gender, stereotyping, discrimination, status, and administrative strategies within a masculinized context. Females encounter difficult experiences when leadership is influenced by these constraints in higher education (Madden, 2005). This includes receiving less compensation than male counterparts, if seen as too competent are less liked, and encounter the double bind. Within the sociocultural dynamic of higher education leadership cultures prevail and the perception of one's ability becomes part of the dynamic. In order to change the gendered dynamic of higher education, Madden noted females must apply diverse strategies and act as change agents to realistically eliminate difficult gendered experiences. Furthermore, Madden explained leadership as a

process which undergoes stages to empower, facilitate, collaborate, and educate others within the sociocultural dynamic. These are elements of an effective leader (Madden, 2005). Female leaders have two options to eliminate difficult leadership experiences in higher education. They can work to eliminate gender-based expectations or be active change agents to transform conceptions of leadership to promote positive behaviors (Madden, 2005).

The Computer Research Association Taulbee Survey reported a comparison of information technology degree and enrollment trends among males and females. Zweben (2012) noted based on the data there is rise in computer science programs, increased enrollment, and an increase in Bachelor degrees awarded in computer science. Bachelor degrees awarded to males were 88.3% and females 11.7%, Master degrees awarded to males were 75.4% and females 24.6%; and Ph.D.'s awarded to males were 81.6% and females 18.4%. Data reflects computing degrees earned by females to be comparatively less than males (Zweben, 2012). If females are not earning computing degrees, females respectively are not entering careers in computer science at the rate of males (Zweben, 2012). This is a direct correlation and impact on the underrepresentation of females in technology careers as well as females in the role of CIO, specifically in academia.

The underrepresentation of females in senior leadership roles is not isolated to the areas of academia and technology. Rikleen (2013) explained the need for organizations to shift to a culture that promotes work-life balance to increase the number of female faculty in the medical field to attract more female leaders. Similar to all STEM fields the medical field has work hours that do not accommodate work-life balance (Rikleen, 2013).

Therefore, work-life conflict is a factor that impacts medical schools ability to recruit and retain females (Rikleen, 2013). Data collection revealed male professors of STEM spend more time engaged in activities that relate to career advancement. However, females struggle in this area due to work-life balance conflicts (Rikleen, 2013). Furthermore, Rikleen noted in order to attract more female leaders the Stanford School of Medicine launched an initiative to combat these challenges (Rikleen, 2013). Programs were implemented to increase cultural acceptance of work-life plans and policies. Females were also given the opportunity to develop short-and-long term strategies to achieve career objectives to meet professional and personal goals. Although this study focused on STEM faculty specifically in the field of medicine, the challenge of work-life balance in correlation to leadership ascension is evident across all STEM fields, particularly technology. Rikleen concluded this challenge can be met with a cultural shift of adopting work-life balance plans and policies within organizational structures to attract more female leaders across STEM fields. Hence, females seeking leadership ascension often encounter barriers when there is a need to manage work-life obligations. These barriers often correlate to one's ability to perform.

In regards to females in higher education information technology, Brown and McClure (2010) explained their concern for the percentage of females CIO's in higher education. Although higher education information technology is a more favorable environment for females as compared to other industries, the percentage of females in the role of CIO in higher education has declined over the years (Brown & McClure, 2010). This brings a cause for concern for the future of females CIO's in higher education. In a

higher education Chief Information Officer's Study, Brown and McClure examined male and female CIO's to determine the future state of female CIO's. Brown and McClure reported females have the opportunity to transition into the role of CIO; however, those currently in the role plan to retire from the position in the next decade. The current age of female technology leaders is 46-65 years old who can potentially transition; but seek to retire and not incur the responsibility of CIO. The retirement of female technology leaders in this age group is greater than males because they are in a younger age group which broadens their entry into the role of CIO. Brown and McClure explained females have less desire than males to transition into the CIO role. The data revealed 75% male want to become CIO's while only 45% females desire to become CIO's (Brown & McClure, 2010). The lack of aspiration toward the role of CIO was attributed to the lack of support to prepare for the position. The findings concluded if females in technology who have the potential to transition to CIO are not mentored, prepared, or supported there will be a future decline in females CIO's in higher education (Brown & McClure, 2010).

Johnson (2014) explained females in higher education administration in sub-Saharan Africa performed and defied gender through the enactment of gender norms and personal agency. Johnson employed a phenomenological study to explore the life and career paths of female participants in higher education. In the study, Johnson reported commonalities among the participants clarifying faith, family and education as the stimulus to career growth. Faith, family, and education also contributed to their experiences which created a platform for professional achievement in the highly

gendered culture and institution of higher education in sub-Saharan Africa (Johnson, 2014).

Adams and Weiss (2011) noted gendered paths to technology leadership impact females in technology. Data was collected from 258 aspiring technology leaders using a mixed method online survey and questionnaire. In the Adams and Weiss study, females who aspire to technology leadership roles believe the role of a technology leader is more of a strategic business partner as opposed to a technology enabler. Interestingly, the study revealed aspiring females' technology leaders are likelier to function in business roles than men are. However, males prefer the business role but work as technologists (Adams & Weiss, 2011). Additionally, Adams and Weiss noted three roles of technologists, change agent, and business expert were key technology leadership roles. It was found females aspiring technology leaders already performed in the role of business expert, change agent and technologist at a greater percentage than men. Consequently, the results suggest there is opportunity for females to ascend to technology leadership roles. Although, the study did not identify the participant's current sector of technology, opportunity exist for females seeking technology leadership roles (Adams & Weiss, 2011).

Wajcman (2013) noted the proportion of female managers has drastically increased over the last twenty years; but female underrepresentation in top positions remains evident. In the study of five multinational corporations, the primary focus was on the process of masculine organizational culture which sexualizes females and excludes them from senior management (Wajcman, 2013). Each corporation possessed model

equality processes; however, a feminist theory on equality, differences in employment, merged with organizational analysis was applied to assess if females bring a distinct feminine style of management to future organizations. Wajcman explored the private lives of managers and their interconnectedness between home and work for both males and females to critically view experiences in a changing corporate climate. Feminine soft skills are being revalued as a quality for corporate success in the future (Wajcman, 2013). Although top management positions in corporate America are still male dominant, feminine soft skills may prove as an asset to lessening gendered organizations of top management positions.

Hess (2013) noted females experience nonverbal discrimination during job interviews exhibited greater negative and fewer positive behaviors in the masculine job applicant interview while inexperienced interviewers did mot. However, the data revealed inexperienced interviewers exhibited greater positive and fewer negative behaviors during the masculine applicant interviews. An organization or occupation is considered gendered when it is dominated by males or by females (Acker, 1990, 1992; Britton, 2000: Pierce; 2014; Wajcman; 2013). Hence, the idea of a masculine job impeded females' access and ability to enter male dominant organizations and occupations. Furthermore, females encounter discrimination based on the job type for which they are applying and the gender of the interviewer which hinder their ability to obtain a masculine job (Wajcman, 2013).

Gendered organizations are not isolated to organizations or occupations that are male dominant. Herakova (2012) noted males are the numerical minority in the nursing

field. Herakova explored male nurses' communication practices and experiences to assess how males relate to communication norms and cultural status in the profession in a female dominant environment. Herakova reported male nurses have positive feelings, experiences, and are satisfied with their work-life balance working in the nursing field. Additionally, Herakova explained male nurses seek assimilation during interactions with health care outsiders. Since the nursing field is female dominant, gendered organization, male nurses seek assimilation when interacting with individuals outside of the nursing industry.

Liminana-Gras, Sanchez-Lopez, Roman, and Corbalan-Berna (2013) explained nursing is a female dominant field. However, male nurses exhibit a lower conformity to traditional masculine gender norms then males in the general population. Data was collected from ninety-eight male nurses and ninety-eight female nurses from the University Hospital of Getafe in Madrid. Liminana-Gras et al. examined impacting differences of task execution has on the health of male nurses in a female dominant nursing occupation. Additionally, Liminana-Gras et al. analyzed the effect of conformity of male gender norms. Four instruments were used for data collection employing four instruments. Liminana-Gras et al. employed the National Health Survey which measures self-perceived health, number of ailments, consumption of medicine and number of visits to the doctor. The GHQ-12 was used to measure mental health. The researchers distributed a questionnaire to measure stress, satisfaction at work and lifestyles. A ninety-four item questionnaire was distributed to analyze the degree of conformity males display gender norms commonly ascribed to males and the context of social norms which

are defined as guidelines prescribed by what males and females should do, think, and feel. Liminana-Gras et al. noted sexual stereotyping consider provisions of care jobs such as nursing are for females and are female linked. As a result, by virtue of the nursing field being sex stereotyped male nurses display lesser conformity to male social gender norms in comparison to males in the greater population.

Simpson (2011) noted nursing is an occupation traditionally chosen by females; however, males enter the nursing field. In the Simpson study, exploratory data was gathered to understand the reflexivity through male nurses' experiences when working with female nurses and female nurses' experiences when working with male nurses. Reflexivity was the underlying principle to assess if gender impacts daily actions, interactions, and communications between male and female nurses (Simpson, 2011). Data was collected from 16 male and 8 female nurses in Australia. Simpson aimed to examine the gender relations of males and females as it relates to the skill and aptitude each gender brings to the profession, how each view the other's performance, and the experiences and challenges of working with or managing each gender. Simpson reported when females discussed males nursing females explained males were advantaged and privileged. Females expressed male nurses stray toward management research, and education which lead males away from the traditional path of nursing care (Simpson, 2011). Based upon the data collected Simpson noted female nurses believe male nurses received prioritization and favoritism due to them being male which led to the male nurses' ability to take specialized courses which result in promotion. Additionally, female nurses found male nurses to be valued and beneficial to the jobs because males

bring balance to the field. Simpson reported male nurses engage with gender at varying levels. Male nurses reported to have special relationships with doctors based upon their expertise which marginalized female nurses to domestic and trivial roles as nurses (Simpson, 2011). Furthermore, male nurses reported doctor's exhibit dismissive treatment toward female nurses and male nurses encounter cultural privileges of masculinity. On the other hand, Simpson reported few males indicated gender is not significant in the nursing profession. Hence, the study reveals the nursing occupation is a gendered occupation in that it is traditionally female centric. However, male nurses are privileged and favored in the field (Simpson, 2011).

Landivar (2013) noted the nursing occupation is female centric; however, males enter the nursing field and earn wages greater than female nurses. In the Landivar study, it was reported in 2011 there were 3.5 million individuals employed as nurses in which 3.2 million were females and 330,000 were men. In 2011, only nine percent of males were nurses and 91% nurses were females (Landivar, 2013). Interestingly, male nurses earned on average $60, 700 per year while female nurses earned on average $51, 100 per year which means male nurses out-earn female nurses (Landivar, 2013). Although the nursing field is a female dominant occupation, male nurses benefit from the glass escalator effect in that they earn higher wages and faster promotions than females (Landivar, 2013).

CIO Leadership

Pastore (2010a) explained Chief Executive Officers' perceive CIOs' must possess characteristic of strategic visioning in order for them to lead effectively. CEO

perspectives were gained on CIO expectations across sectors. Pastore noted CEO's believe CIO's should be a strategic business peer that is not only accountable for technology operations; but are visionary, innovative, and transformative leaders. However, CEO's indicated not many CIO's have the strategic visioning coupled with execution skills to be aligned with CEO expectations to a create a successful transformative organization (Pastore, 2010a). In order to remedy this challenge Pastore reported CEO's must support, mentor, and coach the CIO to ensure strategic visioning, planning, implementation, and execution are embraced to meet expectations. Pastore (2010b) explained CIOs need to think like CEOs in that organizational alignment as partners is critical to drive business innovation and strategic alignment. Pastore (2010c) noted the advice of a global CIO and executive recruiter as it relates to potential questions CEO's should ask of potential CIOs. It was concluded when seeking a CIO it is imperative to gain the CIO's knowledge of business strategy, customers, and the industry in which the work. Pastore (2010c) explained five questions CIO candidates should be prepared to answer in order for the CEO to gauge their strategic orientation. Of the five questions, three are pertinent to ask CIO candidates. The three pertinent questions noted were to "describe how and where a company's IT strategy supports and enables business strategy, what is the most significant change initiative delivered and what business metrics are incorporated into one's IT score card" (Pastore, 2010c, p.1). The goal of the CEO is to assess a CIO candidate's strategic ability in order to assess effectiveness (Pastore, 2010c). Leadership effectiveness is imperative to organizational growth.

Kelner & Patrick (2010) explained competencies individuals require as it relates to their development to achieve high levels of performance in each successive role as one ascends to the future state of a CIO. The three roles identified for future CIO ascension were reactive, active, and proactive (Kelner & Patrick, 2010). Kelner & Patrick noted those in an active, and, more specifically proactive roles are comparable to a CEO as it relates to leading in a transformational business strategic manner. Furthermore, Kelner & Patrick explained CIO attainment is a journey where one must progress from a functional expert to a business strategist accomplishing team and change leadership, as well as, strategic orientation.

Although CIO's strive to be strategic IT leaders, challenges prevail (Brousell, 2013). Brousell noted CIO executive council members reported advancement to the CIO role is affected by their relationship with other C-suite leaders. Eighty percent of the members surveyed aspire to be strategic IT leaders; however, only 21% see themselves in this role (Brousell, 2013). CIO's are met with competing challenges in that they want to focus on business strategy. However, they consumed with improving IT operations and system performance (Brousell, 2013).

Chun and Mooney (2009) explained the CIO role has evolved over the past 25 years. In an exploratory study interview data was collected from 17 CIO's during 60-minute interview sessions per participant. Secondary data was gathered from job postings, academic studies, and practitioner oriented journals to analyze CIO roles and responsibilities. CIO's have two roles (Chun & Mooney, 2009). The first role is as a business strategist in which the CIO is an executive level leader as opposed to being a

service provider. The second role is as a traditional technology centric role. The distinct roles were categorized as a Chief Innovative Officer (executives with a business, non-technical background) and Director of IT (traditional technology centric) (Chun & Mooney, 2009). In addition to the two roles noted by Chun and Mooney, five attributes were reported as requirements of a CIO. The five attributes consisted of contributions to corporate strategy, analytical ability to assess business needs, assessment of IT costs and impacts, creating awareness of an IT corporate footprint, and communication skills (Chun & Mooney, 2009). Current CIO's perceive they are required to possess key attributes in their role in order to be effective. Although, this study did not comprise data from CIO's in academia understanding how CIO's perceive their role within an organization is essential to further understand hiring officials' perception of leadership effectiveness when selecting a CIO candidate.

Rich (2012) reported a list of do's and don'ts as tips for the new CIO from the perspective of three public sector CIO's from the state of California. At the CIO Academy, three public sector CIO's shared insight regarding challenges new CIO's face. The advice provided the new CIO with tips on facing daily challenges. The panelist consisted of two males and one female that worked in public service agencies ranging from small to large. Essential "do's" were to build relationships with fellow chiefs in the agency, speak the language of the business (not only IT jargon), and be creative when providing services to internal/external stakeholders (Rich, 2012).

Brown and McClure (2009) reported in the 2009 Technology Leader (T L) Survey females are represented in information technology leadership roles at a greater percentage

than other industries. In the quantitative study 222 individuals responded and 73 (33%) were female. The data revealed 74% male 59% female aspire to be CIO's. It was concluded mentorship is a contributing factor to females achieving the CIO role in higher education (Brown & McClure, 2009). Interestingly, the 2009 CIO survey consisted of 352 respondents in which 86 were female. Therefore, the data reveals females continue to be underrepresented in the role of CIO in academia.

McLaren (2013) noted organizations require leadership skills and ability when recruiting new employees; but also play a role in the leadership development for high performing employees. Leader-follower relationships are critical to organizational success (McLaren, 2013). Furthermore, Gonzalez and Chakraborty (2013) noted leaders face high performance expectations. Leadership development is required to meet organizational expectations.

Ritchey (2013) noted the most influential people in security based on Security Magazines annual honors positively impact the organization, the industry, colleagues and peers. Of the twenty individuals honored in 2013, only two were females. In 2012, out of 22 honorees, three were females; in 2011, all 20 honorees were men; and in 2010 out of 32 honorees, only six were females. Consequently, females are underrepresented as honorees in the security industry consistently over the past few years.

Virick and Greeg (2012) explained in order for organizations to succeed a strong pipeline of talent must be built to enable the nomination and selection of strong leaders through succession planning. A range of hypotheses were tested; however, three were essential to examine gender differences and succession planning. In the Virick and Greeg

study, an examination of how gender differences operate in the framework of succession planning was analyzed. Virick and Greeg indicated if "… (1) a supervisor's own sex influence the nomination of their successors, (2) a perceived climate of support for diversity had an influence, and (3) if the supervisors status open (high versus low performer) influence the nomination of a female successor" (p. 1) Surveys were distributed to 628 incumbent executive and managerial participants of a North American operations technology firms. Responses were obtained from 228 incumbents. Sixty-two respondents indicated direct involvement in succession planning (Virick & Greeg, 2012). Fifty-eight of the sixty-two respondents provided information on their successor. There were 67% male and 29% female respondents. Virick and Greeg reported when supervisors perceive a diversity climate favorable for females. As a result, females are anticipated to be nominated as a successor. However, a relationship does not exist between the gender of the supervisor and the nomination of female successors (Virick & Greeg, 2012). Last, high performing supervisors were more likely to nominate females for succession. As a result, the relationship between diversity and business performance are parallel to enhanced gender diversity. The researchers noted study limitations include the focus on the first step of succession planning which was the nomination process and respondents were drawn from the company. Consequently, data gathered from one organization mitigates more homogeneous views if drawn from participants from different organizations. Nonetheless, the researchers identify the need for organizations to establish and promote policies and practices to manage diversity.

Barsh and Yee (2012) explained leadership diversity within organizations permeate stronger business outcomes. However, senior leadership roles across industries are male dominant. Organizations have the ability to increase workplace gender diversity and unlock female potential (Barsh & Yee, 2012). A mixed method approach was applied to explore talent pipelines in gender diversity practices in sixty Fortune 500 or smaller corporations. Interview data was collected from more than 350 executives. Survey data was obtained from approximately 4,000 employees regarding attitudes, career aspirations, and ambitions. Additionally, contributory data was provided from respected academics and leading experts such as Catalysts. Barsh and Yee reported large amounts of females enter organizations; but, settle for staff roles, get caught in middle management or leave before their concerns are addressed; a small amount of females reaches VP or higher; and, an integrated approach to address barriers that hinder female advancement to leadership roles is required to increase gender diversity. Barsh and Lee noted the promotion of females to senior leadership roles is imperative to successful organizational performance. Although the study analyzed Fortune 500 companies, females encounter barriers that hinder advancement disallowing professional growth. Organizations have a responsibility to increase workplace diversity to be successful (Barsh & Yee, 2012).

Woszczynki and Shade (2010) explained not only are females underrepresented in senior leadership IT roles they are underrepresented information security leadership roles which is a subfield of information technology. In the Woszczynki and Shade study, perceptions of females in IT in the context of the subfield of Information Security was explored. Interview data was collected from five females' professionals in Information

Security which lasted approximately 45 minutes. Three researchers took part in the data gathering process. The first researcher conducted interviews, the second recorded the interviews in a word processor, and the third observed and made notes of interviews. Woszczynki and Shade reported females share similar motivations for seeking an information security career, shift into IT careers without an IT degree or pursuit of an IT career, desire more gender diversity in the workplace to achieve goals based on different perspectives, were viewed with less respect than male counterparts and are stereotyped; and, are the minority in information security which leads to feelings of isolation. Similar to prior research related to female experiences in IT the data revealed is consistent with prior studies. Limitations include data collection from only five females in the field of information security. The variables of gender, culture, and ethnicity were excluded. Also, the small sample size restricts generalization of the results. Consequently, although females possess equitable skill and experience as male counterparts they are met barriers and challenges that hinder career advancement.

Maleka et al. (2011) noted female leadership efficiency manifests in an evolving nature and consists of a combination of factors that drive effectiveness. A mixed method approach was employed to explore characteristics of efficient leadership to propose a favorable pattern to increase efficiency in Iranian governmental organizations. The study revealed females' exhibit efficient leadership represented in a variety of characteristics over different periods of time (Maleka et al., 2011). The characteristics assessed of female leaders were teambuilding, mentoring and coaching, establishing relations, constant performance improvement and honing a visionary perspective (Maleka et al.,

2011). Although, this study was limited to designing effective female leadership models in government organizations in Iran it provided insight on characteristics females possess to be seen as effective leaders.

Beach (2013) noted deficiencies within the American school system that hinder CIOs capability to fill technical positions. CIO's have job openings; however, there is a talent gap in America because students are ill prepared to enter roles that require analytical and collaborative thinking (Beach, 2013). CIO's must get involved with formulating a campaign to improve the nation's education system (Beach, 2013). If the talent gap was closed, organizations would limit outsourcing options. Technical positions not only require competencies in math and science; but, effective communication, collaboration and analytical skills are extremely imperative (Beach, 2013).

Folkman (2012) reported females excel in leadership competencies at higher percentages than males. In 2011, 7,280 leaders (4,651 male and 2,629 female) completed the Extraordinary Leader 360° Assessment to analyze leadership effectiveness. Study participants were leaders from high-performing organizations. Folkman revealed female ratings in leadership effectiveness by position were higher than males with female percentages of 61 and male percentages of 53 in top management. Of the 15 functions identified in the assessment female leadership effectiveness ratings were higher than males in the area of sales (62.6%), legal (95.4%), general management (55.0%), operations (53.8%), and marketing (52.4%). Although, the study revealed female leaders

possessed leadership effectiveness competencies at a higher rate than males; females remain underrepresented in top management positions.

Allison (2010) explained future CIOs in academia must possess political skills and competencies to drive institutional success. Allison reviewed literature, assessed conversations, and analyzed quantitative data from current information technology professionals. CIO success is based on critical leadership skills and competencies (Allison, 2010). The future CIO is not only responsible for the technology, but, also an innovative strategic planner. Allison (2010) found CIO's must be competent in cultivating change among information technology personal. Additionally, Allison noted CIO's are responsible to promote optimal solutions with an understanding change is imperative. Survey data was collected from 35 IT professionals at the 2010 Educause Midwest Regional Conference to assess views of the future CIO. The study reported three primary attributes. Strategic vision (51.4%), effective collaboration and partnerships (42.9%) and adaptive communication (40.0% were the three primary attributes. Allison noted the primary attributes CIO's must possess are strategic vision, effective collaboration, and effective communication. Although the study negated to reveal the percentage of male and female respondents, it provided competencies IT professionals deemed essential to be effective. Limitations of the study include sample size and it being limited to IT professionals in only one region. Nonetheless, IT professionals identified critical skills and competencies that future CIO's must possess to be effective.

CA Technologies (2012) reported CIO's possess the ability to drive organizational information technology goals among senior leadership. However, CIO's encounter challenges when there is a lack of digital literacy within the senior leadership team. Interviews were conducted in the summer of 2011 that consisted of 685 telephone interviews with CIOs from telecommunications, retail, financial, and manufacturing sectors. The study revealed CIOs are challenged when senior executives lack digital literacy that hinders organizations growth, CIOs seek the opportunity to collaborate with the senior executive team to integrate with IT and drive strategic thinking, and CIOs drive business-using technology. Although the study did not capture data from CIOs in academia, senior executive team collaboration and alignment is critical to mitigate challenges CIO's across sectors. CA Technologies explained effective CIOs are those with the ability to identify strategic business planning from multiple perspectives to garner solutions to gain support from senior leadership. CIO's in various sectors understand what is required to be effective leaders (CA Technologies, 2012).

Drury (2009) explained the individual and institutional approach to support the growth and development of females and individuals of color toward senior IT roles in higher education. Studies indicate females remain underrepresented in IT leadership roles in higher education. However, this can be addressed if females are developed to lead in IT roles (Drury, 2009). Drury indicated that females need to build exceptional leadership skills to gain recognition for leadership opportunities.

Dominici, Fried, and Zeger (2009) noted females remain underrepresented in academic leadership positions in academia. This occurs because females are blocked

from leadership positions, recruitment paths to toward leadership positions, and are perceived as less competent leaders. In the Dominici et al. study twenty-seven females from John Hopkins University participated in using semi-structured interviews in a focus group to understand ways females encounter gender barriers. Dominici et al. reported females are blocked from academic leadership positions because recruitment to administrative ranks occurs less frequently for females than men. As a result, females are not allowed to progress through the sequential academic ranks to obtain academic leadership roles. Academic leadership positions come with the responsibility of being available daily with lengthy hours. The work hour requirements are not appealing to females considering the work demands conflict with balancing family responsibilities. Additionally, it was found females are underrepresented in leadership positions because leadership styles of collegiality and collaboration are less acceptable than common masculine leadership traits (Dominici et al., 2009). Females who are currently in leadership roles are not recognized and disrespected as leaders. Furthermore, Dominici et al. (2009) noted females do not have support of informal networks to assist them in current leadership positions or foster growth in the direction of academic leadership. Population and sample size were a limitation to the study in that only 27 females at John Hopkins University were part of the study. As a result, replicating the study to gain a broader perspective potentially may yield different results. Despite this limitation, Dominici et al. (2009) explained reasons as to why females in academic leadership roles in academia are underrepresented.

In regards to workplace cultures, Wentling and Thomas (2009) noted workplace cultures in information technology hinder and assist the career development of females. A gender imbalance is evident in information technology; however, females have the ability to advance if they are assisted. This gender imbalance is contributed to the characteristics which hinder their advancement. In the Wentling and Thomas study a qualitative data was gathered comprehensively understand characteristics that hinder and assist the career development of females in IT. Semi-structured interviews were conducted with twenty-five females in information technology from Fortune 500 companies. The participants were randomly selected from a master file list of 35 females listed in the NCSA Industrial Partners Program listing. The titles ranged from CIO to Computer Analyst. Wentling and Thomas reported information technology workplace cultures have the ability to hinder and assist career development. Participants described information technology workplace characteristics to be results driven (56%), team oriented (56%), high accountability (48%), and problem solving focused (28%). However, negative characteristics identified were male dominated (72%), diversity not valued (40%), and competitive (40%). Participants reported characteristics that hinder career development were male dominated (64%), very competitive (60%), very conservative (36%) and exclusive (20%). Characteristics reported to assist the career development of females were team oriented (56%), results driven culture (52%), high accountability (40%), challenging (36%), and employee/people oriented (24%). Seventy-two percent indicated progression in career development did not occur as expected. Reasons indicated for non-progression were due to male dominated company/job areas

(77%), gender discrimination (72%), difficulty conforming to company norms (55%), non-encouragement, support, development to top level positions (50%), and treatment as an outsider (44%). Interestingly, the participants reported career satisfaction due to consistency in learning new things (58%), continuously challenged (54%), and the ability to make a valuable contribution (46%) (Wentling & Thomas, 2009). In conclusion, the study revealed a high percentage of females are satisfied in their careers; but, receive minimal support toward career development due to workplace cultures that impede the growth and development for females. The study provided insight on workplace characteristics, specifically, those that hinder career development. Understanding factors which hinder career development in information technology can assist organizations to remove barriers, amend policies, and support female IT workers to incorporate a diversified workforce (Wentling & Thomas, 2009).

Brown (2006) noted the higher education CIO has a critical impact on the institutions organizational success. The role of the CIO is not only to perform at a high technical level; but, to be part of the strategic planning and organizational leadership. Brown (2006) indicated the CIO role has evolved from a technical guru to a business executive. In a nationwide study, Brown (2006) gathered data from CIO's from four year institutions in the US to examine the CIO's effectiveness. Data was also gathered from Institution Management Team (IMT) members on their perception of the CIO's effectiveness. Various attributes were used to determine CIO effectiveness including effective leadership, role on management teams, and view of organizational centralized/decentralized structures. The survey was distributed to 2,549 institutions and

267 CIOs responded. The IMT survey was distributed to 149 members and 117 responded. The study revealed the two highest areas in which the CIO and IMT perceived CIO effective were oversight on contracts and vendor relations; and, provision of IT support and services to the campus community. Additionally, Brown (2006) found the higher education CIO should possess attributes of "…communication skills, political savvy, information technology knowledge, strategic business knowledge, education, and reporting…" (p. 53). CIO effectiveness is also attributable not only to the characteristics and strengths of the CIO and institution; but also when the CIO is part of the executive team reporting directly to the CEO. Although, Brown (2006) reported attributes of the effective CIO in higher education, female underrepresentation is evident in this role. The study did not identify gender or age of respondents. However, some females attain the role of CIO.

Torrens (2010) reported information technology salaries have flattened and declined due to economic constraints and budget cuts. These factors impact all IT industries which have a direct correlation on CIO leadership effectiveness. CIO competencies are essential in sustaining IT organizational infrastructure. However, leadership effectiveness becomes difficult when external and internal constraints affect human resources (Torrens, 2010).

Haake (2009) noted academic leadership in higher education is accomplished through gendered processes. Gender is a relevant factor in forming leadership roles in higher education (Haake, 2009). However, over time, males and females shared varied perspectives on leader identity in higher education. In a qualitative longitudinal study,

Haake interviewed six females and nine males, all heads of departments. The study revealed as time progressed male and female leader identities changed over a period of four years' males expressed academic leadership as non-personal in which leadership was positive and easy to handle. However, females expressed academic leadership as problematic and gender related. Although, Haake's study focused on academic leadership, leadership in higher education administration is also gendered.

The Center for CIO Leadership noted four competencies that drive CIO leadership effectiveness. The competencies identified were leadership, business strategy and process, innovation and growth, and organization and talent management (Anonymous, 2008). A self-assessment confidential survey was distributed to 1,592 CIO's worldwide. There was a response rate of 19% in which 266 CIO's responded. In the area of leadership, CIO's perceive they are viewed as leaders in their organization with demonstrated competencies that align with the organizations strategic goals. CIO's reported they partake in driving business strategy and are innovators who promote change. Limitations of the study surround the response rate received which hinders generalization of the results. Nonetheless, CIO leadership competencies were gained.

Groysberg (2008) explained females build portable skills that contribute to their ability to transition from one organization to another. In the Groysberg study of Wall Street Analyst, it was noted found females have greater success than males when transitioning from one organization to another due to their ability to build informal and formal networking relationships. This skill attributed to the success of females because they rely on relationship building as a mechanism for advancement (Groysberg, 2008).

Relationship building is a leadership trait more common in females than males. As a result, females transitioning from one organization to another received more support (Groysberg, 2008).

In regards to females seeking leadership positions in information technology and higher education, Drury (2011) noted females encounter a dual challenge in that both industries are male dominant. Females encounter barriers of occupation jurisdiction, gender bias, and sex-role stereotypes which exclude them from transitioning to leadership positions (Drury, 2011). Drury (2011) indicated, "…males have typically been advantaged in the leadership journey through the socialization process, the processes and functions of gendered organizations, jurisdiction over artifacts, and societal expectations" (p. 101). Males have traditionally maintained leadership roles in higher education (Touchton, 2008). In the Drury study three female higher education CIOs from medium to large Midwestern public institutions participated in a qualitative analysis. Drury noted through narrative inquiry females face challenges when rising to the role of CIO as well as the challenges encountered as CIOs. The information technology industry is a gendered organization dominated by males ridden with gender bias and sex-role discrimination leading to the perception that females are less competent than males (Drury, 2011). Drury noted limitations of the study included researcher bias because the researcher was employed in information technology in academia for twenty years. The researchers' personal experiences were similar to those discussed by the participants. In order to control bias, verification of participant statements and interpretations were re-analyzed by the researcher. Despite limitations, Drury found three successful female

CIO's in higher education that obtained executive status in a male dominant environment. The data revealed gendered cultures in higher education promote barriers of entry for females, promotion of gender-friendly cultures do not exist, limited opportunities of mentor/mentee relationships and training occur for females (Drury, 2011).

Summary

Females remain underrepresented in senior leadership roles across industries. Gendered organizations contribute to this underrepresentation in addition to perceptions of gender and requisite managerial characteristics which impedes female selection, promotion to and placement in senior leadership roles. The CIO role in academia is gendered in that the occupation employs a greater number of males as opposed to females (Brown, 2008, 2011, 2013; Drury, 2008, 2009, 2011; Madden, 2005). Barriers hinder the advancement of females seeking entry into the role of CIO in academia (Drury, 2008, 2009, 2011; Lord & Preston, 2009, Dominici et al., 2009). Currently, it is known through prior research some females advance to the role of CIO despite documented obstacles. About 23% of females exist in the role of CIO in academia; what is unknown is why so few females exist in the role (Brown, 2008, 2011, 2013). However, the need to understand the perceptual differences of male versus female CIOs hiring officials' selection process in academia, particularly in IT departments in the US is pertinent. This causal comparative study was employed to examine if a hiring officials' gender effects perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. This studies theoretical frameworks of Schein's (1973) "Think Manager, Think Male*"* paradigm and Acker's (199) gendered organization theory. Implications for

positive social change exist in the area of public policy which include filling the literature gap regarding the role of gender and perceived requisite managerial characteristics in hiring practices of CIOs in IT departments in academia in the US.

Chapter 3 will provides a detailed discussion of the research design and methodology.

Chapter 3: Research Method

Introduction

The purpose of this study was to examine whether a CIO hiring official's gender affects his or her perceptions of requisite managerial characteristics when selecting CIOs in academia. This chapter describes the design and approach that guides the research. Within this context, (a) variables, (b) setting and sample, (c) instrumentation and materials, (d) data collection, (e) data analysis, (f) methodological limitations, and (g) ethical safeguards were assessed.

Research Design and Rationale

This study had multiple variables of interest. The independent variables were gender of the CIO hiring official and candidate gender (male, female, or non-gender-specific). The dependent variables were perceptions of requisite managerial characteristics. I used a causal-comparative research design in order to determine if one variable has potential influence over another variable (as cited in Gay, Mills, & Airasian, 2006). Therefore, I examined if a difference exists between male and female university hiring officials in their selection of CIO candidates of different genders.

There were no time constraints in regards to my research study. In reviewing literature, I found that previous researchers have used a causal-comparative research design to examine if one variable has potential influence over another (Gay et al., 2006). Stone (2008) conducted a quantitative study that compared a relationship among groups of males and females in the military. Furthermore, quantitative researchers have conducted studies in which they compared groups of students (as cited in Bosner, 2008;

Elsaid & Elsaid, 2012; Unter & McLean, 2010) and nurses and midwives (as cited in Bekery et al., 2012, 2013). However, I used a retrospective causal-comparative research design.

Methodology

Population

My study population consisted of hiring officials' from colleges, universities, and research institutions. The target population was CIO hiring officials from four-year public, private, and nonprofit colleges, universities, and research institutions in the Northeastern region of the United States. According to the US Census Bureau the Northeastern states in the U.S. are Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.. Approximately 500 four-year public, private, and nonprofit institutions in the Northeastern region of the U.S. met the eligibility criteria (NCES, 2013)

Sampling and Sampling Procedures

I used a purposeful sample of male and female CIO hiring officials from institutions in my target region. In order to gain an adequate sample size, I gathered data from the NCES. I used filter criteria in the NCES database to obtain the target population. I exported the list of 500 institutions into a Microsoft Excel spreadsheet. The =RAND () function in Microsoft Excel to select a purposeful sample assuming each college, university, or research institution had at least one hiring official. I did not include 2-year community colleges within the Northeast region in the sampling frame because they were not part of the target population for this study.

I used power analysis to determine the necessary sample size. I used a statistical power of .80, alpha level of .05, confidence level of 95%, and confidence interval of +/- 5 with an estimated effect size of .20 in performing this calculation. Based on results of this test, I determined that I required at least 217 participants. The statistical power of .80 was selected as the standard statistical power to ensure an effect can be detected from the study. The estimated effect size of .20 was assumed based on the absence of data and application of Cohen's d selection of a small effect size. The tool used to determine sample size is the Sample Size Calculator which is an online tool created by Creative Research Systems (2012). Although the power analysis indicated at least 217 participants were an adequate sample size the entire population of 500 will be surveyed because was not expected that the survey would yield a 100% response rate.

Recruitment, Participation and Data Collection

Recruitment

Rudenstam and Newton (2007) noted the use of internet based survey data collection sites minimize the chore of entering data into a database and the cost of mailing, printing, and entering data. Survey Monkey (www.surveymonkey.com) was the internet based data collection website used for participant recruitment and data collection. Survey Monkey is an online survey development cloud founded in 1999. The company has over ten years of experience in survey methodology and web development. Survey Monkey customers include Fortune 500 companies, academic institutions, small businesses, and human resource departments Survey Monkey specializes in online surveys, questionnaires, market research, decision tools customer feedback, employee

feedback, performance reviews, and parent feedback. Survey Monkey prioritizes user security and privacy. Application and user security include SSL/TLS encryption. Users can determine to collect data responses over a secured, encrypted SSL/TLS connection. This protects communication by using both server authentication and data encryption. Furthermore, Survey Monkey provides user authentication, user passwords, data encryption, data portability, privacy, and HIPAA. Survey Monkey accommodates for storage security with backup frequency and protection redundancy. Additionally, Survey Monkey has procedures in place to handle a security breach. The user identification login name and password to Survey Monkey will kept private and confidential stored in a locked boxed will only be accessible by authorized individuals, myself and my academic committee. As a result, Survey Monkey was the selected online tool for participant recruitment and data collection. Alternatively, if a participant preferred to complete a survey using paper/pen, the survey, instructions, and envelop with postage to return the completed survey would have been mailed to the participant. However, none of the participants requested a survey using pen and paper.

A search of the NCES online database was conducted using filter criteria of 4-year public, private, and non-profit colleges, universities, and research institutions in the Northeastern region of the US to identify potential institutions that would employ CIOs that could participate in the proposed study. The data search provided a list of 500 schools in alphabetical order. The online listing was exporting into Microsoft Excel. The list included the name, address, website address, type of school based on filter criteria entered into the search, campus setting, cost, and IPEDS ID. In order to obtain a

purposeful sample the (=)RAND function in Microsoft Excel was employed to select the sample considering each college, university, and research institution has at least one hiring official. All 500 qualifying institutions' websites were accessed to collect the qualifying institutions' contact information of the human resources director. I recorded the email addresses of each human resource director on a separate spreadsheet and a code was assigned to each email address.

Each participant received a Recruitment Email Invitation (Appendix A). The researcher randomly distributed the recruitment email invitation in an alternating manner to the entire population to ensure each SDI version (SDIV1, SDIV2, SDIV3) was equally distributed. If a participant were interested in participating in the study, they were instructed to select the link included in the invitation. Selecting the survey link advanced the participant to the Agreement to Participate (Appendix B) page. If the participant agreed to participant by selecting "yes", the screen advanced to the "Informed Consent" (Appendix C) page. If the participant agreed to Informed Consent, the survey advanced to the Participant Information Sheet (Appendix D) and SDI version ([www.surveymonkey.com/VI{male}], www.surkeymonkey.com/V2{female}], [www.surveymonkey.com/V3{non-gender specific}] Appendix E).survey version for study participation. All surveys were completed electronically. Implied consent was given when the participant clicked "yes" to begin the completion of the participant information sheet and SDI version SDI version ([www.surveymonkey.com/VI{male}], www.surkeymonkey.com/V2{female}], [www.surveymonkey.com/V3{non-gender

specific}] Appendix E). The process for completing all forms took approximately 15-20 minutes.

Participation and Data Collection

Each human resource's directors included in the sample were emailed regarding the study. As a result, this study was not anonymous. However, the study participants remain confidential. Participants were sent a follow-up reminder to complete the survey (Appendix F). Participants who wanted to withdraw from the study can do so at any time without penalty by sending an email to the researcher requesting withdrawal.

Instrumentation

The instruments employed for data collection was a participant information sheet and the Schein Descriptive Index (SDI). The SDI was developed by Dr. Virginia Schein and published in 1973. The instrument was appropriate for data collection because instructions for use of the SDI allowed the researcher to collect data from two or more groups for comparison. The researcher collected data from male CIO hiring officials' who that rated requisite managerial characteristics of male, female, and non-gender specific CIO candidates in comparison to female CIO hiring officials who that rated requisite managerial characteristics of male, female, and non-gender specific CIO candidates. Therefore, the instrument was appropriate for the study. The SDI was developed for data collection to assess the psychological barriers that impede the selection, promotion, and placement of females into managerial positions based on gender and requisite managerial characteristics. Although the SDI was developed and initially administered in 1973, an exhaustive literature reveals males continue to

outnumber females in managerial and/or leadership positions across industry, specifically in the position of CIO. As a result, the SDI was appropriate to examine the research question.

The SDI consists of a collection of 92 descriptive items. Some are generally positive (such as intelligent, understanding, sophisticated), some are generally negative (such deceitful, vulgar, devious), and others are generally neither positive nor negative (such as firm, passive, frank) (Schein, 1973). Permission to use the SDI (1973) was granted by Dr. Schein in an email dated June 17, 2013 (Appendix G).

Reliability and Validity

Rudestam and Newton (2007) noted reliability refers to producing consistent results and validity measures what the tool is designed to measure. Prieto and Delgado (2010) noted reliability and validity are not only characteristics of a test but are properties of interpretations and inferences of the measures provided from the test. Consequently, reliability refers to the consistency and stability of measures when a test is repeated while validity refers to how well the test measures what it is intended to measure (Prieto & Delgado, 2010).

Deuhr and Bono (2006) expressed concern with the validity of the SDI because some of the adjectives are outdated. Additionally, Vecchio (2002, 2007) found there is no difference between male and female management characteristics. Coder and Spiller (2013) explained changes in society have created issues with the SDI since the world has vastly changed since its development. Therefore, questions arise based on the relevancy

of adjectives included in the instrument. On the other hand, the SDI has been justifiably used in current empirical studies.

Hence, Stone (2008) found the SDI to be a valid and reliable instrument to examine the relationship between gender and requisite managerial characteristics among groups within the active military. Stone conducted a reliability test of the SDI using the coefficient alpha method, also known as Cronbach's alpha (Creswell, 2005). Additionally, Aron, Aron, and Coups (2006) noted the Cronbach alpha method is the most widely used measure of reliability. The Cronbach alpha method is known to provide concrete measures of consistency for research instruments. Stone used the Cronbach alpha method to calculate each version of the SDI (men in general, females in general, successful leaders). According to Aron et al. common values for Cronbach alpha are at least .60 and close to .90. Stone found reliability calculations which approach .90 for each version of the SDI (all surveys = .837, females in general = .895, men in general = .849).

Furthermore, Stone (2008) found intra-class correlation coefficients from a randomized-groups ANOVA comparing ratings of males in general, and successful leaders showed a statistically significant relationship between ratings of *males in general and successful leaders by* both male and female participants (r'=.432; $p < .01$). This trend also held true for male raters, with males indicating a relationship between males and successful leaders in addition to a relationship between females and successful leaders (r'=.41;$p < .01$, and r'=.396; $p < .01$ respectively). Similarly, Bekery et al., (2012) revealed a strong significant resemblance between the overall ratings of males and

managers (r^1=0.639; p<0.001) with the resemblance of females and managers significantly weaker (r^1=0.315, p<0.001; Berkery et al., 2012).

In a study of undergraduate and graduate students Paris and Decker found entry level business student reported a significant relationship exists between females and managers (r^1=0.39; p < 0.05) and males and managers (r^1= 0.57; p< 0.05) with males possessing more managerial attributes (Paris & Decker, 2012). In furtherance, Paris and Decker found upper level business students reported managers possess more characteristics commonly ascribed to males in general (r^1= 0.55; p< 0.05) than females in general (r^1 = 0.28; p<0.05; Paris & Decker, 2012).

Although some prior studies questioned the validity and reliability of the SDI (Coder & Spiller, 2013; Duehr & Bono, 2006; Vecchio, 2002, 2007), the instrument cannot be dismissed as invalid or unreliable. The SDI has been used over the past 25 years in multiple empirical studies to examine perceptions of gender and requisite managerial characteristics to address why females encounter challenges advancing to upper management, leadership and managerial positions (Berkery, et al., 2012, 2013; Berkery, Tiernan, & Morley, 2012; Bosner, 2008; Booysen, & Nkomo, 2010; Elsaid & Elsaid, 2012; Koenig, et al., 2011; Olanrewaju, & Yetunde, 2011; Stone, 2008; Unter & McLean, 2010). The SDI was used in a wide variety of sectors, such as the military, business, medicine and education. As a result, the SDI is a valid and reliable instrument.

Operationalization

The study consisted of multiple variables of interest. The independent variables were gender of the CIO hiring official and CIO candidate gender. The operational definition

of the first independent variable is gender of CIO hiring official. This independent variable was based on two levels, male or female. The second independent variable was CIO candidate gender. This independent variable was based on three levels, male CIO candidate, female CIO candidate, and non-gender specific CIO candidate. The second independent variable, CIO candidate gender was based on the survey versions distributed for completion (SDIV1 – male CIO candidate, SDIV2 – female CIO candidate, SDIV3 – non-gender specific CIO candidate). The operational definition of the dependent variable was requisite managerial characteristics. The dependent variable consisted of 92 descriptive items. The 92 descriptive items were measured based on a rating scale of 1 to 5. The rating scale consisted of 1 – not characteristic, 2 – somewhat uncharacteristic, 3 – neither characteristic nor uncharacteristic, 4 – somewhat characteristic, and 5 – characteristic. Participants only completed one version of the SDI. Instructions regarding completion of the three distinct forms of the SDI (see Appendix G) states: On the following pages, you will find a series of descriptive terms commonly used to characterize people in general. Some of these terms are positive in connation, others are negative, and some are neither very positive nor very negative.

We would like you use this list to tell us what you think a male CIO candidate (SDIV1), female CIO candidate (SDIV2), or non-gender specific CIO candidate (SDIV3) is like. In making your judgments, it may be helpful to imagine that you are about to meet this person for the first time and the only thing known in advance is a male CIO candidate, a female CIO candidate, or a CIO candidate. Please rate each word or phrase in terms of how characteristics of a (male CIO candidate [SDIV1], female CIO candidate [SDIV2],

non-gender specific CIO candidate [SDIV3]). Each SDI form contained specific instructions to rate a male CIO candidate (SDIV1), a female CIO candidate (SDIV2), or a non-gender specific CIO candidate (SDIV3). Each participant will randomly receive a version of the SDI form for completion.

Data Analysis Plan

The data analysis plan for this causal-comparative study included an analysis using descriptive and inferential statistics in SPSS. Initially, computation of the number of male and female CIO hiring officials' respondents was calculated. Mean and standard deviations by gender were calculated for the 92 SDI items to examine perceived requisite managerial characteristics when selecting a male, female, or non-gender specific CIO. In regards to significance, testing the sample size was too small to conduct a meaningful analysis. Additionally, *t* tests were not used due to the normality assumption failing. The focal analysis was ANOVA. Specifically, a between-subject ANOVA with two factors was appropriate for this causal-comparative study. A between-subject ANOVA with two-factors was attempted; but two assumptions failed. The two failing assumptions were the dependent variables were not normally distributed for each categorical level of the independent variables and the 92 SDI items were measured on a 5-point Likert scale which was of an ordinal value. As a result, the intervals between the five values were not calculated the same. In order to compare frequencies, Chi Square was calculated. The statistic test of Chi Square was approximated by the Chi Square distribution. The approximation worsened due to the small-expected frequencies. As a rule, the expected frequency count should be five or more for each category. Since the rule was violated,

the Fisher's Exact test was used for significance. Data was in be interpreted and ratings were displayed with graphical tables and figures. Data was analyzed with the assistance of a research assistant and statistician who have signed a confidentiality agreement prior to data collection and analysis (Appendix H).

Threats to Validity

Possible threats to external validity related to the specificity of variables. In order to ensure variables were specified clearly, the demographic survey was clear and concise with categorical levels to ensure appropriate data was collected to test the hypotheses. This threat was addressed by editing the demographic survey to ensure it is written in clear language. Possible threats to internal validity included maturation. Is it possible participants would change and/or mature from the time in which they were selected to participate in the study. For example, a participant could change titles, industries, or institutional locations from the time of selection. This threat was addressed by randomly selecting additional participants from the selected population.

Ethical Procedures

Ethical procedures were taken into consideration based on the nature of the study and potential effects on participants. A letter of informed consent was disseminated to all potential participants. The letter of informed consent provided potential participants detailed information regarding procedures to participate, confidentiality issues, the voluntary nature of the study, risks and benefits of participation, and contact information to communicate with the researcher with any questions regarding the study.

In order to ensure adherence to ethical procedures, human subjects agreed to informed consent by selecting "yes" to participate in the study. The informed consent letter affirmed the participant understood the purpose of the study and that participation is without harm. I was provided with Institutional Review Board (IRB) approval to conduct the study (IRB approval number 08-26-15-0134540). There were minimal ethical concerns related to recruitment materials and processes surrounding the study. Participants could select "yes" and include a non-work affiliated email address on the informed consent form signifying they agree to participate and understand the study. Requesting participants provide a non-work affiliated email address would further minimize ethical concerns in that the participant responses would not be attached to the college or institution of employment. Potential participants were informed there were no consequences or penalizations to withdraw from the study. Participants were free to withdraw from the study at any time. Participation in the study was solely voluntary without obligation. Additionally, there were no physical risks or benefits to participating. The plan to address participant withdrawal was provided within the informed consent form.

I, along with my academic committee have ensured all records in the study remain confidential. I will store and protect confidential data on my computer stored in my home. Analyzed data results will be shared at the request of the participant. Data will be maintained for a period of at least 5 years to support further research. Other ethical concerns that arise with the nature of the study are the researcher currently works in higher education within the Northeast Region for eleven years; but currently does not

work at a physical college or institution. The researcher, statistician, and research assistant participated in the data analysis to ensure researcher bias was eliminated from the study results.

Summary

The causal comparative study examined if a CIO hiring officials' gender effects perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. The independent variables were gender of the hiring official and candidate gender. The dependent variable was perceived requisite managerial characteristics. Data was collected using the Schein Descriptive Index and a participant information sheet. Data was analyzed using descriptive and inferential statistics. The study included a purposeful random sample of male and female hiring officials from four year public, private, and non-profit colleges, universities, and research institutions in the Northeastern region of the US. Ethical concerns regarding the nature of the study were minimal and appropriate procedures to address any concerns were identified with remedy. Chapter 4 will provide a detailed discussion of the application of the research methodology and results.

Chapter 4: Results

Introduction

The purpose of this study was to examine whether a CIO hiring official's gender affects his or her perceptions of requisite managerial characteristics when selecting CIOs in academia. This study included one central research question: What is the effect of a hiring official's gender on his or her perceptions of requisite managerial characteristics when selecting CIO candidates in academia? The null hypothesis was a hiring officials' gender does not affect perceptions of requisite managerial characteristics when selecting CIO candidates in academia. The alternate hypothesis was a hiring official's gender does affect perceptions of requisite managerial characteristics when selecting CIO candidates in academia. This chapter includes a review of the data collected and study results as well as a summary of key findings in relation to my research questions.

Data Collection

Data collection began after I received approval from Walden University's IRB on August 26, 2015. Recruitment started on Monday, August 31, 2015 and participation in the study started on Thursday, September 3, 2015. CIO hiring officials were recruited based on a search of the NCES online database using filter criteria of four-year public, private, and non-profit colleges, universities, and research institutions in the Northeastern region of the U.S. The data search yielded 500 institutions matching the searching criteria. I exported the list of 500 schools into a Microsoft Excel spreadsheet. Then, I located 360 out 500 valid email addresses for human resource directors by viewing each institutions website.

I sent an invitation to 360 human resources directors inviting them to participate in the study (see Appendix A). The power of analysis indicated an appropriate sample size for the study was 217 participants. However, I did not expect to get a 100% response rate and decided to invite the entire population of 360 human resource directors. The invitation to participate email included a link to the agreement to participate form (see Appendix B). This form included an option to select "yes" to participate or "no". If the participate selected the "no" option the survey ended. If the participant selected "yes", the screen advanced to obtain informed consent, (see Appendix C). Selecting "yes" on to informed consent was the electronic acknowledgement to proceed with the study. Selecting "yes" on the informed consent form advanced the participant information form (see Appendix D) to provide demographic information. After participants completed the participant information sheet, the participant was directed to the SDI (SDVI1, SDVI2, or SDIV3; see Appendix E). The SDI was the instrument participants used to rate perceptions of managerial characteristics.

I sent email reminders from Thursday, September 10, 2015, to Monday, February 22, 2016. Although I attempted to obtain 360 surveys, 81 respondents completed the agreement to participate; but only 52 surveys were completed in 180 days. A minimal response rate was received because participates declined the invitation, no longer worked at the institution, or email addresses were not valid. The data collection period ended on Monday, February 26, 2016.

Demographic Characteristics

Of the 52 surveys completed, 27 respondents were male and 25 were female. Table 1 presents participants' gender based on the SDI version received (SDVI1, SDVI2, or SDVI3). Of the 27 males who participated in the study, seven (41%) completed SDIV1, 11 (64%) completed SDIV2, and nine (50%) completed SDIV3. Of the 25 females who participated in the study, 10 (58%) completed SDIV1, 6 (35%) completed SDIV2, and nine (50%) completed SDIV3.

Table 1

Participants' Gender Based on SDI Version Completed

Gender	**SDIV1** ***n*(percentage of *N*)**	**SDIV2** ***n*(percentage of *N*)**	**SDIV3** ***n*(percentage of *N*)**
Male (*n* = 27)	7(41%)	11(64%)	9(50%)
Female (*n* = 25)	10(58%)	6(35%)	9(50%)

Table 2 presents participant age. Two respondents between the ages of 21-30 completed SDIV1. Interestingly, one respondent (5.6%) was 71 years old or older completed SDIV3. Comparatively, the majority of respondents were between the ages of 51-60 with 7 (41.2%) responding to SDIV1, 6 (33.3%) responding to SDIV2, and 6 (33.3%) responding to SDIV3 totaling 19 respondents were between the ages of 51-60 years old.

Table 2

Participants' Age Ranges

Age Range	SDIV1 *n*(percentage of *N*)	SDIV2 *n*(percentage of *N*)	SDIV3 *n*(percentage of *N*)
21-30	2(11.8%)	0	0
31-40	2(11.8%)	3(17.6%)	1(5.6%)
41-50	6(35.3%)	2(11.8%)	3(16.7%)
51-60	7(41.2%)	6(35.3%)	6(33.3%
61-70	0	6(35.3%)	7(38.9%)
71+	0	0	1(5.6%)

Table 3 presents the respondents length of time employed. Thirteen respondents reported length of time employed was 1-3 years, 12 reported 10-15 years while 1 reported 3-5 years. Two respondents reported length of time employed was less than 6 months. Interestingly, respondents employed 1-3 years and 10-15 years responded at a higher rate than those employed less than 6 months, 3-5, 5-10, 15-20, and 20+ years.

Table 3

Length of Time Employed

Time Employed	SDIV1 *n*(percentage of *N*)	SDIV2 *n*(percentage of *N*)	SDIV3 *n*(percentage of *N*))
Less than 6 months	0	1(5.9%)	1(5.6%)
6 months-1 year	0	1(5.9%)	3(16.7%)
1-3 years	4(23.5%)	3(17.6%)	6(33.3%)
3-5 years	1(5.9%)	0	0
5-10 years	5(29.4%)	2(11.8%)	2(11.1%)
10-15 years	4(23.5%)	6(35.3%)	2(11.1%)
15-20 years	1(5.9%)	1(5.9%)	2(11.1%)
20+ years	2(11.8%)	1(5.9%)	3(16.7%)

Figure 1 presents the ethnicity of the CIO hiring official by percentage when rating a non-gender-specific, female, and male CIO candidate. As displayed in the figure Caucasian/White respondents participated in the study in excess in comparison to other ethnicities, with 77.8% rating a non-gender specific CIO candidate for SDIV1, 88.2% rating a female CIO candidate for SDIV2, and 82.4% rating a male CIO candidate for SDIV3.

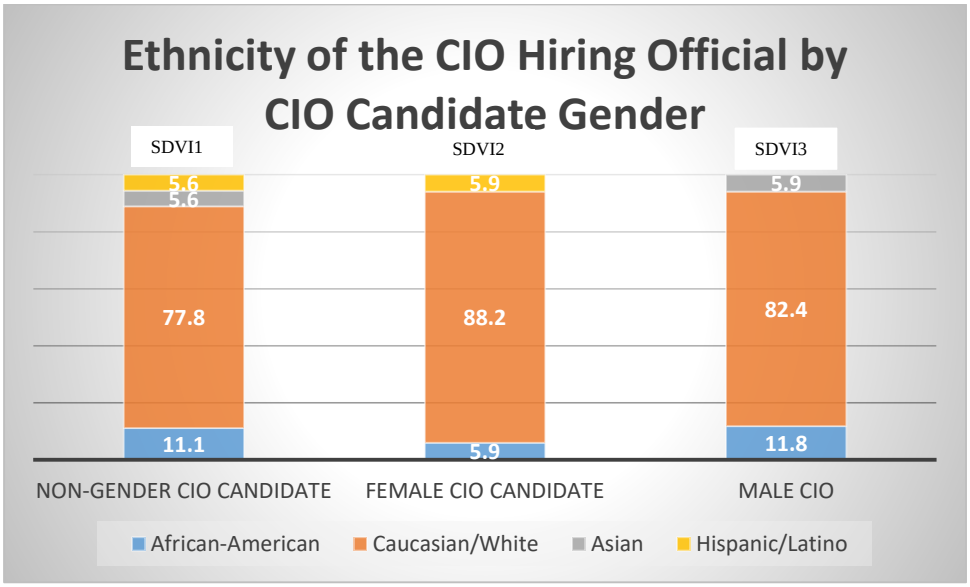

Figure 1. Ethnicity of CIO hiring official by CIO candidate gender.

Descriptive Statistics of Variable Interest

The Schein Descriptive Index (SDI) was the instrument employed to test the hypothesis. The instrument included 92 descriptive items and were measured based on a rating scale of 1 to 5. The rating scale consists of 1 – not characteristic, 2 – somewhat uncharacteristic, 3 – neither characteristic nor uncharacteristic, 4 – somewhat characteristic, and 5 – characteristic. Participants completed one version of the SDI (SDIV1 – mal CIO candidate, SDIV2 – female CIO candidate, SDIV3 – non-gender specific CIO candidate). Statistically test were conducted to analyze the mean and standard deviation of the 92 SDI descriptive items based on the comparison groups of male CIO hiring officials and female CIO hiring officials when examining the effects of perceived requisite managerial characteristics when selecting a male CIO, female CIO, and non-gender CIO candidate.

Table 4 presents male CIO characteristics by gender of the CIO hiring official. Displayed are the 92 SDI characteristics, the mean and standard deviation of female respondents in comparison to the mean and standard deviation of male respondents when rating a male CIO candidate. Based on the data in Table 4, relating to the characteristics of leadership ability males rated the descriptive item of leadership ability of a male CIO candidate the mean was 3.67 (SD = 1.15) in comparison to females, with a mean of 4.13 (SD=1.13). Based on the responses females perceive the descriptive characteristic of leadership ability as somewhat characteristic of a male CIO candidate.

Table 4

Male CIO Characteristics by Gender of the CIO Hiring Officials

92 SDI Items	Female Respondent			Male Respondent			Total		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Curious	3.75	1.04	8	4.00	1.00	3	3.82	0.98	11
Consistent	3.75	0.89	8	4.00	1.00	3	3.82	0.87	11
High need for power	4.29	0.76	7	3.33	1.53	3	4.00	1.05	10
Sympathetic	2.88	1.13	8	2.67	0.58	3	2.82	0.98	11
Fearful	2.63	1.19	8	2.67	1.53	3	2.64	1.21	11
Adventurous	3.50	0.93	8	3.67	0.58	3	3.55	0.82	11
Leadership ability	4.13	1.13	8	3.67	1.15	3	4.00	1.10	11
Values pleasant surroundings	3.50	1.07	8	3.00	0.00	3	3.36	0.92	11
Neat	3.50	0.76	8	3.33	0.58	3	3.45	0.69	11
Uncertain	2.63	1.41	8	3.00	2.00	3	2.73	1.49	11
Creative	3.75	0.89	8	3.00	1.00	3	3.55	0.93	11
Desire to avoid controversy	3.38	1.06	8	3.00	1.00	3	3.27	1.01	11
Submissive	2.50	1.41	8	2.33	1.15	3	2.45	1.29	11
Frank	3.75	0.89	8	4.00	1.00	3	3.82	0.87	11
Courteous	3.50	0.76	8	4.33	1.15	3	3.73	0.90	11
Emotionally stable	3.88	0.64	8	4.00	1.00	3	3.91	0.70	11
Devious	2.50	1.20	8	2.00	1.00	3	2.36	1.12	11

Interested in own appearance	3.38	0.74	8	2.67	0.58	3	3.18	0.75	11
Independent	4.13	0.99	8	3.67	0.58	3	4.00	0.89	11
Desire for friendship	3.13	0.83	8	3.33	0.58	3	3.18	0.75	11
Frivolous	2.38	1.30	8	2.67	1.53	3	2.45	1.29	11
Intelligent	4.00	1.07	8	3.67	1.15	3	3.91	1.04	11
Persistent	3.63	1.06	8	3.67	0.58	3	3.64	0.92	11
Vigorous	3.38	0.92	8	3.67	1.15	3	3.45	0.93	11
Timid	2.38	1.30	8	2.00	1.00	3	2.27	1.19	11
Sophisticated	3.13	0.99	8	3.00	1.00	3	3.09	0.94	11
Talkative	3.00	0.93	8	3.33	0.58	3	3.09	0.83	11
Strong need for security	3.00	1.20	8	3.67	1.15	3	3.18	1.17	11
Forceful	3.63	0.92	8	3.33	0.58	3	3.55	0.82	11
Analytical ability	4.13	0.83	8	4.33	1.15	3	4.18	0.87	11
Competitive	4.00	1.07	8	3.67	1.15	3	3.91	1.04	11
Wavering in decision	2.50	1.41	8	2.67	0.58	3	2.55	1.21	11
Cheerful	3.25	0.89	8	2.67	0.58	3	3.09	0.83	11
High need for autonomy	4.00	0.76	8	3.33	0.58	3	3.82	0.75	11
Able to separate feelings from ideas	4.00	1.07	8	3.33	1.53	3	3.82	1.17	11
Competent	4.00	1.07	8	3.67	1.15	3	3.91	1.04	11
Understanding	3.25	1.04	8	3.00	1.00	3	3.18	0.98	11
Vulgar	2.38	1.60	8	2.67	1.53	3	2.45	1.51	11
Sociable	3.50	0.93	8	3.33	0.58	3	3.45	0.82	11
Aggressive	3.00	1.41	8	3.33	0.58	3	3.09	1.22	11
High self-regard	4.00	0.76	8	3.67	1.15	3	3.91	0.83	11
Grateful	2.71	1.25	7	2.67	0.58	3	2.70	1.06	10
Easily Influenced	3.25	1.28	8	2.00	1.00	3	2.91	1.30	11
Exhibitionist	2.50	1.51	8	2.67	1.53	3	2.55	1.44	11
Aware of feelings of others	3.13	0.99	8	3.00	1.00	3	3.09	0.94	11
Passive	2.38	1.51	8	1.67	1.15	3	2.18	1.40	11
Objective	3.63	1.06	8	4.00	1.00	3	3.73	1.01	11
Speedy recovery from emotional trauma	3.50	0.76	8	2.67	0.58	3	3.27	0.79	11
Shy	3.13	1.13	8	2.67	0.58	3	3.00	1.00	11
Firm	3.63	0.92	8	3.67	0.58	3	3.64	0.81	11
Prompt	3.75	0.71	8	3.67	0.58	3	3.73	0.65	11
Intuitive	3.13	0.99	8	2.67	0.58	3	3.00	0.89	11
Humanitarian values	3.38	0.92	8	2.67	0.58	3	3.18	0.87	11
Knows the way of the world	3.38	0.92	8	3.33	0.58	3	3.36	0.81	11
Dawdler and procrastinator	2.63	1.19	8	2.67	1.53	3	2.64	1.21	11
Quarrelsome	2.75	1.39	8	2.67	1.53	3	2.73	1.35	11
Industrious	3.88	0.83	8	3.67	0.58	3	3.82	0.75	11
Well informed	4.00	0.82	7	4.33	1.15	3	4.10	0.88	10
Not uncomfortable about being aggressive	3.38	1.06	8	3.00	1.00	3	3.27	1.01	11
Reserved	3.38	0.92	8	2.33	0.58	3	3.09	0.94	11
Ambitious	4.00	0.76	8	3.67	1.15	3	3.91	0.83	11

Not conceited about appearance	3.63	0.74	8	3.00	0.00	3	3.45	0.69	11
Strong need for social acceptance	3.00	0.93	8	2.67	0.58	3	2.91	0.83	11
Hasty	3.00	1.20	8	3.00	1.00	3	3.00	1.10	11
Obedient	2.75	1.39	8	2.67	0.58	3	2.73	1.19	11
Desires responsibility	4.38	0.52	8	3.50	0.71	2	4.20	0.63	10
Self-controlled	3.75	0.71	8	3.33	0.58	3	3.64	0.67	11
Modest	3.00	1.07	8	2.67	0.58	3	2.91	0.94	11
Decisive	4.00	0.76	8	3.33	0.58	3	3.82	0.75	11
Nervous	2.50	1.20	8	3.33	0.58	3	2.73	1.10	11
Direct	3.75	0.89	8	4.00	1.00	3	3.82	0.87	11
Hides Emotion	3.63	0.74	8	3.00	0.00	3	3.45	0.69	11
Authoritative	4.13	0.35	8	3.33	0.58	3	3.91	0.54	11
Self-confident	4.00	0.93	8	3.67	0.58	3	3.91	0.83	11
Sentimental	2.88	1.36	8	2.67	0.58	3	2.82	1.17	11
Steady	3.75	0.71	8	3.67	0.58	3	3.73	0.65	11
Assertive	3.88	0.99	8	3.33	0.58	3	3.73	0.90	11
Feelings not easily hurt	3.38	0.92	8	3.00	0.00	2	3.30	0.82	10
Dominant	3.38	0.92	8	2.00	1.00	3	3.00	1.10	11
Tactful	3.00	0.93	8	3.67	0.58	3	3.18	0.87	11
Helpful	3.38	0.74	8	3.33	0.58	3	3.36	0.67	11
Strong need for achievement	3.88	0.64	8	4.00	1.00	3	3.91	0.70	11
Deceitful	2.63	1.41	8	2.33	1.15	3	2.55	1.29	11
Generous	3.25	1.16	8	2.67	0.58	3	3.09	1.04	11
Bitter	2.75	1.39	8	3.33	0.58	3	2.91	1.22	11
Logical	4.25	0.89	8	3.67	0.58	3	4.09	0.83	11
Skilled in business matters	4.13	0.83	8	4.00	1.00	3	4.09	0.83	11
Selfish	2.75	1.28	8	2.67	1.53	3	2.73	1.27	11
Demure	2.88	1.36	8	3.00	0.00	3	2.91	1.14	11
Kind	3.50	0.76	8	2.67	0.58	3	3.27	0.79	11
Strong need for monetary rewards	3.50	1.41	8	3.67	1.15	3	3.55	1.29	11
Self Reliant	4.00	0.93	8	2.67	1.53	3	3.64	1.21	11

Table 5 presents female CIO characteristics by gender of the CIO hiring official. Displayed are the 92 SDI characteristics, the mean and standard deviation of female respondents in comparison to the mean and standard deviation of male respondents when rating a male CIO candidate. Based on the data in Table 5, males rated the descriptive characteristic of leadership ability of a female CIO candidate with a mean of 4.38 (SD=.74) in comparison to females, with a mean of 4.00 (SD=0). Based on the responses

males perceive the descriptive characteristic of leadership ability as somewhat characteristic a female CIO candidate.

Table 5

Female CIO Characteristics by Gender of the CIO Hiring Official

92 SDI Items	Female Respondent			Male Respondent			Total		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Curious	4.00	0.00	2	4.00	0.93	8	4.00	0.82	10
Consistent	4.00	0.00	2	4.25	0.71	8	4.20	0.63	10
High need for power	2.50	0.71	2	3.75	0.71	8	3.50	0.85	10
Sympathetic	3.50	0.71	2	3.13	0.64	8	3.20	0.63	10
Fearful	2.00	0.00	2	2.38	1.19	8	2.30	1.06	10
Adventurous	4.00	0.00	2	3.63	0.92	8	3.70	0.82	10
Leadership ability	4.00	0.00	2	4.38	0.74	8	4.30	0.67	10
Values pleasant surroundings	4.00	0.00	2	3.75	0.89	8	3.80	0.79	10
Neat	3.00	0.00	2	3.38	0.74	8	3.30	0.67	10
Uncertain	2.00	0.00	2	2.38	1.06	8	2.30	0.95	10
Creative	4.00	0.00	2	4.13	0.64	8	4.10	0.57	10
Desire to avoid controversy	2.00	0.00	2	3.00	0.76	8	2.80	0.79	10
Submissive	2.00	0.00	2	2.38	1.19	8	2.30	1.06	10
Frank	4.00	0.00	2	3.63	0.52	8	3.70	0.48	10
Courteous	4.00	0.00	2	3.75	1.04	8	3.80	0.92	10
Emotionally stable	4.00	0.00	2	3.75	0.89	8	3.80	0.79	10
Devious	1.50	0.71	2	2.50	1.07	8	2.30	1.06	10
Interested in own appearance	3.50	0.71	2	3.00	1.41	8	3.10	1.29	10
Independent	4.00	0.00	2	4.25	0.71	8	4.20	0.63	10
Desire for friendship	3.00	0.00	2	3.13	0.64	8	3.10	0.57	10
Frivolous	2.00	0.00	2	2.63	1.06	8	2.50	0.97	10
Intelligent	4.50	0.71	2	4.38	0.92	8	4.40	0.84	10
Persistent	4.00	0.00	2	4.25	0.89	8	4.20	0.79	10
Vigorous	4.00	0.00	2	3.75	0.89	8	3.80	0.79	10
Timid	1.50	0.71	2	2.13	1.13	8	2.00	1.05	10
Sophisticated	4.00	0.00	2	3.13	0.35	8	3.30	0.48	10
Talkative	3.50	0.71	2	3.13	0.35	8	3.20	0.42	10
Strong need for security	3.00	0.00	2	3.00	1.07	8	3.00	0.94	10
Forceful	3.50	0.71	2	3.38	1.19	8	3.40	1.07	10
Analytical ability	4.50	0.71	2	4.13	0.83	8	4.20	0.79	10
Competitive	4.00		1	4.13	0.83	8	4.11	0.78	9
Wavering in decision	2.00	0.00	2	2.25	1.16	8	2.20	1.03	10
Cheerful	3.50	0.71	2	3.50	0.93	8	3.50	0.85	10
High need for autonomy	3.00	1.41	2	3.50	1.31	8	3.40	1.26	10

Able to separate feelings from ideas	4.00	0.00	2	3.63	0.92	8	3.70	0.82	10
Competent	4.50	0.71	2	4.38	0.74	8	4.40	0.70	10
Understanding	4.00	0.00	2	4.00	0.93	8	4.00	0.82	10
Vulgar	1.00	0.00	2	1.88	1.25	8	1.70	1.16	10
Sociable	3.50	0.71	2	3.50	0.76	8	3.50	0.71	10
Aggressive	3.00	1.41	2	3.00	1.41	8	3.00	1.33	10
High self-regard	3.50	0.71	2	3.75	0.89	8	3.70	0.82	10
Grateful	3.00	0.00	2	3.50	0.76	8	3.40	0.70	10
Easily Influenced	2.00	0.00	2	2.38	1.06	8	2.30	0.95	10
Exhibitionist	2.00	1.41	2	2.00	1.20	8	2.00	1.15	10
Aware of feelings of others	4.00	0.00	2	3.75	0.89	8	3.80	0.79	10
Passive	2.00	0.00	2	2.25	1.16	8	2.20	1.03	10
Objective	4.00	0.00	2	3.75	0.89	8	3.80	0.79	10
Speedy recovery from emotional trauma	3.50	0.71	2	3.13	1.13	8	3.20	1.03	10
Shy	3.00	0.00	2	2.29	1.25	7	2.44	1.13	9
Firm	4.00	0.00	2	3.63	0.74	8	3.70	0.67	10
Prompt	4.00	0.00	2	3.88	0.83	8	3.90	0.74	10
Intuitive	4.00	0.00	2	3.75	0.89	8	3.80	0.79	10
Humanitarian values	3.50	0.71	2	3.50	0.76	8	3.50	0.71	10
Knows the way of the world	4.00	0.00	2	3.63	0.74	8	3.70	0.67	10
Dawdler and procrastinator	2.00	0.00	2	2.25	1.16	8	2.20	1.03	10
Quarrelsome	2.00	0.00	2	2.63	1.41	8	2.50	1.27	10
Industrious	4.00	0.00	2	3.88	0.83	8	3.90	0.74	10
Well informed	4.00	0.00	2	4.25	0.71	8	4.20	0.63	10
Not uncomfortable about being aggressive	3.50	0.71	2	3.38	0.92	8	3.40	0.84	10
Reserved	2.00	0.00	2	2.38	1.19	8	2.30	1.06	10
Ambitious	3.50	0.71	2	4.13	0.83	8	4.00	0.82	10
Not conceited about appearance	3.50	0.71	2	2.38	1.06	8	2.60	1.07	10
Strong need for social acceptance	2.50	0.71	2	2.75	0.89	8	2.70	0.82	10
Hasty	2.00	0.00	2	2.50	1.07	8	2.40	0.97	10
Obedient	3.00	0.00	2	2.63	1.06	8	2.70	0.95	10
Desires responsibility	4.00	0.00	2	4.25	0.89	8	4.20	0.79	10
Self-controlled	4.00	0.00	2	4.00	0.93	8	4.00	0.82	10
Modest	3.50	0.71	2	3.38	0.92	8	3.40	0.84	10
Decisive	4.00	0.00	2	4.25	0.89	8	4.20	0.79	10
Nervous	2.00	0.00	2	2.25	1.16	8	2.20	1.03	10
Direct	4.00	0.00	2	4.25	0.89	8	4.20	0.79	10
Hides Emotion	3.50	0.71	2	2.75	0.89	8	2.90	0.88	10
Authoritative	4.00	0.00	2	3.63	0.74	8	3.70	0.67	10
Self-confident	4.00	0.00	2	4.25	0.89	8	4.20	0.79	10
Sentimental	2.50	0.71	2	2.75	0.89	8	2.70	0.82	10
Steady	4.00	0.00	2	3.63	0.74	8	3.70	0.67	10

Assertive	4.00	0.00	2	3.38	1.19	8	3.50	1.08	10
Feelings not easily hurt	3.00	0.00	2	2.63	1.06	8	2.70	0.95	10
Dominant	2.50	0.71	2	2.75	1.39	8	2.70	1.25	10
Tactful	4.00	0.00	2	4.00	0.93	8	4.00	0.82	10
Helpful	4.00	0.00	2	4.13	0.83	8	4.10	0.74	10
Strong need for achievement	3.00	0.00	2	4.25	0.89	8	4.00	0.94	10
Deceitful	2.00	0.00	2	2.38	1.06	8	2.30	0.95	10
Generous	3.00	0.00	2	3.63	0.74	8	3.50	0.71	10
Bitter	2.00	0.00	2	2.38	1.19	8	2.30	1.06	10
Logical	4.00	0.00	2	4.25	0.89	8	4.20	0.79	10
Skilled in business matters	4.00	0.00	2	4.13	0.83	8	4.10	0.74	10
Selfish	2.00	0.00	2	2.38	1.06	8	2.30	0.95	10
Demure	2.50	0.71	2	2.25	1.16	8	2.30	1.06	10
Kind	3.00	0.00	2	3.63	0.74	8	3.50	0.71	10
Strong need for monetary rewards	2.50	0.71	2	3.38	0.74	8	3.20	0.79	10
Self Reliant	4.00	0.00	2	4.29	0.95	7	4.22	0.83	9

Table 6 presents non-gender specific CIO characteristics by gender of the CIO hiring official. Displayed are the 92 SDI characteristics, the mean and standard deviation of female respondents in comparison to the mean and standard deviation of male respondents when rating a male CIO candidate. Based on the data displayed in Table 6, males rated the descriptive characteristic of leadership ability of a non-gender specific CIO candidate with a mean of 4.7 (SD=.46) and females rated a non-gender specific CIO candidate with a mean of 4.5 (SD=.53).

Table 6

Non-Gender Specific CIO Characteristics by Gender of the CIO Hiring Official

92 SDI Items	Female Respondent			Male Respondent			Total		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Curious	4.56	0.53	9	4.43	0.79	7	4.50	0.63	16
Consistent	4.33	0.50	9	4.88	0.35	8	4.59	0.51	17
High need for power	2.56	1.24	9	2.75	1.39	8	2.65	1.27	17
Sympathetic	3.33	1.12	9	3.63	1.06	8	3.47	1.07	17
Fearful	1.56	0.88	9	1.50	0.76	8	1.53	0.80	17
Adventurous	3.44	1.24	9	2.88	0.99	8	3.18	1.13	17
Leadership ability	4.56	0.53	9	4.75	0.46	8	4.65	0.49	17
Values pleasant surroundings	3.00	1.00	9	3.25	1.04	8	3.12	0.99	17
Neat	3.33	0.71	9	3.38	1.06	8	3.35	0.86	17
Uncertain	2.00	1.12	9	1.25	0.46	8	1.65	0.93	17
Creative	4.22	0.67	9	4.50	0.76	8	4.35	0.70	17
Desire to avoid controversy	2.67	1.32	9	2.75	1.49	8	2.71	1.36	17
Submissive	1.56	0.73	9	1.63	0.52	8	1.59	0.62	17
Frank	4.00	0.50	9	4.29	0.95	7	4.13	0.72	16
Courteous	3.89	0.60	9	4.50	0.53	8	4.18	0.64	17
Emotionally stable	4.38	0.52	8	4.50	0.53	8	4.44	0.51	16
Devious	1.44	0.73	9	1.38	0.52	8	1.41	0.62	17
Interested in own appearance	2.11	1.17	9	3.00	1.07	8	2.53	1.18	17
Independent	3.33	1.32	9	4.00	0.76	8	3.65	1.11	17
Desire for friendship	2.56	1.33	9	2.50	0.93	8	2.53	1.12	17
Frivolous	1.44	0.73	9	1.50	0.76	8	1.47	0.72	17
Intelligent	4.67	0.50	9	4.75	0.46	8	4.71	0.47	17
Persistent	4.63	0.52	8	4.50	0.53	8	4.56	0.51	16
Vigorous	3.78	0.67	9	3.63	0.92	8	3.71	0.77	17
Timid	1.44	0.73	9	1.50	0.76	8	1.47	0.72	17
Sophisticated	3.67	0.71	9	3.75	0.71	8	3.71	0.69	17
Talkative	3.22	0.67	9	2.88	0.64	8	3.06	0.66	17
Strong need for security	2.89	1.54	9	3.00	1.31	8	2.94	1.39	17
Forceful	3.56	0.88	9	3.25	1.16	8	3.41	1.00	17
Analytical ability	4.56	0.53	9	5.00	0.00	8	4.76	0.44	17
Competitive	3.78	0.83	9	3.88	0.64	8	3.82	0.73	17
Wavering in decision	1.67	0.71	9	1.50	0.53	8	1.59	0.62	17
Cheerful	3.33	0.87	9	3.25	0.71	8	3.29	0.77	17
High need for autonomy	2.78	1.09	9	2.75	0.71	8	2.76	0.90	17
Able to separate feelings from ideas	4.22	0.67	9	4.13	0.99	8	4.18	0.81	17
Competent	4.44	0.73	9	4.88	0.35	8	4.65	0.61	17
Understanding	4.00	0.71	9	4.14	0.69	7	4.06	0.68	16
Vulgar	1.33	0.71	9	1.00	0.00	8	1.18	0.53	17
Sociable	3.67	0.87	9	3.38	0.92	8	3.53	0.87	17

Aggressive	2.44	0.88	9	2.38	0.74	8	2.41	0.80	17
High self-regard	3.00	1.22	9	3.75	0.89	8	3.35	1.11	17
Grateful	3.11	1.05	9	3.25	1.16	8	3.18	1.07	17
Easily Influenced	1.78	0.83	9	1.75	0.89	8	1.76	0.83	17
Exhibitionist	1.44	0.73	9	1.88	0.99	8	1.65	0.86	17
Aware of feelings of others	4.11	0.60	9	3.63	1.06	8	3.88	0.86	17
Passive	1.44	0.73	9	1.63	0.74	8	1.53	0.72	17
Objective	4.22	0.44	9	4.71	0.49	7	4.44	0.51	16
Speedy recovery from emotional trauma	3.11	1.17	9	3.38	1.06	8	3.24	1.09	17
Shy	2.56	1.24	9	2.29	0.95	7	2.44	1.09	16
Firm	4.00	0.50	9	4.00	0.76	8	4.00	0.61	17
Prompt	4.11	0.33	9	4.63	0.52	8	4.35	0.49	17
Intuitive	4.44	0.53	9	4.75	0.46	8	4.59	0.51	17
Humanitarian values	4.11	0.78	9	3.00	1.41	8	3.59	1.23	17
Knows the way of the world	3.89	0.78	9	3.25	1.04	8	3.59	0.94	17
Dawdler and procrastinator	1.38	0.74	8	1.50	0.76	8	1.44	0.73	16
Quarrelsome	2.11	1.36	9	1.75	1.16	8	1.94	1.25	17
Industrious	4.33	0.50	9	3.86	0.90	7	4.13	0.72	16
Well informed	4.78	0.44	9	4.75	0.46	8	4.76	0.44	17
Not uncomfortable about being aggressive	3.33	0.87	9	3.63	1.06	8	3.47	0.94	17
Reserved	2.44	0.73	9	2.00	0.93	8	2.24	0.83	17
Ambitious	3.89	0.60	9	3.63	0.52	8	3.76	0.56	17
Not conceited about appearance	3.00	1.12	9	2.88	0.64	8	2.94	0.90	17
Strong need for social acceptance	2.56	0.88	9	2.25	0.89	8	2.41	0.87	17
Hasty	1.44	0.73	9	1.75	0.71	8	1.59	0.71	17
Obedient	2.78	0.67	9	2.88	0.99	8	2.82	0.81	17
Desires responsibility	4.33	0.50	9	4.00	0.76	8	4.18	0.64	17
Self-controlled	4.22	0.44	9	4.29	0.76	7	4.25	0.58	16
Modest	3.44	1.13	9	3.50	0.53	8	3.47	0.87	17
Decisive	4.22	0.44	9	4.50	0.76	8	4.35	0.61	17
Nervous	1.56	0.73	9	1.71	0.76	7	1.63	0.72	16
Direct	3.89	0.60	9	4.29	0.76	7	4.06	0.68	16
Hides Emotion	2.89	1.05	9	2.50	1.07	8	2.71	1.05	17
Authoritative	3.44	1.24	9	3.63	1.30	8	3.53	1.23	17
Self-confident	4.33	0.50	9	4.63	0.52	8	4.47	0.51	17
Sentimental	2.33	1.12	9	2.38	1.06	8	2.35	1.06	17
Steady	4.22	0.44	9	4.13	0.64	8	4.18	0.53	17
Assertive	4.22	0.67	9	3.75	0.71	8	4.00	0.71	17
Feelings not easily hurt	2.56	1.24	9	2.29	0.95	7	2.44	1.09	16
Dominant	3.00	1.22	9	2.88	0.35	8	2.94	0.90	17
Tactful	4.22	0.67	9	3.88	0.99	8	4.06	0.83	17
Helpful	4.33	0.71	9	4.63	0.52	8	4.47	0.62	17
Strong need for achievement	4.00	0.71	9	4.25	0.71	8	4.12	0.70	17
Deceitful	1.78	1.09	9	1.25	0.46	8	1.53	0.87	17

Generous	3.44	0.88	9	2.75	1.16	8	3.12	1.05	17
Bitter	1.44	0.73	9	1.63	0.74	8	1.53	0.72	17
Logical	4.67	0.50	9	4.88	0.35	8	4.76	0.44	17
Skilled in business matters	4.44	0.73	9	4.50	0.76	8	4.47	0.72	17
Selfish	1.67	0.87	9	1.63	0.74	8	1.65	0.79	17
Demure	2.22	0.97	9	2.43	0.53	7	2.31	0.79	16
Kind	3.78	0.67	9	3.50	0.93	8	3.65	0.79	17
Strong need for monetary rewards	2.00	1.00	9	2.38	1.06	8	2.18	1.01	17
Self Reliant	4.33	0.50	9	4.38	0.92	8	4.35	0.70	17

With regard to significance testing the sample size was too small to conduct a meaningful analysis. Additionally, *t* tests were not used due to normality assumption failing. A between-subject ANOVA with two-factors were attempted; but two assumptions failed. The two failing assumptions were the dependent variables were not normally distributed for each categorical level of the independent variables and the 92 SDI items were measured on a 5-point Likert Scale which was of ordinal value. Chi Square was calculated to compare frequencies but the approximation worsened due to the small expected frequencies. As a rule, the expected frequency count should be 5 or more for each category. Since this rule was violated, the Fisher's Exact test was used for significance.

Table 7 presents the Tests of Normality. Displayed are the 92 SDI descriptive characteristics comparing the CIO type alongside the Kolmogorov-Smirnov Test and Shapiro Wilk Test. Significant differences were found for the following descriptive statistics: consistent, devious, objective, intuitive, well-informed, and helpful in relation to the CIO type (female, male, and non-gender specific CIO candidate) to the distinct characteristic.

Table 7

Tests of Normality

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	Df	*p*
Curious	Female CIO	.200	10	.200*	.832	10	.035
	Non-gender CIO	.348	16	.000	.729	16	.000
	Male CIO	.210	11	.191	.896	11	.165
Consistent	Female CIO	.324	10	.004	.794	10	.012
	Non-gender CIO	.380	17	.000	.632	17	.000
	Male CIO	.280	11	.016	.785	11	.006
High need for power	Female CIO	.222	10	.178	.906	10	.258
	Non-gender CIO	.256	17	.004	.869	17	.021
	Male CIO	.229	10	.148	.859	10	.074
Sympathetic	Female CIO	.324	10	.004	.794	10	.012
	Non-gender CIO	.259	17	.004	.863	17	.017
	Male CIO	.252	11	.049	.803	11	.010
	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Fearful	Female CIO	.246	10	.089	.874	10	.111
	Non-gender CIO	.393	17	.000	.670	17	.000
	Male CIO	.200	11	.200*	.928	11	.389
Adventurous	Female CIO	.342	10	.002	.841	10	.045
	Non-gender CIO	.237	17	.012	.881	17	.033
	Male CIO	.256	11	.043	.893	11	.150
Leadership ability	Female CIO	.272	10	.035	.802	10	.015
	Non-gender CIO	.410	17	.000	.611	17	.000
	Male CIO	.274	11	.021	.828	11	.022
Values pleasant surroundings	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.276	17	.001	.784	17	.001
	Male CIO	.380	11	.000	.772	11	.004
Neat	Female CIO	.472	10	.000	.532	10	.000

	Non-gender CIO	.303	17	.000	.742	17	.000
	Male CIO	.382	11	.000	.701	11	.000
Uncertain	Female CIO	.224	10	.168	.911	10	.287
	Non-gender CIO	.345	17	.000	.732	17	.000
	Male CIO	.155	11	.200*	.896	11	.163
Creative	Female CIO	.370	10	.000	.752	10	.004
	Non-gender CIO	.292	17	.000	.776	17	.001
	Male CIO	.323	11	.002	.843	11	.035
Desire to avoid	Female CIO	.245	10	.091	.820	10	.025
controversy	Non-gender CIO	.287	17	.001	.865	17	.019
	Male CIO	.219	11	.146	.889	11	.134
	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Curious	Female CIO	.200	10	.200*	.832	10	.035
	Non-gender CIO	.348	16	.000	.729	16	.000
	Male CIO	.210	11	.191	.896	11	.165
Consistent	Female CIO	.324	10	.004	.794	10	.012
	Non-gender CIO	.380	17	.000	.632	17	.000
	Male CIO	.280	11	.016	.785	11	.006
High need for power	Female CIO	.222	10	.178	.906	10	.258
	Non-gender CIO	.256	17	.004	.869	17	.021
	Male CIO	.229	10	.148	.859	10	.074
Sympathetic	Female CIO	.324	10	.004	.794	10	.012
	Non-gender CIO	.259	17	.004	.863	17	.017
	Male CIO	.252	11	.049	.803	11	.010
	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Fearful	Female CIO	.246	10	.089	.874	10	.111

	Non-gender CIO	.393	17	.000	.670	17	.000
	Male CIO	.200	11	.200*	.928	11	.389
Adventurous	Female CIO	.342	10	.002	.841	10	.045
	Non-gender CIO	.237	17	.012	.881	17	.033
	Male CIO	.256	11	.043	.893	11	.150
Leadership ability	Female CIO	.272	10	.035	.802	10	.015
	Non-gender CIO	.410	17	.000	.611	17	.000
	Male CIO	.274	11	.021	.828	11	.022
Values pleasant	Female CIO	.245	10	.091	.820	10	.025
surroundings	Non-gender CIO	.276	17	.001	.784	17	.001
	Male CIO	.380	11	.000	.772	11	.004
Neat	Female CIO	.472	10	.000	.532	10	.000
	Non-gender CIO	.303	17	.000	.742	17	.000
	Male CIO	.382	11	.000	.701	11	.000
Uncertain	Female CIO	.224	10	.168	.911	10	.287
	Non-gender CIO	.345	17	.000	.732	17	.000
	Male CIO	.155	11	.200*	.896	11	.163
Creative	Female CIO	.370	10	.000	.752	10	.004
	Non-gender CIO	.292	17	.000	.776	17	.001
	Male CIO	.323	11	.002	.843	11	.035
Desire to avoid	Female CIO	.245	10	.091	.820	10	.025
controversy	Non-gender CIO	.287	17	.001	.865	17	.019
	Male CIO	.219	11	.146	.889	11	.134

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Submissive	Female CIO	.246	10	.089	.874	10	.111
	Non-gender CIO	.300	17	.000	.752	17	.000
	Male CIO	.183	11	.200*	.909	11	.238
Frank	Female CIO	.433	10	.000	.594	10	.000
	Non-gender CIO	.257	16	.006	.814	16	.004
	Male CIO	.310	11	.004	.864	11	.065
Courteous	Female CIO	.286	10	.020	.885	10	.149
	Non-gender CIO	.315	17	.000	.785	17	.001
	Male CIO	.335	11	.001	.733	11	.001
Emotionally stable	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.366	16	.000	.638	16	.000
	Male CIO	.279	11	.017	.822	11	.018
Devious	Female CIO	.246	10	.089	.874	10	.111
	Non-gender CIO	.394	17	.000	.678	17	.000
	Male CIO	.264	11	.031	.854	11	.048
Interested in own appearance	Female CIO	.269	10	.039	.879	10	.127
	Non-gender CIO	.243	17	.009	.839	17	.007
	Male CIO	.414	11	.000	.718	11	.001
Independent	Female CIO	.324	10	.004	.794	10	.012
	Non-gender CIO	.212	17	.040	.892	17	.049
	Male CIO	.232	11	.101	.795	11	.008
Desire for friendship	Female CIO	.370	10	.000	.752	10	.004
	Non-gender CIO	.192	17	.098	.872	17	.024
	Male CIO	.414	11	.000	.718	11	.001

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Frivolous	Female CIO	.297	10	.013	.868	10	.095
	Non-gender CIO	.391	17	.000	.679	17	.000
	Male CIO	.183	11	.200*	.909	11	.238
Intelligent	Female CIO	.362	10	.001	.717	10	.001
	Non-gender CIO	.440	17	.000	.579	17	.000
	Male CIO	.216	11	.162	.871	11	.079
Persistent	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.366	16	.000	.638	16	.000
	Male CIO	.209	11	.195	.906	11	.217
Vigorous	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.290	17	.000	.780	17	.001
	Male CIO	.323	11	.002	.843	11	.035
Timid	Female CIO	.229	10	.148	.859	10	.074
	Non-gender CIO	.391	17	.000	.679	17	.000
	Male CIO	.227	11	.118	.863	11	.063
Sophisticated	Female CIO	.433	10	.000	.594	10	.000
	Non-gender CIO	.260	17	.003	.789	17	.001
	Male CIO	.266	11	.029	.877	11	.095
Talkative	Female CIO	.482	10	.000	.509	10	.000
	Non-gender CIO	.300	17	.000	.798	17	.002
	Male CIO	.362	11	.000	.795	11	.008
Strong need for security	Female CIO	.300	10	.011	.841	10	.045
	Non-gender CIO	.189	17	.110	.892	17	.050
	Male CIO	.289	11	.011	.878	11	.099

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Forceful	Female CIO	.255	10	.065	.866	10	.090
	Non-gender CIO	.251	17	.006	.872	17	.024
	Male CIO	.256	11	.043	.893	11	.150
Analytical ability	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.469	17	.000	.533	17	.000
	Male CIO	.280	11	.016	.785	11	.006
Competitive	Female CIO	.223	9	.200*	.838	9	.055
	Non-gender CIO	.243	17	.009	.809	17	.003
	Male CIO	.216	11	.162	.871	11	.079
Wavering in decision	Female CIO	.181	10	.200*	.895	10	.191
	Non-gender CIO	.300	17	.000	.752	17	.000
	Male CIO	.219	11	.147	.916	11	.290
Cheerful	Female CIO	.222	10	.178	.906	10	.258
	Non-gender CIO	.295	17	.000	.859	17	.015
	Male CIO	.362	11	.000	.795	11	.008
High need for autonomy	Female CIO	.182	10	.200*	.930	10	.445
	Non-gender CIO	.213	17	.039	.878	17	.029
	Male CIO	.232	11	.100	.822	11	.018
Able to separate feelings from ideas	Female CIO	.302	10	.010	.781	10	.008
	Non-gender CIO	.296	17	.000	.782	17	.001
	Male CIO	.208	11	.200*	.854	11	.049
Competent	Female CIO	.305	10	.009	.781	10	.008
	Non-gender CIO	.426	17	.000	.630	17	.000
	Male CIO	.216	11	.162	.871	11	.079

Understanding	Female CIO	.200	10	.200*	.832	10	.035
	Non-gender CIO	.287	16	.001	.807	16	.003
	Male CIO	.210	11	.191	.896	11	.165
Vulgar	Female CIO	.427	10	.000	.652	10	.000
	Non-gender CIO	.513	17	.000	.391	17	.000
	Male CIO	.287	11	.012	.828	11	.022
Sociable	Female CIO	.360	10	.001	.731	10	.002
	Non-gender CIO	.234	17	.014	.889	17	.044
	Male CIO	.256	11	.043	.893	11	.150
Aggressive	Female CIO	.200	10	.200*	.918	10	.344
	Non-gender CIO	.241	17	.010	.872	17	.024
	Male CIO	.289	11	.011	.871	11	.080
High self-regard	Female CIO	.302	10	.010	.781	10	.008
	Non-gender CIO	.258	17	.004	.855	17	.013
	Male CIO	.227	11	.120	.819	11	.017
Grateful	Female CIO	.416	10	.000	.650	10	.000
	Non-gender CIO	.317	17	.000	.825	17	.004
	Male CIO	.289	10	.018	.868	10	.095
Easily Influenced	Female CIO	.224	10	.168	.911	10	.287
	Non-gender CIO	.292	17	.000	.774	17	.001
	Male CIO	.164	11	.200*	.934	11	.448
Exhibitionist	Female CIO	.307	10	.008	.797	10	.014
	Non-gender CIO	.362	17	.000	.703	17	.000
	Male CIO	.222	11	.136	.879	11	.102

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Aware of feelings of others	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.260	17	.003	.872	17	.023
	Male CIO	.266	11	.029	.877	11	.095
Passive	Female CIO	.181	10	.200*	.895	10	.191
	Non-gender CIO	.358	17	.000	.721	17	.000
	Male CIO	.255	11	.044	.832	11	.025
Objective	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.366	16	.000	.638	16	.000
	Male CIO	.219	11	.146	.889	11	.134
Speedy recovery from emotional trauma	Female CIO	.323	10	.004	.839	10	.043
	Non-gender CIO	.179	17	.148	.930	17	.219
	Male CIO	.363	11	.000	.810	11	.013
Shy	Female CIO	.355	9	.002	.773	9	.010
	Non-gender CIO	.259	16	.005	.838	16	.009
	Male CIO	.318	11	.003	.843	11	.034
Firm	Female CIO	.272	10	.035	.802	10	.015
	Non-gender CIO	.324	17	.000	.774	17	.001
	Male CIO	.310	11	.004	.866	11	.069
Prompt	Female CIO	.254	10	.067	.833	10	.036
	Non-gender CIO	.410	17	.000	.611	17	.000
	Male CIO	.300	11	.007	.793	11	.008
Intuitive	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.380	17	.000	.632	17	.000
	Male CIO	.318	11	.003	.825	11	.020

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Humanitarian values	Female CIO	.360	10	.001	.731	10	.002
	Non-gender CIO	.220	17	.029	.854	17	.012
	Male CIO	.310	11	.004	.864	11	.065
Knows the way of the world	Female CIO	.272	10	.035	.802	10	.015
	Non-gender CIO	.258	17	.004	.834	17	.006
	Male CIO	.310	11	.004	.866	11	.069
Dawdler and procrastinator	Female CIO	.181	10	.200*	.895	10	.191
	Non-gender CIO	.414	16	.000	.644	16	.000
	Male CIO	.200	11	.200*	.928	11	.389
Quarrelsome	Female CIO	.181	10	.200*	.852	10	.061
	Non-gender CIO	.304	17	.000	.776	17	.001
	Male CIO	.217	11	.157	.905	11	.211
Industrious	Female CIO	.254	10	.067	.833	10	.036
	Non-gender CIO	.257	16	.006	.814	16	.004
	Male CIO	.232	11	.100	.822	11	.018
Well informed	Female CIO	.324	10	.004	.794	10	.012
	Non-gender CIO	.469	17	.000	.533	17	.000
	Male CIO	.248	10	.082	.805	10	.017
Not uncomfortable about being aggressive	Female CIO	.282	10	.023	.890	10	.172
	Non-gender CIO	.242	17	.009	.886	17	.040
	Male CIO	.219	11	.146	.889	11	.134
Reserved	Female CIO	.246	10	.089	.874	10	.111
	Non-gender CIO	.292	17	.000	.774	17	.001
	Male CIO	.266	11	.029	.877	11	.095

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Ambitious	Female CIO	.200	10	.200*	.832	10	.035
	Non-gender CIO	.368	17	.000	.733	17	.000
	Male CIO	.227	11	.120	.819	11	.017
Not conceited about appearance	Female CIO	.245	10	.090	.892	10	.177
	Non-gender CIO	.297	17	.000	.866	17	.019
	Male CIO	.382	11	.000	.701	11	.000
Strong need for social acceptance	Female CIO	.342	10	.002	.841	10	.045
	Non-gender CIO	.280	17	.001	.857	17	.014
	Male CIO	.366	11	.000	.725	11	.001
Hasty	Female CIO	.233	10	.133	.904	10	.245
	Non-gender CIO	.325	17	.000	.754	17	.001
	Male CIO	.227	11	.117	.938	11	.498
Obedient	Female CIO	.424	10	.000	.699	10	.001
	Non-gender CIO	.292	17	.000	.862	17	.016
	Male CIO	.228	11	.116	.916	11	.285
Desires responsibility	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.315	17	.000	.785	17	.001
	Male CIO	.324	10	.004	.794	10	.012
Self-controlled	Female CIO	.200	10	.200*	.832	10	.035
	Non-gender CIO	.355	16	.000	.746	16	.001
	Male CIO	.282	11	.015	.786	11	.006
Modest	Female CIO	.282	10	.023	.890	10	.172
	Non-gender CIO	.257	17	.004	.805	17	.002
	Male CIO	.371	11	.000	.742	11	.002

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Decisive	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.308	17	.000	.757	17	.001
	Male CIO	.232	11	.100	.822	11	.018
Nervous	Female CIO	.181	10	.200*	.895	10	.191
	Non-gender CIO	.308	16	.000	.768	16	.001
	Male CIO	.221	11	.141	.917	11	.294
Direct	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.287	16	.001	.807	16	.003
	Male CIO	.280	11	.016	.785	11	.006
Hides Emotion	Female CIO	.345	10	.001	.820	10	.026
	Non-gender CIO	.258	17	.004	.865	17	.018
	Male CIO	.382	11	.000	.701	11	.000
Authoritative	Female CIO	.272	10	.035	.802	10	.015
	Non-gender CIO	.296	17	.000	.843	17	.008
	Male CIO	.385	11	.000	.724	11	.001
Self-confident	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.349	17	.000	.642	17	.000
	Male CIO	.362	11	.000	.795	11	.008
Sentimental	Female CIO	.342	10	.002	.841	10	.045
	Non-gender CIO	.259	17	.004	.852	17	.011
	Male CIO	.289	11	.011	.878	11	.099
Steady	Female CIO	.272	10	.035	.802	10	.015
	Non-gender CIO	.395	17	.000	.703	17	.000
	Male CIO	.300	11	.007	.793	11	.008

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Assertive	Female CIO	.278	10	.027	.835	10	.038
	Non-gender CIO	.265	17	.003	.815	17	.003
	Male CIO	.255	11	.044	.899	11	.181
Feelings not easily hurt	Female CIO	.424	10	.000	.699	10	.001
	Non-gender CIO	.322	16	.000	.799	16	.003
	Male CIO	.342	10	.002	.841	10	.045
Dominant	Female CIO	.205	10	.200*	.929	10	.436
	Non-gender CIO	.297	17	.000	.866	17	.019
	Male CIO	.227	11	.117	.938	11	.498
Tactful	Female CIO	.200	10	.200*	.832	10	.035
	Non-gender CIO	.295	17	.000	.825	17	.004
	Male CIO	.310	11	.004	.864	11	.065
Helpful	Female CIO	.254	10	.067	.833	10	.036
	Non-gender CIO	.331	17	.000	.738	17	.000
	Male CIO	.432	11	.000	.619	11	.000
Strong need for achievement	Female CIO	.256	10	.063	.769	10	.006
	Non-gender CIO	.273	17	.002	.809	17	.003
	Male CIO	.279	11	.017	.822	11	.018
Deceitful	Female CIO	.224	10	.168	.911	10	.287
	Non-gender CIO	.375	17	.000	.669	17	.000
	Male CIO	.183	11	.200*	.909	11	.238
Generous	Female CIO	.360	10	.001	.731	10	.002
	Non-gender CIO	.279	17	.001	.873	17	.025
	Male CIO	.284	11	.014	.898	11	.172

	CIO Type	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
		Statistic	df	*p*	Statistic	df	*p*
Bitter	Female CIO	.246	10	.089	.874	10	.111
	Non-gender CIO	.358	17	.000	.721	17	.000
	Male CIO	.257	11	.041	.912	11	.255
Logical	Female CIO	.245	10	.091	.820	10	.025
	Non-gender CIO	.469	17	.000	.533	17	.000
	Male CIO	.227	11	.120	.819	11	.017
Skilled in business matters	Female CIO	.254	10	.067	.833	10	.036
	Non-gender CIO	.358	17	.000	.721	17	.000
	Male CIO	.227	11	.120	.819	11	.017
Selfish	Female CIO	.224	10	.168	.911	10	.287
	Non-gender CIO	.324	17	.000	.752	17	.000
	Male CIO	.171	11	.200*	.940	11	.518
Demure	Female CIO	.246	10	.089	.874	10	.111
	Non-gender CIO	.278	16	.002	.871	16	.028
	Male CIO	.350	11	.000	.810	11	.013
Kind	Female CIO	.360	10	.001	.731	10	.002
	Non-gender CIO	.262	17	.003	.871	17	.023
	Male CIO	.363	11	.000	.810	11	.013
Strong need for monetary rewards	Female CIO	.400	10	.000	.751	10	.004
	Non-gender CIO	.262	17	.003	.825	17	.005
	Male CIO	.183	11	.200*	.909	11	.238
Self-Reliant	Female CIO	.269	9	.059	.808	9	.025
	Non-gender CIO	.292	17	.000	.776	17	.001
	Male CIO	.208	11	.200*	.875	11	.091

The analyzed data revealed the gender of a hiring official does not affect perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. Null Hypothesis H_0: Gender of a hiring official does not affect perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. Alternate Hypothesis H_1: Gender of a hiring official does effect perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. Due to the a small sample size, the normality assumption failing, two assumptions failing when testing the between-subject two factor ANOVA, and violation of the Chi Square test the null hypothesis could not be accepted.

Summary

The original null hypothesis could not be tested because the sample size was not adequate. The importance of the findings are discussed in greater detail in chapter 5 which includes a brief overview and recap of how and why the study was done, interpretation of the findings, limitations, implications for social change, and recommendations for actions.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative causal comparative study was to examine whether the gender of CIO hiring officials affects their perceptions of requisite managerial characteristics when selecting CIO candidates in academia. Male, female, and non-gender specific CIO candidates are rated similarity in the area of leadership ability by CIO hiring officials. However, minimal females exist in the role of CIO in academia.

According to Haake (2009), gendered processes exist within academic leadership in higher education. Additionally, gender is a factor in leadership role selection in higher education (Haake, 2009). Researchers have identified the SDI as valid instrument to examine gender and perceptions of requisite managerial characteristics in business students, nurses, midwives, and military personnel (as cited by Berkery et al., 2012, 2013; Berkery, Tiernan, & Morley, 2012; Bosner, 2008; Booysen & Nkomo, 2010; Elsaid & Elsaid, 2012; Koenig, et al., 2011; Olanrewaju, & Yetunde, 2011; Stone, 2008; Unter & McLean, 2010). Key findings of this study indicate CIO hiring officials' rate male, female, and non-gender specific candidates similarly across all 92 SDI characteristics.

Interpretation of Findings

Researchers state that females remain underrepresented in senior leadership roles across industries (see Lennon, 2013). Several factors contribute to this underrepresentation. These include gendered organizations, in addition to perceptions of

gender and requisite managerial characteristics which impede female selection, promotion to, and placement in senior leadership roles. According to the literature, the CIO role in academia is gendered in that a greater number of males are employed in it than females (Brown, 2008, 2011, 2013; Drury, 2008, 2009, 2011; Madden, 2005). However, barriers hinder the advancement of females seeking entry into the role of CIO in academia (Drury, 2008, 2009, 2011; Lord & Preston, 2009; Dominici et al., 2009). Nonetheless, researchers have indicated that some females advance to the role of CIO despite documented obstacles (Drury, 2008, 2009, 2011). However, about 23% of females exist in the role of CIO in academia (Brown, 2008, 2011, 2013).

The research question examined in this study was what is the effect of a hiring official's gender on his or her perceptions of requisite managerial characteristics when selecting CIO candidates in academia? In analyzing my data, I found that gender does not affect hiring officials' perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. As a result, the question as to why so few women exist in the role of CIO is academia is unanswered. The findings of this study are similar to findings in prior studies. Stone (2008) examined gender stereotyping among male and female active duty Air Force personnel using the SDI. As discussed in Chapter 2, Stone (2008) found that male and female participants viewed both men and women as capable of possessing ideal characteristics of successful leaders. Therefore, Stone found an individuals' gender had nothing to do with them being a successful leader.

Bosner (2008) used the SDI to examine how gender stereotypes and self-perceptions impact students enrolled in undergraduate business courses at two western

New York colleges. Bosner (2008) found that both male and female participates mostly agreed on the importance of each of the characteristics of being a successful manager. Male and female students rate themselves similarly in that they possess similar requisite managerial characteristics (Bosner, 2008). Gender of the rater did not affect perceptions of requisite managerial characteristics. In relation to the findings of this study, Bosner (2008) and Stone (2008) identified that gender does not affects perceptions of requisite managerial characteristics when rating a male, female or non-gender specific leader. These findings counter Schein's (1973) findings when examining perceived requisite manager characteristics.

Current literature reflects that gender diversity in necessary academia. Brink and Benshop (2011) conducted an empirical study on the recruitment and selection of full professors in three academic fields in the Netherlands. Brink and Benschop found gender was not a static entity that impedes inequality in the recruitment and selection process. However, gender is a dynamic construct that operates in various structural and cultural context within academia. Gender imbalance within various fields contribute to gender inequality and gender inequality exists in specific fields and disciplines; thus, creating a barriers for female selection in specific fields. Hence, Brink and Benschop noted gender barriers must be managed differently depending on the discipline of entry.

This is one of the first studies to examine if a hiring officials' gender effects perceptions of requisite managerial characteristics when selecting a CIO in academia using the SDI. After conducting this study and analyzing the data, the findings revealed gender does not affect perceptions of requisite managerial characteristics when selecting

a CIO candidate in academia. This study contributes to the body of knowledge and provides social significance in identifying that gender is not a variable that impacts perceptions of requisite managerial characteristics during the placement, promotion, and selection of male, female, or non-gender specific CIO's in academia. This is of profound significance in that gender, gender barriers, and gender stereotyping have been a prevalent factor in hindering the advancement of women to senior leadership roles across industries, specifically within gendered organizations and gendered roles.

Limitations

This study had three limitations. First, the data did not answer the research question. Considering the data did not answer the research question it can be concluded use of the Schein Descriptive Index (SDI) was inadequate to examine if a hiring officials' gender effects perceptions of requisite managerial characteristics when selecting a CIO in academia. Second, a quantitative approach to measure perceptions of requisite managerial characteristics when selecting a CIO candidate limits the ability to obtain data through interview and focus groups which can support identifying perceptions based on observations such as eye contact, body language, and data gathering through open-ended questions. Last, the target audience selected as the population to participate in the study was limiting in that data collection was limited to receiving responses on perception of requisite managerial characteristics from the hiring official and not the potential candidates' perception of requisite managerial characteristics to be selected in the role of CIO. As a result, the results of the study cannot be generalized.

Recommendations

Based on the limitations of this study future recommendations are grounded in the findings. Considering the data did not answer the research question using the 92-item Schein Descriptive Index (SDI) it is recommended a different instrument be used to examine if a hiring official's gender effects perceptions of requisite managerial characteristics when selecting a CIO in academia. Specifically, it is recommended the MLQ be used. The MLQ evaluates three different leadership styles: Transformational, Transactional, and Passive-Avoidant. This would allow individuals to measure how they perceive themselves as leaders using the leader/self-form. However, the MLQ rater/other feedback form is used by another individual, male or female, to rate their perceptions of the leader. This instrument provides 360-degree feedback captured from the leaders' perception and the raters' perception to examine leadership characteristics. Another recommended instrument to examine if a hiring officials' perception effects perceptions of requisite managerial characteristics when selecting a CIO candidate in academia is the Leadership Practices Inventory (LPI). The LPI measures five practices of exemplary leadership which exist in a "self" and "observer" version to gain both the individuals' and observers' perception of engaged leadership behaviors.

Although two quantitative instruments were recommended to examine if a hiring officials' gender effects perceptions of requisite managerial characteristics when selectin a CIO in academia it is further recommended this study be replicated used a mixed method approach. Based on the findings of this study a mixed method approach is appropriate. Conducting interviews and focus groups while observing how participants

respond to the questions related to perceptions of requisite managerial would significantly enrich the discipline.

Last, it is recommended the target audience as study participants be females who strive to obtain leadership positions in the role of CIO to gain a perspective as to what barriers hinder their ability to achieve the role of CIO. Furthermore, gain an understanding as to why so few females presently exist in the role of CIO in academia. It is recommended this study be replicated in all regions of the U.S. with the recommended instruments of the MLQ or LPI using a mixed method approach to fill the literature gap. Furthermore it is recommended factors of ethnicity, age, and experience be examined as key variables that impact perceptions of requisite managerial characteristics when selecting a CIO candidate in academia.

Implications

Implications for social change are prevalent based on the information and data presented in this study. Previous chapters outlined the significance of examining if a hiring officials' gender effects perceptions of requisite managerial characteristics when selecting a CIO in academia. An extensive literature review provided a discussion on how academia and the role of CIO are gendered. Considering there was no scholarly literature found on this topic the SDI was used to examine the research question and understand if a hiring officials' gender effects perceptions of requisite managerial characteristics.

This study contributed to the field of public policy, specifically the area of leadership and management by revealing gender of a hiring official does not affect

perceptions of requisite managerial characteristics when selecting a CIO in academia. As a result, gender is not considered an impeding variable hindering a females' entry into the role of CIO in academia. Second, this study contributed to the field of public policy in that it revealed the SDI developed by Schein in 1973 is an inadequate instrument to examine perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. Last, this study contributed to the field of public policy by socially identifying gender as a non-variable that effects perceptions of requisite managerial characteristics. Hence, enrichment of the field of public policy allows for the exploration of other variables, such as age, ethnicity, and experience to examine perceptions of requisite managerial characteristics.

The social change implications of this study align with the social change mission to which Walden University is committed. By examining if the gender of a hiring official effects perceptions of requisite managerial characteristics is consistent with Walden's University pledge to improve society's development and promote individual's worth and dignity through building on knowledge to promote the greater good (Walden University, 2012). Aligned with Walden University's pledge to improve society's development this study has implications for positive social change in eliminating gender as an impeding variable that hinders females from being selected to the leadership role of CIO in academia while increasing awareness that other factors such as ethnicity, age, and experience impact the selection process. Furthermore, society's development within the field of public policy is in need of further advancement to examine why so few females

exist in leadership roles in gendered organizations, specifically in the role of CIO in academia.

Conclusion

Gender bias and discrimination are prevalent in our society. Research reflects women experience gender discrimination when seeking senior executive positions in male dominant work environments. Academia is a gendered organization where males dominant senior executive leadership roles. The role of CIO across industries, specifically in academia is gendered in that males outnumber females in the role of CIO. In conclusion, this study examined if the gender of a hiring official effects perceptions of managerial characteristics when selecting a CIO in academia to understand why so few women exist in the role. The results revealed hiring officials' gender does not affect perceptions of requisite managerial characteristics when selecting a CIO candidate in academia. However, women remain underrepresented in the role of CIO in academia. Recommendations for future research revealed the Schein Descriptive Index (SDI) is an inadequate instrument to examine if a hiring officials' gender effects perceptions of requisite managerial characteristics when selecting a CIO in academia. Furthermore, future research is required to assess why so few females continue to be underrepresented in leadership roles in comparison to male counterparts to support society's development in gender-diversified organizations.

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Appendix A: Recruitment Email Invitation

Greetings,

My name is Shanna Van Ness and I am a Ph.D. student working under the supervision of Dr. Hilda Shepeard in the School of Public Policy and Administration at Walden University. The reason I am contacting you is that I am conducting a study to examine hiring Chief Information Officers (CIOs) in academia. I am currently seeking volunteers as participants in this study.

If you are interested, please click the link below to advance to the "Agreement to Participate Letter".

If you have any questions or would prefer to complete a survey via mail form, contact me at [redacted] or [redacted].

https://www.surveymonkey.com/r/SDIV1

https://www.surveymonkey.com/r/SDIVI2

https://www.surveymonkey.com/r/SDIV3

Sincerely,

Shanna Van Ness
Doctoral Candidate
School of Public Policy & Administration
Walden University

Appendix B: Agreement to Participate

Hello _____,

My name is Shanna Van Ness and I am a Ph.D. student working under the supervision of Dr. Hilda Shepeard in the School of Public Policy and Administration at Walden University. The reason I am contacting you is that I am conducting a study to examine hiring Chief Information Officers (CIOs) in academia. I am currently seeking volunteers as participants in this study.

Participation in this study involves completing a survey (reading words, filling out a questionnaire with descriptive items about an unknown individual seeking a position as a CIO). Participation in this study will take approximately 15-20 minutes. I would like to assure you that the study has been reviewed and received ethics clearance through the Walden University Institutional Review Board.

If you are interested in participating, please complete the attached survey named "Schein Descriptive Index and Participant Information Sheet". If you agree to participate, please select "yes". Selecting "yes" will advance you to the "Letter of Informed Consent" which will provide further detail regarding the study. Upon completing this letter agreeing to participate and the informed consent letter you will receive the study questionnaire for completion.

If you have any questions or would prefer to complete a survey via mail form, contact me at [redacted] or [redacted].

Sincerely,

Shanna Van Ness
Doctoral Candidate
School of Public Policy & Administration
Walden University

Agreement to Participate

□ Yes □ No

.

Appendix C: Participant Information Sheet

Completion of this sheet is significant for describing a variety of factors on the results of this study. Your information will remain confidential. Any reports that might be published will not include any identify information. Please check the appropriate line.

What is your gender?
_____ Male
_____ Female

Please indicate your age:
_____ 21-30
_____ 31-40
_____ 41-50
_____ 51-60
_____ 61-70
_____ 71+

Please indicate your ethnicity:
_____ African-American/Black
_____ Caucasian/White
_____ Native American
_____ Asian
_____ Hispanic/Latino
_____ Other

Please indicate your highest level of earned academic degree:
_____ Associate's Degree
_____ Bachelor's Degree
_____ Master's Degree
_____ Ph.D

Please indicate the length of time you have worked in academia (please identify the number of years and months below):
_____ Year(s) _____ Month(s)

Please indicate the length of time you have been employed with the current employer:
_____ Less than 6 months
_____ 6 months – 1 year
_____ 1+ year – 3 years
_____ 3+ years – 5 years
_____ 5+ years – 10 years
_____ 10+ years – 15 years

_____ 15+ years – 20 years
_____ 20+ years

Appendix D: Schein Descriptive Index

I administered an adaptation of the Schein Descriptive Index (Schein, 1973) to participants.

Schein Descriptive Index, Copyright Schein (1973)

On the following pages, you will find a series of descriptive terms commonly used to characterize people in general. Some of these terms are positive in connation, others are negative, and some are neither very positive nor very negative.

We would like you use this list to tell us what you think a male CIO candidate (SDIV1), female CIO candidate (SDIV2), or non-gender specific CIO candidate (SDIV3) is like. In making your judgments, it may be helpful to imagine that you are about to meet this person for the first time and the only thing known in advance is a male CIO candidate, a female CIO candidate, or a CIO candidate. For the purpose of this study the individual is seeking a CIO position at your college. Please rate each word or phrase in terms of managerial characteristics of a male CIO candidate [SDIV1], female CIO candidate [SDIV2], and non-gender specific CIO candidate [SDIV3] seeking a CIO position at your college.

The ratings are to be made according to the following scale:

5 – Characteristic of a (male CIO candidate [SDIV1], female CIO candidate [SDIV2], non-gender specific CIO candidate [SDIV3])

4 – Somewhat characteristic of a (male CIO candidate [SDIV1], female CIO candidate [SDIV2], non-gender specific CIO candidate [SDIV3])

3 – Neither characteristics of a (male CIO candidate [SDIV1], female CIO candidate [SDIV2], non-gender specific CIO candidate [SDIV3])

2 – Somewhat uncharacteristic (male CIO candidate [SDIV1], female CIO candidate [SDIV2], non-gender specific CIO candidate [SDIV3])
Not
1 – Not characteristic of a (male CIO candidate [SDIV1], female CIO candidate [SDIV2], non-gender specific CIO candidate [SDIV3])

Place the number (1, 2, 3, 4, or 5) which most closely represents your opinion of the line next to the adjective.

For the purpose of this study the individual seeking a CIO position at your college.

5 - Characteristic
4 - Somewhat characteristic
3 - Neither characteristic nor uncharacteristic
2 - Somewhat uncharacteristic
1 - Not characteristic

1. Curious_____
2. Consistent_____
3. High need for power_____
4. Sympathetic_____
5. Fearful_____
6. Adventurous_____
7. Leadership ability_____
8. Values pleasant surroundings____
9. Neat_____
10. Uncertain_____
11. Creative_____
12. Desire to avoid controversy_____
13. Submissive_____
14. Frank_____
15. Courteous_____
16. Emotionally stable_____
17. Devious_____
18. Interested in own appearance___
19. Independent_____
20. Desire for friendship_____
21. Frivolous_____
22. Intelligent_____
23. Persistent_____
24. Vigorous_____
25. Timid_____
26. Sophisticated_____
27. Talkative_____
28. Strong need for security_____
29. Forceful_____
30. Analytical ability_____
31. Competitive_____
32. Wavering in decision_____
33. Cheerful_____
34. High need for autonomy_____
35. Able to separate feelings from ideas_____
36. Competent_____
37. Understanding_____
38. Vulgar_____
39. Sociable_____
40. Aggressive_____
41. High self-regard_____
42. Grateful_____
43. Easily Influenced_____
44. Exhibitionist_____
45. Aware of feelings of others_____
46. Passive_____

47. Objective_____
48. Speedy recovery from emotional trauma_____
49. Shy_____
50. Firm_____
51. Prompt_____
52. Intuitive_____
53. Humanitarian values_____
54. Knows the way of the world____
55. Dawdler and procrastinator_____
56. Quarrelsome_____
57. Industrious_____
58. Well informed_____
59. Not uncomfortable about being aggressive_____
60. Reserved_____
61. Ambitious_____
62. Not conceited about appearance _____
63. Strong need for social acceptance_____
64. Hasty_____
65. Obedient_____
66. Desires responsibility_____
67. Self-controlled_____
68. Modest_____
69. Decisive_____
70. Nervous_____
71. Direct_____
72. Hides Emotion_____
73. Authoritative_____
74. Self-confident_____
75. Sentimental_____
76. Steady_____
77. Assertive_____
78. Feelings not easily hurt_____
79. Dominant_____
80. Tactful_____
81. Helpful_____
82. Strong need for achievement____
83. Deceitful_____
84. Generous_____
85. Bitter_____
86. Logical _____
87. Skilled in business matters_____
88. Selfish_____
89. Demure_____
90. Kind_____
91. Strong need for monetary rewards_____
92. Self Reliant_____

Appendix E: Follow-up Reminder

Dear Research Participant,

I write as a follow-up to electronic survey questionnaire sent on _____ (date). Please note I have not yet received the completed survey.

Again, your participation in this study will provide useful information on this topic. If you have not already done so, please survey.

If you have already completed the survey, please disregard this communication.

As a reminder, your participation is solely voluntary, and all collected data is confidential.

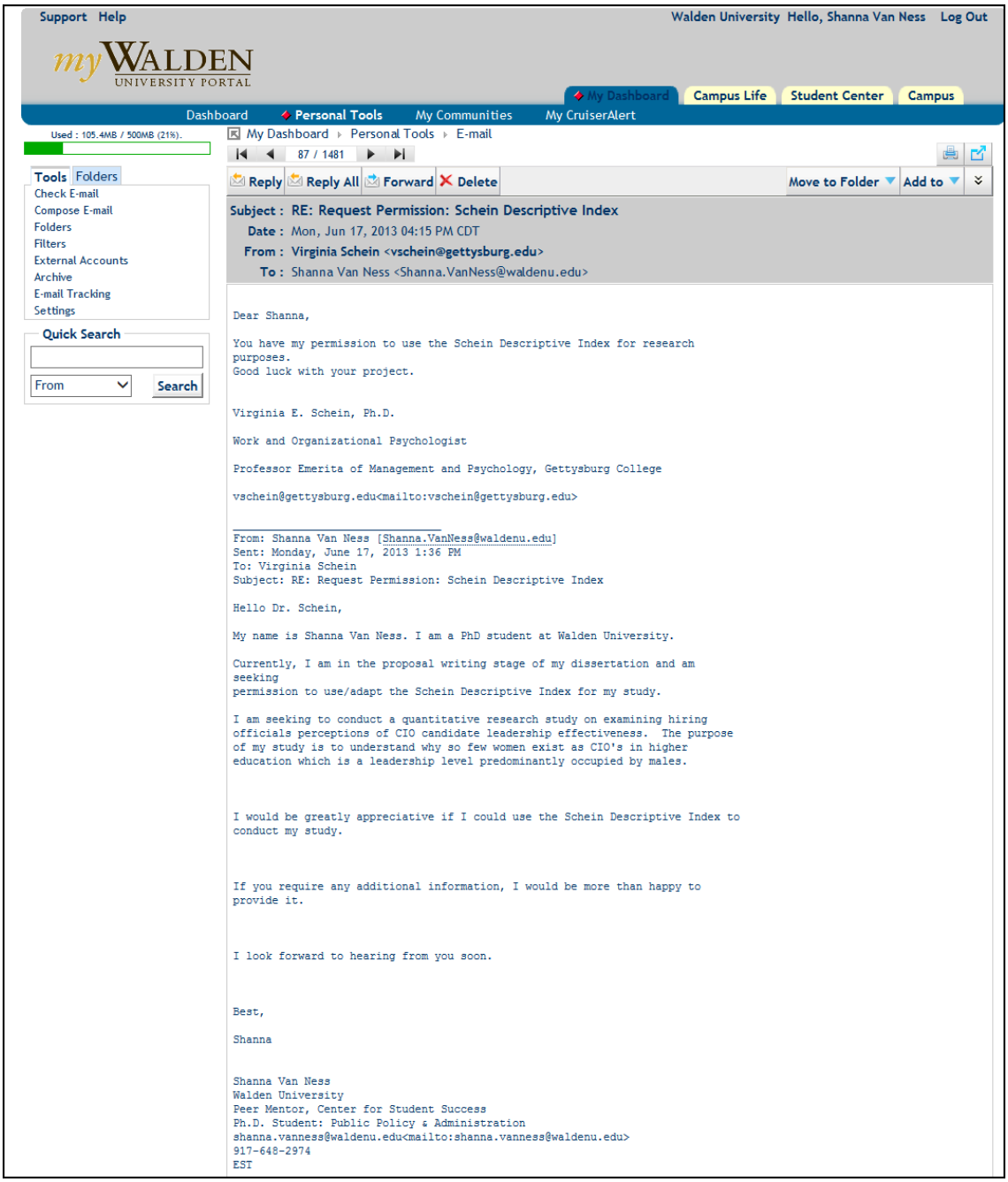
If you wish to withdraw from this study you can do so at any time without penalty. Please contact me in you have any questions.

Sincerely,

Shanna B. Van Ness

Appendix F: Permission to use the Schein Descriptive Index

Dr. Virginia Schein granted permission to use the Schein Descriptive Index (Schein, 1973) via email communication.



Support Help

Walden University Hello, Shanna Van Ness Log Out

myWALDEN UNIVERSITY PORTAL

My Dashboard | Campus Life | Student Center | Campus

Dashboard | Personal Tools | My Communities | My CruiserAlert

Used : 105.4MB / 500MB (21%).

Tools Folders

Check E-mail
Compose E-mail
Folders
Filters
External Accounts
Archive
E-mail Tracking
Settings

Quick Search

From Search

My Dashboard ▸ Personal Tools ▸ E-mail

87 / 1481

Reply | Reply All | Forward | Delete | Move to Folder | Add to

Subject : RE: Request Permission: Schein Descriptive Index
Date : Mon, Jun 17, 2013 04:15 PM CDT
From : Virginia Schein <vschein@gettysburg.edu>
To : Shanna Van Ness <Shanna.VanNess@waldenu.edu>

Dear Shanna,

You have my permission to use the Schein Descriptive Index for research purposes.
Good luck with your project.

Virginia E. Schein, Ph.D.

Work and Organizational Psychologist

Professor Emerita of Management and Psychology, Gettysburg College

vschein@gettysburg.edu<mailto:vschein@gettysburg.edu>

From: Shanna Van Ness [Shanna.VanNess@waldenu.edu]
Sent: Monday, June 17, 2013 1:36 PM
To: Virginia Schein
Subject: RE: Request Permission: Schein Descriptive Index

Hello Dr. Schein,

My name is Shanna Van Ness. I am a PhD student at Walden University.

Currently, I am in the proposal writing stage of my dissertation and am seeking
permission to use/adapt the Schein Descriptive Index for my study.

I am seeking to conduct a quantitative research study on examining hiring officials perceptions of CIO candidate leadership effectiveness. The purpose of my study is to understand why so few women exist as CIO's in higher education which is a leadership level predominantly occupied by males.

I would be greatly appreciative if I could use the Schein Descriptive Index to conduct my study.

If you require any additional information, I would be more than happy to provide it.

I look forward to hearing from you soon.

Best,

Shanna

Shanna Van Ness
Walden University
Peer Mentor, Center for Student Success
Ph.D. Student: Public Policy & Administration
shanna.vanness@waldenu.edu<mailto:shanna.vanness@waldenu.edu>
917-648-2974
EST

Appendix G: Confidentiality Agreement

Name of Signer: RIAN BRIDGEMOHAN

During the course of my activity in analyzing data for this research study "Hiring Officials' Perceptions of Gender & Requisite Managerial Characteristics when Selecting CIOs", I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

- I will not disclose or discuss any confidential information with others, including friends or family.
- I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
- I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
- I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
- I agree that my obligations under this agreement will continue after termination of the job that I will perform.
- I understand that violation of this agreement will have legal implications.
- I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature:  Date: 8/10/2015

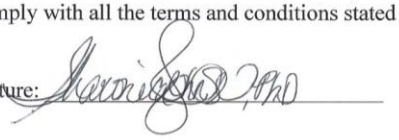
Name of Signer: **Sharonica Johnson, PhD**

During the course of my activity in analyzing data for this research study "Hiring Officials' Perceptions of Gender & Requisite Managerial Characteristics when Selecting CIOs", I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement, I acknowledge and agree that:

- I will not disclose or discuss any confidential information with others, including friends or family.
- I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
- I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
- I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
- I agree that my obligations under this agreement will continue after termination of the job that I will perform.
- I understand that violation of this agreement will have legal implications.
- I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

By signing this document, I acknowledge that I have read this confidentiality agreement and I agree to comply with all the terms and conditions stated above.

Signature:  Date: 8/10/15