School Counselors' Perceptions about Female Participation in Non-Traditional Secondary Career and Technical Education (CTE) Programs

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SCHOOL COUNSELORS' PERCEPTIONS ABOUT FEMALE PARTICIPATION IN NON-TRADITIONAL SECONDARY CAREER AND TECHNICAL EDUCATION (CTE) PROGRAMS

by

Rashida Khatoon Malik

A Dissertation
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Faculty of The Graduate College
In partial fulfillment of the
Requirements for the
Degree of Doctor of Philosophy
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The purpose of this study was to examine high school counselors' perceptions of female participation in nontraditional secondary Career and Technical Education (CTE) programs. The data for this study was collected from high school counselors in Michigan by sending them a survey containing 25 items. The first section of the survey covered the demographics of the participants. The second section consisted of eight belief statements about counseling female students into nontraditional CTE programs. The third section of the survey had 12 belief statements about female participation in CTE nontraditional programs. The survey responses were based on five-point Likert scales. The belief statements were used to describe the perceptions of school counselors in Michigan high schools toward female participation in nontraditional CTE programs.

The latent dimensions of school counselors' perceptions were examined to determine the relative influence of their gender, age, level of education, years of employment in education, years of employment in school counseling, and the school size. The principal components analysis (PCA) with varimax rotation was used to find their perception dimensions. Multiple analysis of variance (MANOVA) was used and Wilkes Lambda multivariate statistics found that gender, level of education,
and the school size had significant impact on school counselor’s perceptions toward female participation in non-traditional CTE programs.
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I could not have achieved the completion of this dissertation without God's love and grace. The writing of a dissertation can be a lonely and isolating experience, but it is obviously not possible without the personal and practical support of many people. I am greatly indebted to my advisor Dr. Carl Woloszyk for his patience, meticulous guidance, invaluable assistance, and encouragement throughout the dissertation process. My sincere gratitude also goes to Dr. Linda Dannison, Dr. Richard Zinser, and Dr. John Chapman who have generously given their time and expertise to better my work. I thank them for their contributions and their good-natured support.

I would like to dedicate this Doctoral Dissertation to my mother, my father, and my grandfather. They have taught me to believe in dreams and to accomplish them; my gratitude and my love to them are beyond words.

I would also like to acknowledge the love, inspiration, and patience of my sister and brother, their spouses and their children, and my entire Malik Clan. There is no doubt in my mind that their love, prayers, and continual support, kept me going. Their constant love and caring are the reasons for where I am and what I am.

Rashida Khatoon Malik
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CHAPTER I
INTRODUCTION

Background

The gender imbalance across some occupations came to be acknowledged as a socioeconomic problem in 1970s. Federal legislation began to address the issue by aiming at education, training, and employment programs. Title IX of the Education Amendments of 1972 and subsequent Executive Order No. 11246 in 1978 prohibited discrimination by schools and by contractors receiving federal funds. Title IX was the first comprehensive federal law to prohibit sex discrimination against students and employees of educational institutions. It is one of several federal antidiscrimination laws that define and ensure equality in education. The Carl D. Perkins Vocational Education Act of 1984 established state equity coordinators and set aside program funds specifically for gender equity and single parents/displaced homemakers. The Nontraditional Employment for Women Act of 1991 amended the Job Training Partnership Act of 1982 to require employment goals for women in nontraditional occupations (NTOs), and Women in Apprenticeship Occupations and Nontraditional Occupations (WANTO) Act of 1992 provided technical assistance to employers and unions for integrating women into NTOs (Kerka, 2003).

Title IX legislation was intended to provide relief to individuals who were suffering from some form of exclusion or discrimination. The Equal Educational Opportunities Act of 1974, and the Carl Perkins Vocational Education Act of 1984 were introduced to promote gender equity in career and technical education (CTE) programs. Gender equity achieved a significant boost with the passage of these federal laws. The
legislative support provided motivation and incentives to decrease gender bias and increase options for female students in career and technical education. After more than 30 years since the passage of the Title IX, some improvement has been achieved, but the problems of gender bias and segregation in some CTE programs still exist. Title IX, attempted to insure that both men and women were provided with an equal opportunity to be their best.

Since 1972, and the passage of Title IX, there has been a huge change in the general thinking and expectations of what women can achieve. Though women have participated and made contributions in every field of life, as their male counterparts, significant disparities persist in career and technical education (NCWGE, 2001).

Evidently, some barriers remain in the legislative and educational remedies attempted over 30 years (Burge & Culver, 1990). Many factors may be responsible for some of these barriers. Some barriers are complex and interrelated and restrain female participation in nontraditional educational programs (Sheng et al., 1996).

Career and technical educators (formerly known as vocational educators) are alleged to have limited female access to nontraditional programs in both obvious ways and sometimes in very subtle ways (Sadker & Sadker, 1994). Career and technical educators are sometimes blamed for transmitting their personal biases toward female participation in nontraditional programs by using gender-biased and stereotyped materials for assessment, guidance, and counseling (Sheng et al. 1996). In career and technical education programs, counselors are instrumental with career planning, goal-setting, establishing areas of interest, and career exploration to assure that all students have equal access to career planning. Therefore, the counselors are blamed more than anybody else
in career and technical education for the narrow gender-based range of career options (Edwards, 1997).

School counselors play a very intense role with students regarding awareness about occupational choices. They can support students in programs that are nontraditional; foster career decisions based on skills, abilities, and goals rather than gender; and, encourage females to enter high-wage, new, and emerging technical occupations (Darling & Sorg, 1993). Some research has documented discrimination against women by teachers and guidance counselors who advised young women to follow more traditional career fields. There is also evidence that gender stereotyping is common among counselors and that they often discourage females away from certain preparatory courses, especially in mathematics and the sciences that may lead their careers in nontraditional fields (Eitzen, 2000).

Statement of the Problem

Recent studies have shown that career and technical educators are aware that gender segregation and gender discrimination exist and still have a baneful effect on access (Hargroder 1998; Silverman 1999; & Sheng et al. 1996). All educators agree that this is a serious situation, since females still constitute a small minority in male-dominant programs and that gender disparity can affect educational outcomes for students (Koch & Irby, 2002; Grossman & Grossman, 1994).

McBride (1993) states that females contemplating entering nontraditional programs face numerous barriers, and one of them is gender stereotyping. In this regard, some researchers have cited the power of counselors to support a “status quo” model of career assistance, rather than a counselor as “a change agent”
model (Hansen, 2003). The counselor's role as an advocate and change agent offers a major challenge to changing the stereotypical thinking of individuals, but also changing the gender segregated educational system. Schneider (1993) found that "impetus from school, guidance counselors, or other adults" to encourage interest in nontraditional occupations (NTOs) "was conspicuously absent" (p. 43). Career counseling should broaden choices for all students, but "few counselors are actually trained to deal specifically with the vocational needs of nontraditional students" (Florida, 1998, p. 32). School counselors also may discourage girls from pursuing scientific or technical occupations (Betz & Fitzgerald, 1987). Though most school counselors do not actively discourage girls, their unconscious signals may impact female students' participation in nontraditional CTE programs.

School counselors can be instrumental in encouraging career aspirations, by providing accurate information about local and national labor trends to help students make better informed choices (Shoffner & Vacc, 1999). They work with students, teachers, parents, and administrators to help ensure that students' educational, vocational, and emotional needs are being met. School counselors are perceived as problem-solvers and play a critical role in providing appropriate career education and guidance for all students.

The importance of the role of school counselors is irrefutable, but little research is available documenting their positive role in schools (Whiston & Sexton, 1998). Due to the absence of relevant research regarding the school counselors' perceptions toward female participation in career and technical education, limited information is available on
the role and the perceptions of school counselors. The present study was an attempt to assess the perceptions of school counselors in relation to this issue.

Career and technical education (CTE) is an effective way for preparing students to join the workforce and to attain skilled jobs in today’s very competitive labor market (Buzzle, 1993). Since career and technical education programs are not limited to a specific gender, students can explore careers regardless of their gender. CTE provides opportunities for students to explore careers that are nontraditional for their gender. Unfortunately, CTE is sometimes characterized by unrelenting gender segregation and discrimination. According to Wonacott, (2002) non-equitable access to CTE programs, systematic practices, and expectations drive females into the traditional careers, and hence limit their access to the full benefits of CTE. Though there have been countless programs designed to encourage females to enter nontraditional occupations, most occupations remain strongly gender segregated (Ehrhart & Sadler, 1987).

There are still striking gender disparities in guidance and counseling practices, in CTE program enrollment, in level and quality of classes available in traditionally male and traditionally female CTE programs and in the wages earned by female and male CTE graduates (Gloeckner, & Knowlton, 1995). A growing proportion of the workforce in the United States is either unqualified or under-qualified to fill the technical jobs. The under representation of females in math, science, and workforce development courses which are nontraditional to their gender worsen the situation (U.S. Commission on Civil Rights, 2000). Due to the intensity of parity issues, career and technical education needs to develop initiatives and strategies to encourage and accommodate female students in nontraditional CTE programs (Scott, et al., 2003).
According to the U. S. Department of Labor, Bureau of Labor Statistics (2002), more women are working now than in the past and their working years spent with employers are longer than men. Hence, the current insufficient preparation of many students, particularly minority and female employees, for scientific and technical jobs threatens not only the nation’s ability to compete in the world economy, as well as US security and quality of life.

The United States has become a world leader in giving women the opportunity to receive higher education. Over the past few decades, women have made inroads into many nontraditional occupations, but they still represent a small portion of the nontraditional workforce (Gatta, 2001). Gender equity and female participation in nontraditional programs is still an issue in career and technical education. There are concerns about bias in teacher practices, sexual harassment by other students, gender stereotyping in materials, guidance and counseling practices (Wonacott, 2002).

According to National Coalition for Women and Girls in Education, gender segregation is not a problem in one specific school or a single state; it exists in the overall CTE system (2002).

Purpose of the Study

The purpose of this study was to examine the high school counselors’ role toward female participation in nontraditional secondary CTE programs. Appropriate career counseling and advising plays a key role for secondary students selecting CTE programs and it is a crucial element in career selection for women. Due to existing stereotyping, women are often unaware that they are appropriate candidates for careers in nontraditional technical occupations. CTE programs are often overtly discriminatory.
toward females in guidance, counseling, and advising practices. Females also face enrollment barriers due to the lack of career information concerning nontraditional roles, inappropriate school counseling services, and lack of a supportive network (Bell & Fritz, 1992).

Gender bias perpetuated by families, peers, educators, counselors, and society has effectively reduced the number of women who are willing to try careers in nontraditional areas. Women can make an effective contribution to the economy so their role as the potential labor force cannot be ignored (Gatta & McKay, 2003). The doors to nontraditional occupations need to be unilaterally open to all regardless of gender. Career and technical education can be the ticket to economic independence for female students, but biased career counseling, recruiting, sexual harassment, and differential treatment in the classroom are some of the factors that push them away from the CTE programs leading to careers that provide economic security (Scott et al., 2003). The theme of the most recent research deals with the concept of 'gender equity', which is instrumental in addressing the hurdles, women face in career choices. To make more young women successful in life and with their career goals, there is a need to address the issue of gender segregation in career and technical education.

School counselors face evolving demands as society moves into new century (Coy, 1999; Gerler, Ciechalski, & Parker, 1990; Sears & Coy, 1991). The perceptions of school counselors regarding what they believe with respect to female students' participation are important if counselors influence participation in nontraditional CTE programs. Hoyt et al. have suggested that "counselors change themselves in ways that
will better enable them to play a proper and useful role in meeting career development needs through tech prep and other 'schooling-to-employment' programs" (1994, p. 2).

In the words of Hinkle (1993):

Counselors should allow students to make their own choices and not speak or think for the students, and provide them opportunities and assist in decision making process ..........sex role stereotyping can be defined as preconceptions that limit both men and women in fulfilling their potential, dreams and goals (pp. 1-2)

Nevertheless, a general lack of research exists on the counselor’s role as a facilitator for gender equity in CTE programs and about their perceptions toward female participation in nontraditional CTE programs. This study focuses on high school counselors in Michigan, as to how they perceive the participation of female students in secondary nontraditional CTE programs. This study also investigates some of the factors which may covertly counselors’ perceptions regarding career counseling and advising of female students.

Research Questions

To address the issue of counselors’ perceptions toward female participation in nontraditional CTE program three basic questions were investigated:

1. What are the high school counselors’ perceptions toward female participation in nontraditional secondary CTE programs?
2. What are some of the underlying beliefs that affect school counselors’ perceptions toward female participation in nontraditional secondary CTE programs?
3. Does difference in gender, age, level of education, years of experience in education, years of experience in counseling and school size affect school counselors' perception of female participation in nontraditional CTE programs?

The Need for the Study

Female students are often faced with discriminatory practices throughout their educational journey particularly if they want to follow a nontraditional path for their future. Gender biases may be perpetuated by numerous factors, and discourage female students to explore occupational choices.

School counselors are positioned in schools to assist all students in career planning, to motivate them to learn academic and occupational skills, to be resilient and to learn all career competencies required to make a successful transition to their adulthood (Herman et. al., 2003).

School counselors are often alleged to act as gatekeepers rather than as advocates for the students they serve (Hart & Jacobi; House & Martin, 1998). School counselors sometimes deliberately and often unconsciously influence female students' career choices as a result of beliefs and assumptions that they hold.

The role of school counselors is increasingly being scrutinized by school authorities to determine the effectiveness of appropriated services to students (Field & Hines, 2002). Evolving technology, customer expectations, and the changing employer demands, require different student readiness skills and school counseling approaches (Feller, 2003).
The role of school counselors has shifted from an ancillary service provider to full partner in the educational process (Johnson, 2000). Many counselors are struggling with different demands and definitions of their professional roles (Burnham & Jackson, 2000; Herr, 2002). Limited studies have been done on the role of school counselors regarding the gender counseling issue. Further, very limited research has been conducted regarding the perceptions of school counselors toward female participation in nontraditional CTE programs. The available research does not address the issue of counselors’ perceptions regarding services to CTE students. Knight’s study investigated the role of teachers and school counselors with respect to students’ enrollment in nontraditional vocational programs (1983). In another study, conducted in Pennsylvania, students’ attitudes were studied toward nontraditional career choices and how school course selection was influenced by school counselors (McKenna & Ferrero, 1991).

Goldsmith et al. (1991) studied the role of the school counselor as a contributing factor to students’ career choices with respect to gender. Sheng et. al. (1996) conducted the study in Georgia in two-year post secondary technical institutes. Their study investigated vocational educators’ perceptions toward female participation in nontraditional postsecondary vocational programs. Another study examined the enrollment issues in nontraditional vocation education and indirectly mentioned the role of school counselors (Edwards, 1997). A study by Kitchen in 2001 refers to the differences in perceptions of vocational and non-vocational counselors regarding vocational education.

Most of the research indirectly documented the school counselor’s role as a contributing factor to the career choices of students. The existing body of literature shows...
an absence of research particularly on school counselors’ perceptions toward gender equity and female participation in nontraditional career and technical programs. School counselors have an ancillary role in students’ life regarding their career and occupational choices (Herr, 2000). Counselors play a significant role in ensuring every student’s success and in removing barriers to academic and occupational goals (Paisley, 2003). Therefore, there is a need to investigate school counselors’ perceptions toward female participation in nontraditional CTE programs.

Limitations of the Study

The first limitation of this study is related to its population. The present study only examined high school counselors in Michigan. Therefore, findings may not be generalized to other high school counselors in other states.

The second limitation is related to the extent to which the findings can be generalized beyond the context studied in the research. The present study looked into a very small aspect of the issue, because career choices may be influenced by many other factors such as perceptions of parents and family, other adults, imitations, role modeling and other influence groups (Knight, et al., 1983; McKenna & Ferrero, 1991; Read, 1991; and Gutbezahl, 2001). These individual groups influence nontraditional vocational career choices of students (Edwards, 1997). Due to the strong influence of the all other factors on occupational choices, and without examining all relevant factors, the study does not provide the full understanding of the issue of female participation in nontraditional CTE programs.

The third limitation of the study is related to the instrument used for data collection. The survey instrument used a five-point Likert scale, with no open-ended
questions. The inclusion of open-ended questions on the survey could have enabled the researcher to collect responses that might not otherwise be drawn through a forced-choice type questionnaire.

The fourth limitation of the study was that school counselors' perceptions were measured only toward female students in nontraditional CTE programs; the study did not include male students participating in nontraditional CTE programs.

The last limitation of the study was that school counselors' perceptions were assessed by their beliefs. In real life, beliefs may be different from actual behavior. By using belief statements, the study could not assess the actual practice of school counselors toward female participation in nontraditional CTE programs.

Despite the limitations of this study, the results indicated that the perceptions of school counselors toward female participation was quite positive with the majority of counselors agreeing that female students should be provided opportunities for full inclusion in nontraditional CTE programs.

Summary

Gender equity in education is one way to eliminate sex role stereotyping and sex bias from the educational process, thus providing the opportunity and an environment to validate and empower individuals as they make appropriate career and life choices (Hilke & Conway, 1994). Societal changes over the last four decades have given a new horizon to understand the expanding opportunities for women. The preamble (Valentin, 1997) to Title IX states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any educational programs or activity receiving federal assistance" (p. 1).
School counselors have a key role to prepare students for the practicalities of workplace. So it is very crucial that school counselors must become aware to the persistent negative effects of stereotyping gender-role expectations. This study gives insight into their beliefs about counseling and participation of female students in secondary career and technical education (CTE) programs. School counselors should be central players in promoting gender equity so that all students can accomplish their career dreams and aspirations regardless of their gender. According to Owens et al. (2003):

To understand the position of girls and women in education requires an understanding of changing structures and complex processes and a commitment to breaking down the barriers, which continue to result in a female disadvantage. If America is to hold the best possible future for our people and civilization, she cannot afford to waste a primary resource—our nation’s girls and women. (p. 3)
CHAPTER II
LITERATURE REVIEW

Gender Equity in American Education

Historically, career and technical educators took their cues of what and whom to teach from the needs and desires of the workplace. In the beginning, this teaching along with theories of career development and work, focused almost absolutely on men (Roby, 1976). However, the increase of women in the workplace, led a debate on educating women for new roles in various careers and programs (Hyslop, 2000).

According to Sadker and Sadker (1994) it took three hundred years for girls to reach full participation in America's educational system and it is still an ongoing struggle. Girls are still fighting against sexism and gender biases in education. Primarily, vocational education is a combination of practical and applied learning which enables students to connect school and work and that is why vocational education becomes elementel for gender equity (Gordon, 2003).

The years of schooling for women, was thought to not automatically translate into improved economic and social status. The imbalances in gender distribution across occupations were considered a socioeconomic issue. In fact, developing gender equity in education through development of occupational skills and employment possibilities for women is a pragmatic economic approach to equity, which can be accomplished through vocational education (Burge & Culver, 1989). Experimental studies have shown that sexist language and sexist instructional materials affect the responses of all students (Vetter, 1993).

The deep-rooted social conceptualization of men as strong and technologically
able and women as physically and technically incompetent is not likely to disappear overnight (Evans et al., 1991; Golombok & Fivush, 1994). People learn to generalize on the basis of sex, and the distinction is embedded in their daily lives without being aware of bias (Valian, 1998).

According to Wajcman (1991), these gender profiles are "the result of different childhood exposure to technology, the prevalence of different role models, different forms of schooling, and the extreme sex segregation of the job market" (p. 42). In everyday life and in their work, women often face many challenges due to gender. According to Brilles (1995), sexual discrimination may be expressed physically, verbally, or non-verbally and it can be cognitive or non-cognitive, traditional, or nontraditional.

In the past, women have been restricted in their labor force participation and in wage earning potential. During most of the twentieth century, an invisible hand divided the courses offered in schools to prepare females and males for careers and workforce skills (NCWGE, 2002).

The educational system in the US has been biased against female education from the very origin. During the colonial period, educational institutions were founded by high-status and influential white men for the education of young white males. Women were excluded from those opportunities, because women were not allowed to officiate in church or politics (Fox, 1997). Women were considered intellectually and morally inferior and were kept restricted to housekeeping and household skills throughout 17th century (Goree, 1993, Lovegreen, 2003). At the end of the century, a limited number of privileged women were benefited by education (Fox, 1997; Sadker & Sadker, 1994). In
the 18th century, separate schools were established for women due to the public demand that women be trained as teachers.

The Civil War contributed in a positive way to the overall educational system. The Civil War led to a decline in male enrollment in higher education. To fill the enrollment gap and to address the economic issues of the time, women were given opportunities to participate in educational institutions (Lovegreen, 2003).

During World War I and World War II, the shortage of male workers and industrial changes created by the wars provided many new work opportunities for women in factories (Gordon, 2003). Economic devastation and the industrial expansion opened the doors for women and provided opportunities to join academic institutions, which were traditionally male (Fox, 1997). Women were finally able to get an education in liberal arts as well as vocational training.

Later, in opposition to mixed schools for male and female students, schools with a religious affiliation began to open where girls were taught basic grammar and arithmetic along with domestic skills, to play the role of an appropriate wife and a good mother (Sadker & Sadker, 1994). Home economics was established at the secondary level as a female program that prepared girls for their roles as wives and mothers while the area of industrial arts was typically reserved for boys. Women were considered incapable or inappropriate for the programs and careers were traditionally perceived as masculine areas (Fox, 1997; Goree, 1993; Gordon, 2003).

The 20th century gave the women increased access to education but despite many advances, women still had a long way to go in getting equal access to all opportunities in education and career opportunities (Goree, 1993). Though women were no longer
perceived as the “mistresses of families” (Willard, 1987), the improvements in breaking down barriers were not fully accomplished.

Career and technical education programs were still predominantly segregated by gender and there are striking disparities in course enrollment throughout the nation. Female students were offered less choices in educational programs. According to National Coalition for Women and Girls in Education:

The 18 career and technical high schools in New York City are highly sex segregated, with the majority of those schools having a student enrollment that is more than 70 percent one gender. The four predominantly female vocational high schools offer, on average, 1.75 Advanced Placement (AP) courses per school, as compared to 11 predominantly male schools, which offer 3.89 AP courses (NCWGE, 2002, p. 23)

In addition, gender-driven expectations and behaviors affected career and occupational choices and continued to send male and females students down very different paths. In research concerning gender related educational issues, Garrod and Taber (1991) found that women did not pursue nontraditional programs in technical fields due to:

A lack of knowledge of career opportunities, gender issues in workplace, the continued existence of sexual discrimination and harassment in male-dominated professions, the pressure of meeting the responsibilities of family, personal commitments while engaged in technical career, and by the long term prospect of professional growth in a male dominated field (p. 20)
Legislative History of Career and Technical Education

Career and Technical Education (formerly known as vocational education) started at the beginning of the century as a state and federal partnership. The Smith-Hughes Act of 1917 provided the first federal funding for public school programs in agriculture, trade and industrial, and home economics education. The first two programs were particularly designed for males, and home economics was designed to educate females for homemaking and homemaking careers (Gordon, 2003). The Equal Pay Act of 1963 was the first legislative step toward gender equity in the workplace, and sought to end discrimination in wages due to gender (Burge & Culver, 1989).

Traditionally, vocational education programs were often intentionally segregated by gender without any legislative direction for change until the passage of Equal Pay (Hayward & Benson, 1993). This Act was considered the first noteworthy legislation relating to workplace equity, because the Act called for the end of discrimination on the basis of gender in payment of wages for equal work. This law was followed by Title VII of the Civil Rights Act of 1964 prohibiting discrimination in work based on sex, race, color, religion, and national rights (Burge & Culver, 1990).

The enactment of Title IX of the Education Amendments of 1972 (National Coalition for Women & Girls in Education, 2002, National Women’s Law Center, 2002), prohibited discrimination on the basis of sex in educational programs. The Act reflected the belief that females could enjoy the same educational opportunities as males, if compliance with strict equity requirements were mandated and enforced.

The Carl D. Perkins Vocational Act in 1984, emphasized gender equity in vocational programs. Individual states were directed to expend funds for programs to
eliminate gender bias and to promote gender equity in career and technical education. The Act was most recently reauthorized in October of 1998, and it provided individuals with the academic and technical skills needed to succeed in a knowledge, and skills-based economy. The Perkins legislation supports career and technical education to prepare its students for both secondary and postsecondary education and the careers by choice (ACTE, 2004).

The two most recent reauthorizations of the Act have made dramatic shifts in the direction of federal vocational education policy to meet the economic demands of changing work force and to prepare students for careers. Lynch stated (2000) "Both of these pieces of federal legislation are essentially grounded in school reform and the mandate to use federal funds to improve student performance and achievement" (p.10). The current Perkins law allows for more state and local flexibility and has raised expectations for students participating in career and technical education programs by holding them to the same high academic standards as all other students (ACTE, 2004).

Undoubtedly, Title IX of the Educational Amendments of 1972 was a milestone in the history of legislation, which barred discrimination due to gender. The Carl Perkins Vocational Education Act of 1984 continued the policies of Title IX, by allocating funds for the promotion of career and technical education.

These two laws brought a remarkable nationwide change to increase gender equity. Before these laws, vocational education was gender-oriented and there was a visible line between masculine and feminine program areas. Although female workers are still more concentrated in certain occupations, enormous progress has been made by entering certain traditional male occupations. Female presence in the once-male-
dominated professions such as medicine, dentistry, and law increased significantly between 1990 and 2000. However, the presence of women in traditionally male technical and trade occupations remained rare (Costello et al., 2003). The female share of employment in occupations typified by high earnings also has grown. According to the US Department of Labor (2003), in 2002, 47.5 percent of full-time wage and salary workers in executive, administrative, and managerial occupations were women, up from 34.2 percent in 1983 (the first year for which data are available).

In 1999, young women, aged 16 to 34, were only 1% of automobile mechanics, 4% of airline pilots and navigators and 10% of electronic technicians compared to young men in the same age category. About half of young women (aged 16 - 24 years) work in jobs that paid an average wage of $338 per week while 60% of young men work in jobs that paid an average wage of $448 per week (Women’s Bureau of the Department of Labor, 1999). This $110 per week wage differential is linked to the different occupations in which women and men are employed. Women employed in nontraditional jobs earn higher wages than women employed in traditionally female occupations.

The overall number of women in the paid labor force has increased by 112% since the 70’s with the wage gap decreasing by 15 cents to 77 cents for every dollar a man earns (AFL-CIO, 2003). In 1950, only one-third of the U.S. labor force was female; by the year 2003 that proportion was approaching one-half (46 percent) and by 2010, women are projected to account for 48 percent of the total labor force (Costello, et al., 2002). Also, the number of working women has grown from 5.3 million in 1900 to 18.4 million in 1950 and to nearly 65 million in 2003 (U.S. Department of Labor, Bureau of
Labor Statistics, 2003). It is projected to increase to 75.5 million by 2010 (U.S.
Department of Labor, Women's Bureau, 2003).

More women are working than ever before in the United States, but they are still
more concentrated in certain industries and occupations, as compared to men. Women
have made progress by taking on new roles in the workplace and entering certain tra­
ditionally male occupations, but they are still facing the problems of gender discrim­
ination in wages and job benefits (Kaiser Foundation, 2002; AFI-CIO, 2003).

Despite nationwide equity efforts through legislation and vocational education
amendments, thirty-two years later, there are still visible and invisible dividing lines up
into male and female careers. During the course of time, steps are being taken to improve
the situation by using a three-pronged approach, combining elements of affirmative
action, employer education, and education in schools. Some progress is made to overturn
traditional hurdles connected with women entering non-traditional occupations, but still a
lot is needed to be done, especially in the area of vocational education (Halloran, 2001).

Gender Equity in the Workplace

Vocational enrollments are still largely gender segregated, although women have
increased enrollment in postsecondary education overall, their numbers remain low in
nontraditional programs. Even in vocational education faculty, women still predominate
in traditional areas like health, home economics, and office occupations and are few in
number in agricultural, trade and industrial, and technology education (Olson 1999).
Wider Opportunities for Women (WOW) studied 15 school-to-work (STW) programs,
finding that six had few or no females; 90% of girls remained clustered in traditional
areas (Milgrim & Watkins, 1994).
Unfortunately, gender equity remains a low priority and is not adequately addressed in career and technical education programs. Choice of school subjects and choice of careers are strongly linked, and girls need to know the current and developing patterns of job availability, skill shortages and that choice of subjects may affect their future. (Francis, 2002; Francis et al. 2003).

Some programs are getting more popular with female students. Professional specialties and administrative/managerial occupations are among the fastest-growing occupational groups (Women's Bureau, 1991). Working women mainly remained in nonprofessional occupations (73%), and nontraditional occupations gains had been minimal (WOW 1993). The services sector, traditionally employing large numbers of women in low-paying jobs, continued to account for the lion's share of newly created jobs (US Department of Labor, 1991).

According to the U.S. Department of Labor (2002), 63 million women were employed and 3.5 million women (5.5% of all working women) were working in nontraditional occupations. Between 1988 and 2002, the number of women in non-traditional jobs remained unchanged at around 3% of the total number of employed workers. Over the past decade, the greatest increase in the number of women working in nontraditional jobs has been in managerial and professional occupations.

An American woman can expect to earn approximately two-thirds the income of her male counterpart (U. S. Bureau of Census, 1992). A primary agent of this discrepancy is the pay disparity between traditionally male and traditionally female occupations (Gray, Huang, & Li, 1993). Discrimination within career fields, high turnover rates for
women, and less seniority within a given occupation also contributed to this earnings gap (U. S. Department of Labor, 1991).

Evidently, some barriers remain resistant to the legislative and educational remedies attempted over nearly three decades. Many factors are to be blamed for the failure of these efforts. Career and technical education always receive derogatory treatment as compared to other academic options, but it continues to demonstrate positive results in high school students' career development (Eliot et al. 2001; Feller, 2003; Maxwell & Rubin, 2000). There are numerous changes taking place, which demand to navigate and re-evaluate students' educational and career needs. Adapting to global competition, evolving technology, and changing workforce needs, have become a necessity for all youth (Feller, 2003).

Buzzel (1993), views vocational education as a way out to address the problem of workforce competitiveness. The continuously changing demands of labor market place a huge responsibility on the overall educational system. Though, there have been countless programs to encourage females to enter nontraditional occupations, most occupations remain strongly gender segregated (Ehrhart & Sadler, 1987). It is increasingly imperative to spotlight the cost of gender equity to change the society and to address the issue in schools.

For a long time women seemed to be the "forgotten half" in career and technical education, as they have been either prepared for occupations in homemaking or low-pay, dead-end jobs. According to Stephenson and Burge, the channeling into traditional gender paths persists in the family and in school, beginning early in childhood (1997). Sometimes students are influenced by visual images of working people in careers and in
textbooks, displays, videos, and curriculum. These images may influence students' gender stereotypes about career options. The way nontraditional occupations are advertised and perceived by the public has a significant impact on those who pursue these opportunities (Kerka, 2001).

Research has also shown that beliefs about gender appropriateness of careers are communicated through various societal and public venues. The media has been a strong tool to convey societal beliefs about men and women. Barbercheck (2001) stated that male characters tend to be portrayed as independent, assertive, technical, and responsible in mass media while women are more likely to be emotional, warm, domestic, weak, and helpless. Knupfer (1998) also found that women are portrayed in advertisements in decorative roles rather than productive roles. These media portrayals help to foster stereotypical beliefs about women, which then impacts women's occupational knowledge and role identification (Gatta & McKay, 2003). The biased presentation of career options may negatively influence opportunities for female participation in nontraditional programs. These female participants could otherwise benefit from a wide range of high-tech skills that offer long-term employment and higher wages.

Nontraditional role models and mentors, peer influence, parents' expectations, instructional strategies, and curriculum materials are some factors, which contribute to students' career choices (American Association of University Women, 2000; Turner et al. 2002; Workforce Preparation Workgroup, 1997-98). Wrightsman and Keaux (1981) identified that perceptions and attitudes have been factors to steer people to assume different occupational and life roles. McBride stated (1993) that females contemplating entering nontraditional programs face many barriers, and one of them is gender
stereotyping. Some researchers blame the power of educators’ perceptions, which discourages students to make certain occupational choices (Snyder, 1988). Research has also indicated that teachers perceived their female students’ abilities less than that of their male counterparts, which is significantly decreasing girls’ performance and aspiration toward science careers (Shepardson & Pizzini, 1992).

Plucker (1996) conducted a survey where teachers expressed that they were not aware of the problem of gender inequity in schools. He also found that due to teachers’ behavior, females developed negative attitudes toward science. Research has also indicated that teachers perceived their female students' abilities to be less than that of their male counterparts. Such differential treatment of boys over girls discourages girls’ performance and aspiration toward science careers (Shepardson & Pizzini, 1992).

Although vocational educators are aware of this serious situation, females still constitute a small minority in male-dominant programs (McBride-Bass, 1993). In a recent study on the continuing female under-involvement in science and nontraditional programs, the following causes were found to be significant: teachers interact more often and in more detail with male students who tend to be more aggressive; female students have a more difficult transition through adolescence than male students; science as a discipline discourages females; society undervalues the role of women and sends mixed messages to females and there is an overall denial of gender biases in the educational system (Graham, 2001).

Female access to nontraditional CTE programs and occupations continue to be limited as historic, cultural, and social gender roles are conveyed to students through family and home life, and often supported by instructors in the classrooms (Sadker &
Sadker, 1994; Seymour, 1995. Since male and female interests match gender stereotypes (Renninger, 2000), these interests often lead them to make stereotype choices (Smith & White, 2002). Research has documented that gender differences would cause stereotypical threats in women but not in men (Quinn, & Spencer, 2001). Women have been found to be more susceptible to stereotype threat effects and that explicit beliefs about gender stereotype are more pervasive among females (Blanton et al., 2002). These explicit beliefs about gender roles may influence women's career choices in math science and in other nontraditional fields (Schmader, et al., 2004).

The past two decades have seen a substantial increase in the opportunities, training, and encouragement given to girls and women to enroll in nontraditional education programs. Statistics affirm that there has been some progress made in the number of women who choose to major in nontraditional disciplines, but it was only a fraction of compared to men (National Center for Education Statistics, 2003).

Nash (1991) stated that regardless of their increasing presence in the workplace, women continue to be concentrated, in nearly the same proportion today as in the 1960s, in "traditionally female" occupations such as clerical work, nursing, teaching, food service, library work, retail sales, and domestic work. According to Stenberg & Tuchscherer (1992), a meager 9% of working women are found in nontraditional occupations.

Not only are more women working outside the home, but also more likely than ever to carry financial responsibilities for the family. Career and technical education is in a unique position to prepare women to meet the changing demands of workplace due to
its direct link between school and work, but most of vocational occupations are strongly gender segregated. As late as the 1990, Burge and Culver stated:

Like all other areas of education, vocational education reflects the gender inequities arising from our society. Most of the areas of vocational education are heavily gender-typed; and, therefore, nontraditional for one gender or the other. Among vocational programs, cosmetology, business, health occupations, and home economics have traditionally been the domain of women; auto mechanics, industrial arts, and agriculture have been perceived as belonging to men. (p. 160)

In fact, most of the traditional vocational education programs tend to be heavily gender-typed and nontraditional for one gender or the other (Burge & Culver, 1990). Despite the promise of greater wage security, which nontraditional vocational programs provide, females are seriously under represented in courses that can prepare them for high skill, high wage careers (National Women Law Center, 2001). With all the efforts of school districts to incorporate career preparation into traditional academic schools by offering innovative programs such as career pathways, industry-sponsored certification programs, or even entire career-focused academies for students, only 13.1% of female students nationwide were enrolled in vocational programs nontraditional for their gender (Bitters & Foxwell, 1990).

The American Association of University Women Education Foundation (1998) reported on 14 School to Work sites and found more than 90% of girls clustered in five programs that trained them for jobs in the traditionally female fields of health, teaching, graphic arts, and office technology. Another study of Wisconsin's School to Work
programs showed the similar trends of female students clustering in just a few programs, with 81% of them enrolled in Health or Finance programs (Scholl, & Smyth, 2000). These studies indicated that some School to Work programs may simply be replicating existing sex stereotypes and may not be addressing the law's goal of ensuring every student should be provided equal opportunities to a variety of career.

According to the US Department of Education (2000), high school technical vocational programs, including computer applications, computer programming, data processing, communication technology, electronics technology, and chemical technology were dominated by male students. Despite the increasing importance of computers and high technology in today's workplace female students are less likely to get the necessary training in computers and technology beyond the traditionally female areas of word processing or data entry. This data implies at both the secondary and post-secondary levels, and in both vocational and general academic education (National Women Law Center, 2001). Comparing male and female students participation in career and technical programs, Melymuka (2001), stated that "though teen girls were using computers and the Internet at rates similar to their male peers, they were five times less likely to consider a technology-related career or plan on taking post-secondary technology classes."

Research indicates that in some nontraditional career and technical education classrooms, girls might not be receiving an equal opportunity to learn, by receiving different assignments and fewer opportunities to use the tools necessary for their intended trade (NWLC, 2001). According to a report compiled by Office for Sex Equity in Education, Michigan State Board of Education (1992), one teacher in Michigan reported
that he would only allow female students to operate the required equipment if they had a male student supervising them.

The National Coalition for Women and Girls in Education (NCWGE) reported that gender segregation in career and technical education programs shows that female students still do not feel welcome in many career fields due to gender bias, sexual harassment, and unequal treatment (2002). Given the critical importance of career and technical education providing females with equal preparation and access to work, it seems that vocational education is not doing an adequate job of facilitating females' entry into all occupations. In order to make the promise of career education work for women and girls, the barriers that prevent female students from participating in nontraditional career and technical programs and succeeding in these programs need to be eliminated (Sheng, 1996; NWLC, 2001; & Burg & Culver, 1994).

Gender stereotyping still exists in the society, and schools have the potential to influence those stereotypes. Female students continue to be discouraged from pursuing certain career and technical education opportunities because of gender stereotypes, and the barriers hampering female participation in nontraditional programs are complex and interrelated (Sheng, et al. 1996; NCWGE, 2002). Sex discrimination is present in the form of biased career counseling and recruiting, sexual harassment, and unequal treatment in the classroom. All these factors discourage female students away from nontraditional programs and the economic security that these programs can provide.

The United States Commission on Civil Rights (2000) reported that lack of counseling; stereotypical socialization; discouragement; less aggressive inclusion of parents in designing programs; gender-biased teaching styles, resources, and testing; and
other barriers, are the factors that discourage girls from math, science, engineering, and other technical career fields. Similarly, a Congressional Commission (2000) studying the lack of women in science, engineering, and technology reported that the active discouragement contributed to girls' lack of interest in nontraditional careers in science, engineering, and technology.

Educational policy is also influenced by society, cultural, economic, political, and social factors. Consequently, education policy shapes the role of education and assigns the roles of those who participate in the system (Lucena, 2003). In the educational system, females face a different set of behavioral responses from those expected of males (Sadker & Sadker, 1994; Kerka, 2001). Vocational educators could restrain females' access to nontraditional programs by transmitting their gender biases in classrooms, counseling situations. Therefore, negative perceptions of instructors, counselors, and administrators toward female participation in nontraditional programs and their inappropriate treatment of female students can be a major barrier for females contemplating enrolling in nontraditional programs.

Gender bias can range from a subtle discouragement to a clear refusal to enroll female students in programs considered nontraditional for their gender (Sadker & Sadker, 1994). In either case, the result is to effectively block certain vocational preparation opportunities for females. As Feller (2003) pointed out "school counselors overtly and unconsciously impact student options as a result of assumptions they hold" (p. 269).

Even with all the increased knowledge and awareness of gender equity, the research shows that boys and girls are treated differently in classrooms and schools (Younger, et al., 1999). The Congressional Commission on the Advancement of Women

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and Minorities in Science documented that in post-secondary programs, female students transfer out of science, engineering and technology related majors more often than men due to experiences of gender bias and low faculty expectations. Instructors' conduct that perpetuates sexism and gender bias can influence student participation in courses and can be another factor to limit choices of going into a particular career (Graham, 2001).

In a study, conducted on the reasons for female students not completing an industrial technology class, female students associated their failure to not finding the class relevant, being treated unfairly, and gender stereotypes. After providing the female students a gender equitable environment in the classroom that engaged all students, there was a visible improvement in the completion and success rates of female students (Ryan 1999).

Male students get more time and attention from instructors due to the common belief that boys are good in technical education programs while girls are treated as marginal students (NWLC. 2001). Studies have shown that teachers unintentionally reinforce the sense of invisibility by calling on boys more frequently than girls do, and when they do call on girls, they often avoid asking complex, abstract, and open-ended questions that consistently challenge boys (NWLC, 2001; Mann, 1995).

Research continues to show that classroom teachers provide more attention and direction to male students, addressing male students more frequently by name, and interrupting female students more often than male students. When female students are praised, it is more often for their behavior or appearance, whereas males are commended mainly due to their academic ability and performance (Esler & Eslesr, 2001). If female students ever get any acknowledgement and praise, it is often for their clerical values.
such as neatness, while boys receive praise for intellectual quality (Mann, 1994). In a study, 71% of male teachers believed that male students were more interested in the mechanics of computer technology, and associated male students' success in technology with talent, while female students' success was linked with luck or diligence and not by the talent (AAUW, 2000). Research suggests to eliminate gender biases and stereotypes through the positive portrayal of younger women and to encourage them to enter in nontraditional occupations in science and engineering (Gatta & McKay, 2003).

In career and technical education females students face different kind of discouragements and bias. According to Silverman and Pritchard (1993), girls in Connecticut reported that in technology, education boys made fun of girls who try to use the equipment, girls who were better than boys were receiving a particularly hard time from the boys, and that teachers did not try to correct the behavior.

Esler and Esler (2001), defined teachers as “technicians”, “manipulators” and “innovators”. They further proposed that the first two categories of teachers are not effective as they teach from prepared material, selected portions of prepared curricula, whereas “innovators” appraise the needs of all students, and create the learning experience to address the needs of all students. Burge and Culver (1990) also emphasized that the willingness of vocational educators to be innovative in recruitment and retention activities can make a difference in women's lives.

In addition, educators' perceptions and attitudes may have significant effects on students' behavior (Harvey & Klein, 1985: Spender & Sarah, 1980). Since vocational educators are involved in providing guidance and education and their influences can
greatly shape and promote students' career choices, it is important that the current situation be assessed.

Role of School Counselors in Career and Technical Education

All types of educators, particularly those in CTE, in collaboration with counselors, may influence the career choices of female students in different occupational programs. Career and technical programs continue to use career-counseling methods that reinforce existing gender stereotypes and discourage female students from pursuing nontraditional vocations (NWLC, 2001). Career counseling sometimes is not designed to expose all students to a variety of career options. Counseling programs may simply reinforced outmoded stereotypes regarding work (Silverman & Pritchard, 1996). As Eitzen et al., cited:

High school guidance counselors may channel male and female students into different (i.e., gender stereotyped) fields and activities. There is evidence that gender stereotyping is common among counselors and that they often steer females away from certain college preparatory courses, especially in mathematics and the sciences (2000, p. 259)

Another factor in school counseling, which may influence students' career options, is standardized interest inventory assessments. The standardized tests have played a major role in allocating educational opportunities to female students. However, these tests frequently have been a gatekeeper, barring access to progress, their success in competitive job markets and the key to economic security (AAUW, 1992). There is evidence that aptitude tests have themselves been sex-biased, listing occupations as either female or male and despite changes in testing, counselors may inadvertently channel
students into traditional gendered choices (Connor & Vargyas, 1992; Eitzen et al., 2000). Many of these assessment tools have an inherent gender bias that lead female students towards traditionally female careers (Farmer, 1995).

Sometime female students do not receive fair treatment in guidance and counseling from school counselors due to stereotyped assumptions. In one school, the guidance counselors simply assumed that girls would not be interested in the traditionally male skilled trades offered, because young ladies do not like dirty or heavy work. Counselors failed to encourage girls to consider enrolling in nontraditional programs and even actively discouraged girls who expressed interest in non-traditional programs (NWLC, 2001). Sometimes school counselors may simply conclude without basis that technical and scientific careers may not be realistic for female students. Moreover, many times this behavior was based on cultural stereotypes about appropriate gender behaviors. In another study, one female student reported, “she wanted to do something in medicine, but her school counselors discouraged her” (Ginorio, & Huston, 2001).

In a qualitative study conducted by Gatta and McKaya (2003), many female students reported that their school counselors discouraged them from going into non-traditional fields. Female students come across different kind of problems in career and technical education programs and other factors influence the enrollment of students in nontraditional programs. Edwards (1997) pointed out that students’ greatest source of support was families, and many student were not given sufficient program information, since school counselors were not adequately trained in recruiting and guidance techniques.
In a similar study when the perceptions of vocational and non-vocational counselors’ were investigated regarding vocational education, both groups of counselors were found supportive (Kitchen, 2001). However, the vocational school counselors were strongly supportive in their attitudes toward career and technical education, as compared to non-vocational school counselors. Kitchen also found that tenure and race caused significant differences in school counselors’ perceptions regarding vocational education.

Robbin (1992) stated in a study about gender equity in career and technical education, that few students felt that their junior high school guidance counselor had helped students consider a wide range of career choices, including nontraditional choices. School counselors were seen to have a significant influence on students’ career choices and their postsecondary options (Paisley, 2003). A growing body of research emphasizes the positive role of school counselors in promoting successful career choices for all students (Herr, 2000; Feller, 2003). School counselors are ideally positioned to carry out equity and advocacy for all students, but they often function more as gatekeepers than as advocates for students’ academic and career interest (Hart & Jacobi, 1992; House & Martin 1998). School counselors need to be cognizant of workplace and workforce changes to assist all students with lifetime learning and work transitions (Feller, 2003).

The new knowledge economy is changing schools, workplace, and career development; and, consequently the role of school counselor has also changed (Jarvis & Keeley, 2003). The changing economy requires a new approach to facilitate career development for all students to identify broad career choice and prepare them for multiple roles within those choices. Students need to have transferable employability and personal management skills, because acquisition of these skills increases their chances
and opportunities for workplace success and success in life (Jarvis, 2003). The need of students to build their careers in an efficient way places more responsibility on school counselors and they need to infuse advocacy into their work for equity and social justice for all students (Bemak & Chung, 2005).

Though it is not clearly the role of counselors alone, there is agreement that counselors play an important role in helping to remove and create options for both genders (House & Hayes, 2002; Herr, 2002; Paisley, 2003). Career counseling should broaden choices for all students, but "few counselors are actually trained to deal specifically with the vocational needs of nontraditional students" (Florida 1998, p. 32). Schneider (1993) found that "impetus from school, guidance counselors, or other adults" to encourage interest in nontraditional occupations (NTOs) "was conspicuously absent" (p. 43).

There are conspicuous gender disparities in guidance and counseling practices, in CTE program enrollment, in the level and the quality of classes available in traditionally male and traditionally female CTE programs and in the wages earned by female and male CTE graduates. Interest and assessment is part of every student's entry into career and technical education. And, although it is now illegal to use the assessment material, which differ by gender, assessments still rely on the assessor's interpretation of data on the student's interests. Students respond to many unconscious signals sent by the assessors or counselors through the material or guidance given to the students. Hinkle (1993) talks about the counselor's importance in promoting bias-free career planning by stating, "Counselors need to be aware and cautious about personal prejudices and biases when counseling students. Upbringing, demographics, role models, educational system, and
leaders are examples that influence the way individuals view nontraditional careers”
(p. 12).

Summary

The literature reveals that for several decades, females seemed to be the "forgotten half" in career and technical education because they have been either prepared for occupations in homemaking or low-pay, dead-end jobs. This neglect ultimately contributes to inappropriate career preparation and barriers inhibiting female participation in nontraditional programs. These female participants could otherwise benefit from a wide range of high-tech skills that offer long-term employment and higher wages. In the past a non-equitable access to CTE programs and systematic practices and expectations steered female students into home economics and away from being electrician, carpenters, or web designer.

More and more career and technical educators are aware of the fact that gender segregation, and gender discrimination, still exists and still has a baneful effect on access (McBride-Bass, 1993). Although educators agree on the fact that this is a serious situation, females still constitute a small minority in male-dominant programs. Researchers have found that these early efforts to eliminate sex-role stereotyping were somewhat successful in raising initial awareness of the problem. Female enrollments did increase. However, there still is a considerable lack of progress in the area of nontraditional enrollments (Robbin, 1992).

It seems that females contemplating entering nontraditional programs face numerous barriers, and one of them is gender stereotyping (McBride-Bass, 1993). In this regard, some researchers have cited as problematic the power of educators to insist that
students conform to the educators' imposed perceptions and occupational choices (Snyder, 1988). Nevertheless, a general lack of research exists on vocational educators' and school counselors' perceptions toward female participation in nontraditional programs.

There seems to be an agreement that counselors should play a major role in helping to remove barriers and create options for both sexes and that nonsexist counseling is essential for optimal growth of students. Focusing on counselor roles specifically, Hoyt and Hughey (1994) recommended that "counselors change themselves in ways that will better enable them to play a proper and useful role in meeting career development needs through tech prep and other 'schooling-to-employment' programs" (p.2). The new roles and responsibilities proposed by Hoyt and Hughey include assisting all students with individual career plans, informing all students about career opportunities, and providing career development activities in the classroom. Professional development was seen as vital to ensuring that counselors would be prepared to perform these new roles.

Gender equity is a broad social issue that can be profoundly influenced in the field of education. The goal of education is to provide opportunities to gain knowledge, skills, and attitudes that prepare young people for the adult world. To accomplish this purpose, schools should follow goals and objectives, which communicate a philosophy of equality for all. The climate of equitable learning can help all students become aware of the careers available to them and help prepare them for changing roles at home and in the workplace. Biased opportunities and differential expectations resulting from sex bias and role stereotyping can cause students to lose the freedom of career choice and limit their ability to learn and to succeed. Furthermore, sex bias and stereotyping may negatively
affect a state's economy and quality of life by not utilizing the skills and talents of all students most effectively (Wisconsin Department of Public Instruction, 1990).

The literature review also reveals that school counselors have a significant role and responsibility to help all students regarding their academic and career options. Counselors need to provide evidence of positive impacts on both male and female students (House & Martin, 1998). School counselors should be aware of social, political and economic realities and should aim to address these issues while providing counseling services to students (Bemak & Conyne, 2004).
CHAPTER III
DESIGN AND METHODOLOGY

This chapter outlines the research methodology and the research design employed in the study. The chapter also explains the selection of sample, the instrumentation used in the study, and the form of analysis used with the collected data.

Purpose

The primary purpose of this study was to investigate high school counselors' perceptions toward female participation in nontraditional secondary programs. Also, selected counselor variables including gender, age, educational level, years of experience in education and counseling have been examined to compare differences, if any, on counselors' perception toward female participation in nontraditional secondary programs.

School size, particularly with regard to high schools, is an issue of strong interest and concern among education reformers, teachers, parents and policymakers. Therefore, school size factor was also included in this study. Educators have been looking at school size in a serious way for at least the past three decades (Cotton, 1996; Nachtigalm 1992; and Nathan & Febey, 2001). As a matter of fact, research on high school size conducted in the past 30 years advocates that there is a need to move to much smaller schools (Gregory, 2000; Wasley et al. 2001). Large school size discourages students' attendance and smothers their enthusiasm for involvement in school activities (Klonsky, 1995; and Raywid, 1995). Large schools have lower grade averages and standardized-test scores coupled with higher dropout rates and more problems with violence, security, and drug abuse. Though school size, of course, has little direct effect on how schools function, it is
a set of mediating variables that has the more direct impact to which we should direct our attention (Roeder, 2002).

Research Design and Instrumentation

A survey technique was employed to investigate into the perceptions of high school counselors in the state of Michigan. The survey titled “School Counselors’ Perceptions about Female Participation in Nontraditional Secondary Career and Technical Education (CTE) Programs” was mailed to the high school counselors in the state of Michigan. The survey consisted of a five-point Likert scale containing 25 items and comprised of three sections. The first section dealt with the demographic information of the participants (high schools counselors) and level of education including years of experience in education and in counseling. The second section contained belief statements about counseling female students and the third section contained belief statements about the female participation in CTE nontraditional programs. The survey instrument is presented in Appendix A.

The survey employed in the study was a slightly modified version of the questionnaire used by Sheng et al. (1996) in a similar study to investigate the vocational educators’ perception toward female participation in nontraditional post-secondary vocational programs. The original questionnaire had two sections. The first section had 22 perception statements and the second section was about the demographic information of the participants in the study.

A pilot study was conducted to assess content validity, on the revised instrument. According to Polit & Hungler (1999), the content validity of an instrument is very subjective and unavoidably based on judgment and there are not objective methods to
assess the adequacy of the contents of an instrument. Polit and Hungler suggested to consult the "experts in the content area" to analyze proportion and appropriateness of the content of the items.

To ensure the questionnaire's validity and reliability after survey changes, it was piloted on a group of high school counselors. Feedback was solicited from seven practicing high school counselors that were not included in the actual study. The advisor and the members of the researcher's doctoral committee also approved the changes. To minimize misinterpretations, on the final copy of the survey, five revisions were made by the major advisor and the researcher. With minimal recommended changes (e.g. the word 'vocational' was replaced by 'CTE'), and minor rewording of the belief statements the survey was customized for the study.

The final survey consisted of a total of 25 questions. The first five questions in section one were about the demographics of the high school counselors. The second section of the survey consisted of eight questions on belief statements about counseling female students into CTE programs.

The third section of the survey consisted of twelve questions, pertaining to beliefs about female participation in secondary nontraditional CTE programs.

The Selection of Sample and Method of Data Collection

The population for this study was selected from the counselors of public high schools in the state of Michigan. The database, obtained from 2004-05 Michigan High School Athletic Association listing of Michigan High Schools, was used to identify the population under study. A random sample was drawn for each school classification (i.e.
A, B, C and D) from this population, because each school classification corresponds to the size of enrollment in the school.

Random sampling was applied for the collection of data because it allowed each person in the population an equal chance, and a known probability for being selected. Random sampling is considered a valid quantitative methodology because it allows for generalizability from the sample to the larger population. The probability of sampling error can be computed statistically and it limits the bias of who is/is not included in the sample (Alreck & Settle, 1995).

Though the names of the school and their sizes were acquired from 2004-05 Michigan High School Athletic Association listing of Michigan High Schools (MSHAA), a few discrepancies were found in the information. Therefore, for survey accuracy, the size names and the addresses of schools were counter checked from Michigan Directory of Education (2004). The samples for Class A, B, C, and D high schools were randomly selected from the total population of 762 Michigan public high schools. The A, B, C and D letters correspond to the school size with respect to the enrollment of students in the schools which is as follow:

2004-05 CLASSIFICATION OF SCHOOLS by MHSAA

CLASS A — 1036 and above
CLASS B — 1035-489, inclusive
CLASS C — 488-234, inclusive
CLASS D — 233 and below

Each survey was coded by the school classification to identify whether the returned survey was from a Class A, B, C, or D high school. To keep the responses
anonymous, the name of individual high school was not published. There were 762 high schools listed in the database from MHSAA, and 448 high schools were randomly selected. A total of three surveys were sent to the attention of the school counseling/guidance office for each Class A high school (A=192), two surveys to each Class B high school (B=128); and, one survey to each class C (C=64) and Class D (D=64) high school counseling/guidance office). The reason for the difference in the numbers of surveys sent to A, B, C and D schools was that the number of counselors varies according to the school size. The data collected from all the returned surveys from school district was tabulated, kept confidential, and anonymous.

Mailing Procedure

A cover letter was sent to the school counselors, inviting them to participate in the study. The cover letter stated the purpose of the study, guaranteed confidentiality and specified the time requirements. The cover letter also explained that the return of survey would be considered as their consent to participate in the study. The school counselors' were provided with an envelope, pre-addressed and pre-stamped to facilitate returning the completed survey. The mailed survey responses were returned to the researcher at the department of Family and Consumer Sciences at Western Michigan University. The cover letter used in the survey is shown in Appendix B.

Three weeks after the initial mailing, a reminder letter along with a second survey package was mailed non-respondents. The participants were asked to return the blank survey or discard it in case they would not want to participate in the study. A copy of the reminder letter is show in Appendix C.
A total of 280 surveys were returned, with a response rate of 62.5%. A majority of the respondents were females and a large number of respondents were from the 50-59 age group. Only 10 participants had EdD/PhD, while 44.6% had MA, and 47.5% had MA+ education.

Only seven surveys were returned as blank surveys. Most respondents took full interest to participate in the survey and filled every section, but a few missing values were found during the data tabulation. It was felt that these missing values were non-intentional on the part of the participants. The survey was completely anonymous which meant that demographic and factual details between non-responders and responders could not be compared.

Methods of Analysis

The research instrument was a quantitative survey; therefore, no qualitative data was collected. As was specified to the respondents, the results of the study are described without any specific analysis related to a specific school, or a particular school counselor. For data analysis purposes, each school was identified by its classification (i.e. A, B, C and D).

With the application of SPSS (Version 12), means and standard deviations were computed across all respondents' ratings on the five-point Likert scale items. Descriptive statistics were used to the high school counselors' perceptions toward female participation in nontraditional programs. The research objectives were described with the combination of descriptive and inferential statistics. Principle Components Factor Analysis was used to identify the underlying themes (of eight scale items that measured the school counselors’ beliefs about female students counseling into CTE program and 12
scale items about counselors' beliefs regarding female participation in CTE nontraditional programs). Factor Analysis is commonly used for data reduction and to sort out underlying themes (Kim, & Mueller, 1978). This method not only identifies the latent variables, which contribute to the common variance in a set of measured variables but also excludes unique variances from the analysis (Fabrigar et al., 1999).

Multivariate analysis of variance (MANOVA) was used to analyze the differences in perceptions among school counselors based on gender, age, level of education, total years of experience in the field of education, the total years of experience as a school counselor, and the size of the school at the 0.05 significance level.

The Human Subjects Institutional Review Board Letter of approval to conduct this study is found in Appendix D.

Summary

In this chapter, the purpose of the study was restated. The research design and the instrument used in the study were explained. The procedure for data collection, mailing procedures, and methods of data analysis were explained.
CHAPTER IV

ANALYSIS OF THE RESULTS

In this chapter, the quantitative results of the study are presented. The study is based on an investigation of three research questions. The questions are consistent with the purpose of this study, which was to provide a better understanding of the perceptions of school counselors toward female participation in nontraditional career and technical education (CTE) programs at the secondary level. The results are discussed with respect to each research question.

The chapter is divided into six sections: (1) demographic statistics about the survey responses, (2) analysis of the results for the first research question, (3) analysis of the results for the second research question, (4) analysis of the results for the third research question, (5) an overall description of the latent variables and their impact on counselors’ perceptions and (6) summary of the chapter.

Demographic Statistics of Survey Respondents

A total of 448 surveys were mailed to school counselors, and 287 surveys were returned. The seven surveys that were returned blank, indicates that seven school counselors declined to participate in the survey.

The majority of the respondents (66.4 %) in the study were females. Out of 280 respondents of the survey, 186 were females and 87 were males. The frequencies and the percentages of responses by gender of the participants are presented in Table 1.
Table 1

Gender of the Participants

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>87</td>
<td>31.1</td>
</tr>
<tr>
<td>Female</td>
<td>186</td>
<td>66.4</td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The participants of the study ranged in age from 22 years to 60 and above. Table 2 identified the age groups of respondent in the study. The majority of the respondents (44.3%) of the study were from age group 50-59. The age group 60 and above showed the lowest percentage (4.3%).

Table 2

Age Groups of the Participants

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-29</td>
<td>13</td>
<td>4.6</td>
</tr>
<tr>
<td>30-39</td>
<td>54</td>
<td>19.3</td>
</tr>
<tr>
<td>40-49</td>
<td>71</td>
<td>25.4</td>
</tr>
<tr>
<td>50-59</td>
<td>121</td>
<td>44.3</td>
</tr>
<tr>
<td>60 and above</td>
<td>12</td>
<td>4.3</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td>2.1</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The majority of the participants of the study held MA (47.5 %) and MA + (44.6 %) education level. There were ten respondents with the highest level of education (EdD/PhD), which represented 4.3% of the total survey respondents. Only 2.1% respondents held BA + 15 education level.

The education of the participants in the study is represented in Table 3.

Table 3

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA + 15</td>
<td>6</td>
<td>2.1</td>
</tr>
<tr>
<td>MA</td>
<td>125</td>
<td>44.6</td>
</tr>
<tr>
<td>MA +</td>
<td>133</td>
<td>47.5</td>
</tr>
<tr>
<td>EdD or PhD</td>
<td>10</td>
<td>3.6</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>280</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The years of employment of the respondents in education ranged from 0-25 years or more. The study showed that majority of the participants (37.1 %) had 25 or more years of employment in education. The years of employment of the participants of the study is identified in Table 4.

The data showed that the majority (25.7 %) of the school counselors' participated in the present study had 0-4 years of counseling experience. The participants' years of employment in counseling, and the frequencies and the percentages are presented in Table 5.
### Table 4

The Participants’ Years of Employment in Education

<table>
<thead>
<tr>
<th>Years</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>20</td>
<td>7.1</td>
</tr>
<tr>
<td>5-9</td>
<td>32</td>
<td>11.4</td>
</tr>
<tr>
<td>10-14</td>
<td>39</td>
<td>13.9</td>
</tr>
<tr>
<td>15-19</td>
<td>41</td>
<td>14.6</td>
</tr>
<tr>
<td>20-24</td>
<td>39</td>
<td>13.9</td>
</tr>
<tr>
<td>25 or more</td>
<td>104</td>
<td>37.1</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>1.8</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Total Surveys Mailed = 448  
Total Response = 280  
Response Rate = 62.5 %

### Table 5

The Participants’ Years of Employment in Counseling

<table>
<thead>
<tr>
<th>Years</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>72</td>
<td>25.7</td>
</tr>
<tr>
<td>5-9</td>
<td>70</td>
<td>25.0</td>
</tr>
<tr>
<td>10-14</td>
<td>52</td>
<td>18.6</td>
</tr>
<tr>
<td>15-19</td>
<td>28</td>
<td>10.0</td>
</tr>
<tr>
<td>20-24</td>
<td>17</td>
<td>6.1</td>
</tr>
<tr>
<td>25 or more</td>
<td>36</td>
<td>12.9</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>1.8</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Total Surveys Mailed = 448  
Total Response = 280  
Response Rate = 62.5 %

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The data showed that the survey responses were proportionate to each school classification. The highest response (38.2%) came from size ‘A’ schools. The smallest responses (15.7%) were received from size ‘D’ schools. The school size frequencies and percentages are presented in Table 6.

Table 6

<table>
<thead>
<tr>
<th>School Size</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>107</td>
<td>38.2</td>
</tr>
<tr>
<td>B</td>
<td>78</td>
<td>27.9</td>
</tr>
<tr>
<td>C</td>
<td>51</td>
<td>18.2</td>
</tr>
<tr>
<td>D</td>
<td>44</td>
<td>15.7</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>13.9</td>
</tr>
</tbody>
</table>

School Counselors’ Belief Statements: Results – Research Question 1

What are the high school counselors’ perceptions toward female participation in nontraditional CTE programs?

This research question addressed the high school counselors’ perceptions toward female participation in nontraditional CTE programs. In the study, 20 statements were used to express the perceptions of school counselors in Michigan high schools. The overall response for female participation in nontraditional programs was positive. The twenty-two perceptions statements showed mean scores ranging from 3.91 to 1.20. For the responses, five-point Likert scale was used. All the low mean items were the one, which were initially set negatively (items 1, 8, 12, 14, 17, 19). For example, the first
statement was "Some career and technical education (CTE) programs, like electronics
technology, automotive, or manufacturing technology should primarily enroll males". For
belief item numbers 1, 8, 12, 14, 17, and 19, low means was representative of positive
perceptions, since 'strongly disagree' reflect a high level of positive perception. For
example, in item number one, low mean (1.43), is actually a positive perception where
majority (63.1%) of the respondent strongly disagreed with the statement.

School counselors strongly agreed that career choice is as important for females
as it is for males (M = 3.91; SD = .467); this item received the highest positive mean
score in the study. Counselors strongly agreed that "females should be able to enter any
CTE programs in which they are interested and capable of completing" (M = 3.90; SD = .385). This item got the second highest response in positive perception toward female
participation. There was also a strong agreement that "CTE instructors should provide
the same learning activities and projects for females in their programs as for male
students" (M = 3.73; SD = .492). Regarding recruitment, there was strong consent that
"career counseling and recruitment materials that are available to students should be free
from implications that certain careers are more appropriate or "realistic" for one gender
than the other" M = 3.69; SD = .556). Another item, which reflected very positive per­
ception, and strong agreement among school counselor was that "CTE programs should
establish procedures for describing and communicating to the general community the fact
that all CTE programs are available to both females and males" (M = 3.60; SD = .623).

School counselors strongly disagree on the item which stated that "females
enrolled in programs such as engineering technology, drafting, and industrial technology
cannot solve math problems as well as males" (M = 1.20; SD = .604), it was the lowest
mean of all items. The majority of the respondents agreed that “sexual harassment exists for female students who are in nontraditional CTE programs” (M = 3.57; SD = 1.091), but they disagreed on the statement that “CTE instructors cannot prevent sexual harassment in CTE programs that are nontraditional for females” (M = 1.46; SD = .895).

Some of the statements showed conflicting responses. Apparently, the school counselors did not have very clear perception about the phenomena. For example, they did not seem very clear about whether “females entering nontraditional CTE programs will have more job opportunities and better pay than those entering traditional CTE programs” (M = 3.51; SD = 1.253). Similarly, they were not very sure that the school counselors have “special responsibilities to encourage females to consider enrollment in CTE programs that are nontraditional for their gender” (M = 3.03; SD = .907). The unsure responses were concerning whether “money should be set aside in the school’s budget for the promotion of female participation in nontraditional CTE programs” (M = 2.95; SD = 1.100).

A descriptive statistics summary of school counselors’ perception about female participation in nontraditional secondary career and technical education program is presented in Table 7.
Table 7

Descriptive Statistical Summary of School Counselors’ Perceptions About Female Participation in Nontraditional Secondary Career and Technical Education Programs

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Some career and technical education (CTE) programs, like electronics technology, automotive, or manufacturing technology should primarily enroll males.</td>
<td>1.43</td>
<td>.693</td>
</tr>
<tr>
<td>2</td>
<td>Career choice is as important for females as for males.</td>
<td>3.91</td>
<td>.467</td>
</tr>
<tr>
<td>3</td>
<td>Money should be set aside in the school's budget for promoting female participation in nontraditional CTE programs</td>
<td>2.95</td>
<td>1.100</td>
</tr>
<tr>
<td>4</td>
<td>Females should be able to enter any CTE programs in which they are interested and capable of completing.</td>
<td>3.90</td>
<td>.385</td>
</tr>
<tr>
<td>5</td>
<td>To promote participation in CTE programs nontraditional for their gender, guidance materials (pamphlets, brochures, videotapes, etc.) should be visibly present and available for females in the counseling office.</td>
<td>3.39</td>
<td>.616</td>
</tr>
<tr>
<td>6</td>
<td>Career counseling and recruitment materials that are available to students should be free from implications that certain careers are more appropriate or &quot;realistic&quot; for one gender than the other.</td>
<td>3.69</td>
<td>.556</td>
</tr>
<tr>
<td>7</td>
<td>Counselors have special responsibilities to encourage females to consider enrollment in CTE programs that are nontraditional for their gender.</td>
<td>3.03</td>
<td>.907</td>
</tr>
<tr>
<td>8</td>
<td>Females are not physically capable of working in all occupations.</td>
<td>2.06</td>
<td>1.141</td>
</tr>
<tr>
<td>9</td>
<td>Females entering nontraditional CTE programs will have more jobs and better pay than those entering traditional CTE programs.</td>
<td>3.51</td>
<td>1.253</td>
</tr>
<tr>
<td>10</td>
<td>CTE instructors should provide the same learning activities and projects for females in their programs as for male students.</td>
<td>3.73</td>
<td>.492</td>
</tr>
<tr>
<td>Item</td>
<td>Statement</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------------------------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>11</td>
<td>The course content in male dominated occupations should include projects and examples that acknowledge the presence of females in the field.</td>
<td>3.47</td>
<td>.707</td>
</tr>
<tr>
<td>12</td>
<td>Females enrolled in programs such as engineering technology, drafting, and industrial technology cannot solve math problems as well as males.</td>
<td>1.20</td>
<td>.604</td>
</tr>
<tr>
<td>13</td>
<td>Separate facilities, such as, locker rooms and restrooms should be available for females who are enrolled in CTE programs.</td>
<td>3.53</td>
<td>.693</td>
</tr>
<tr>
<td>14</td>
<td>CTE instructors cannot prevent sexual harassment in CTE programs that are nontraditional for females.</td>
<td>1.46</td>
<td>.895</td>
</tr>
<tr>
<td>15</td>
<td>CTE instructors need to make employers aware of gender bias, stereotyping, and discrimination in hiring practices.</td>
<td>3.42</td>
<td>.877</td>
</tr>
<tr>
<td>16</td>
<td>The impact of gender bias can be minimized through class discussion and teaching activities in CTE programs.</td>
<td>3.42</td>
<td>.620</td>
</tr>
<tr>
<td>17</td>
<td>It is difficult for CTE instructors to convey the same expectations to female and male students in CTE programs.</td>
<td>1.87</td>
<td>1.110</td>
</tr>
<tr>
<td>18</td>
<td>Sexual harassment exists for female students who are in nontraditional CTE programs.</td>
<td>3.57</td>
<td>1.091</td>
</tr>
<tr>
<td>19</td>
<td>Female students are more difficult for CTE instructors to teach in nontraditional CTE programs.</td>
<td>2.02</td>
<td>1.381</td>
</tr>
<tr>
<td>20</td>
<td>CTE programs should establish procedures for describing and communicating to the general community the fact that all CTE programs are available to both females and males.</td>
<td>3.60</td>
<td>.623</td>
</tr>
</tbody>
</table>
What are the underlying beliefs that affect school counselors' perceptions toward female participation in nontraditional CTE programs?

The second research question in the study examined the latent variables associated with school counselors' perceptions toward female participation in nontraditional CTE programs. To address this question, an exploratory factor analysis was used. The main applications of factor analytic techniques are: (1) to reduce the number of variables and (2) to detect structure in the relationships between variables, that is to classify variables (Widaman, 1993). An exploratory principal component factor analysis (PCA) was used to examine the underlying dimension of school counselors' perceptions. This method was used due to (a) an absence of preexisting data structure; and, (b) it is the most commonly used method to identify latent variables of a relatively large set of variables. Factor analysis is a statistical procedure used to uncover relationships among many variables. This method allows numerous intercorrelated variables to be condensed into fewer dimensions, called factors. Therefore, factor analysis is applied as a data reduction or structure detection method as it reduces the information from many variables into a set of weighted linear combinations of those variables (Fabrigar, et al. 1999).

The purpose of the second research question was to identify the latent variables, which are contributing to the common variance in a set of measured variables. Factor analysis (FA) was used, which excluded unique variance from the analysis. In the context of this research, the variables are the degree of agreement of various specific attitude statements (i.e. belief statements from part B and C of the survey), and the factors are the general underlying attitudes.
There are different methods of extracting the factors from a set of data. The purpose was to reduce the information from many variables into a set of weighted linear combinations of those variables, the Principle Components Analysis (PCA), was utilized, since it does not differentiate between common and unique variance (Bryant & Yarnold, 1995; Johnson & Wichern, 2002). PCA is appropriate for most social science research purposes and is the most commonly used form of factor analysis. Also, PCA determines the factors, which can account for the total (unique and common) variance in a set of variables and is appropriate for creating a typology of variables or reducing attribute space (Pett, et al. 2003).

The factor analysis for this study was conducted using the statistical package SPSS version 12.0 for windows. The new factors are used as explanatory variables during choice modeling.

To minimize the number of variables, and to get a simpler structure, varimax rotation was used. This is the most common rotation option (Johnson & Wichern, 2002). By spreading the variance more equally across identified factors, it minimizes the number of variables, which have high loadings. So a Varimax solution provides results, which makes it simpler as possible to identify each variable with a single factor.

Generally, an accepted factor loading criteria for the interpretation of factors that loaded on each factor level is .30, since it indicates approximately 10% of the variance for a corresponding variable (Tinsley & Tinsley, 1987). However, to make the findings more accurate, in the present study a higher criterion of .40 was used, which reflects about 15% of the variance in a given factor. All factor loadings above .40 were
considered high enough to aid in the interpretation of factors and to ensure a greater
degree of credibility in factor loadings.

Before doing the factor analysis, the items 8, 15, 19, 21, 24, and 25 were inversed.
These factors were initially set as negative statements in the survey. And, to facilitate the
analysis of all factors in one direction, it was important to reorder them in the same
directions like the remaining positively stated items.

In a principal components analysis, the first factor represents the combination of
variables that corresponds to the largest values of total variance for a sample; each
successive component represents gradually smaller portions of variance (Gall et al.,
1996).

These factor loadings are the basis for imputing a label to the different factors.
Table 8 presents the rotated component matrix and all the factor loadings with the
application of varimax rotation, and their placement under factor 1, 2, 3 and 4. The first
principal component accounts for as much of the variability in the data as possible, and
each succeeding component accounts for as much of the remaining variability as
possible.

At the bottom of the Table 8, the ratio of the eigenvalue is the ratio of exploratory
importance of the factor with respect to the variables. The eigenvalue, for a given factor,
measures variance in all the variables, which accounted for that factor. If a factor has low
eigenvalue, then it is contributing little to the explanation of variances in the variables
and may be ignored as redundant with more important factors.

The rotated component matrix is the central output for factor analysis. Table 8 has
20 factors (items 6-25), one for each variable. However, only four are extracted for
analysis (to make the findings more accurate, SPSS was told .40 criteria for factor loadings, which reflects about 15% of the variance in a given factor). The percentage of variance shows the total of variance on four factors with respect to all 20 (i.e. belief statements) items.

Table 8
Rotated Component Matrix (a)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Statements</th>
<th>Rescaled Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Nontrad programs primarily for males</td>
<td>0.455 0.002 0.186 -0.193</td>
</tr>
<tr>
<td>7</td>
<td>Career choice important for females</td>
<td>0.086 -0.008 0.105 -0.058</td>
</tr>
<tr>
<td>8</td>
<td>Funds for promoting female participation</td>
<td>-0.153 0.955 0.030 -0.064</td>
</tr>
<tr>
<td>9</td>
<td>Females should be able to enter any CTE program</td>
<td>0.281 0.002 -0.032 -0.023</td>
</tr>
<tr>
<td>10</td>
<td>Guidance material visibly available for females</td>
<td>0.412 0.308 0.044 0.112</td>
</tr>
<tr>
<td>11</td>
<td>Recruitment material available for All</td>
<td>0.443 0.154 0.072 -0.090</td>
</tr>
<tr>
<td>12</td>
<td>Counselors responsibility to encourage females</td>
<td>0.396 0.458 -0.181 0.128</td>
</tr>
<tr>
<td>13</td>
<td>Females may join all CTE programs</td>
<td>0.283 0.001 0.087 0.132</td>
</tr>
<tr>
<td>14</td>
<td>Better jobs for females due to nontrad programs</td>
<td>-0.081 0.119 0.056 0.978</td>
</tr>
<tr>
<td>15</td>
<td>Instructors should provide same learning activities for males and females</td>
<td>0.511 0.082 0.156 -0.002</td>
</tr>
<tr>
<td>16</td>
<td>Course contents include examples of females in Field</td>
<td>0.569 0.212 0.008 0.225</td>
</tr>
<tr>
<td>17</td>
<td>Girls bad in math &amp; technology programs</td>
<td>0.190 -0.007 0.093 0.045</td>
</tr>
<tr>
<td>18</td>
<td>Separate facilities for females</td>
<td>0.569 -0.029 0.170 0.102</td>
</tr>
<tr>
<td>19</td>
<td>Instructors can’t prevent sex-har</td>
<td>0.344 0.113 0.115 -0.051</td>
</tr>
<tr>
<td>20</td>
<td>Instructors should inform employers about gender biases</td>
<td>0.189 0.367 0.146 0.252</td>
</tr>
</tbody>
</table>
Table 8—continued

<table>
<thead>
<tr>
<th>Item #</th>
<th>Statements</th>
<th>Rescaled Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>Gender bias can be minimized</td>
<td>.373</td>
</tr>
<tr>
<td>22</td>
<td>Same expectations from females in nontrad</td>
<td>.300</td>
</tr>
<tr>
<td>23</td>
<td>Sexual harassment for females in nontrad CTE programs</td>
<td>-.119</td>
</tr>
<tr>
<td>24</td>
<td>Female students are more difficult to teach</td>
<td>.253</td>
</tr>
<tr>
<td>25</td>
<td>Community should know nontrad CTE is for both males and females</td>
<td>.538</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Eigenvalue</th>
<th>2.03</th>
<th>1.525</th>
<th>1.219</th>
<th>1.989</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of variance</td>
<td></td>
<td>10.177</td>
<td>7.624</td>
<td>6.094</td>
<td>9.944</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 6 iterations.
nontrad = nontraditional
sex-har = sexual harassment

In Table 9, the rotated factor loadings are presented as 'rotation solution.' The belief statements were grouped under factor 1, 2, 3 and 4. This grouping of all 20 items gave the direction to label them as 'new variables', which were the latent variables regarding school counselors perception to female participation in nontraditional CTE programs.

Table 8 shows the latent variables after the reduction, less important or redundant items were excluded. Factor 1 loaded 7 items, factor 2 loaded 2 items and factor 3 and four loaded one item in each of them. The table 3 illustrates that with the application of
principal components factor analysis (PCA) and with varimax rotation, four latent factors are identified and all are explainable.

The four 'derived' factors were designated as follows: (1) Equity, (2) Promotion, (3) Sexual harassment and (4) Better jobs due to nontraditional CTE programs. Though the factor loadings were evident from Table 9 in these four areas but the first factor (i.e. equity) was the most significant one, accounting for 10.177%. Seven of the twenty responses appeared in this first factor that was characterized by providing female student equal opportunity in several ways such as separate facilities for them, course contents should include the examples of females in the nontraditional field, CTE programs should establish the procedures to inform to the general community that all CTE programs are available for both males and females, also instructors should provide the same learning activities to female students, and that the nontraditional CTE programs are not primarily for males but for females too.

The counselors' responses in the same direction expressed a general agreement that female students' participation in nontraditional CTE programs should be more equity-based rather than being gendered-based. In addition, the respondents showed a general consent on equitable services regarding facilities, course contents, in learning activities including general information to overall community.

The second factor contained two items that explained school educators' perception toward female participation in nontraditional CTE programs. This factor showed a variance of 7.624%, and showed two latent variables 1) funds for promoting female participation and 2) counselors' responsibility to encourage the female students in nontraditional CTE programs. The underlying dimension of the counselor's perception is
that more efforts are required to promote female participation in non-traditional CTE programs by allocating more funds and encouraging female students for nontraditional program for their gender.

The third factor loaded one item, which reflected the underlying dimension of school counselor’s perception that sexual harassment, is a critical issue for female students in nontraditional CTE programs. This factor showed a variance of 6.094%, and this latent variable was marked as ‘sexual harassment’.

The fourth factor had one loading on it, and showed the school counselors’ perception toward females having better jobs due to education in nontraditional CTE programs. This factor was labeled as ‘better jobs’ and had 9.944% variance of the total data.

The factor analysis with the use of principal component analysis (PCA) with the application of varimax rotation provided the underlying factors that incorporated school counselors’ perceptions toward female participation in nontraditional programs. The rotated component matrix (grouped) is presented in Table 9.

Table 9
Rotated Component Matrix (a - Grouped)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Statements</th>
<th>Rescaled Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Separate facilities for females</td>
<td>.569</td>
</tr>
<tr>
<td>16</td>
<td>Course contents include examples of females in field</td>
<td>.569</td>
</tr>
<tr>
<td>25</td>
<td>Community should know CTE is for males and females</td>
<td>.538</td>
</tr>
<tr>
<td>15</td>
<td>Instructors should provide same learning activities for males and females</td>
<td>.511</td>
</tr>
<tr>
<td>6</td>
<td>Nontraditional programs primarily for males</td>
<td>.455</td>
</tr>
</tbody>
</table>
Table 9—continued

<table>
<thead>
<tr>
<th>Item #</th>
<th>Statements</th>
<th>Rescaled Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Recruitment material available for all</td>
<td>.443</td>
</tr>
<tr>
<td>10</td>
<td>Guidance material visibly available for females</td>
<td>.412</td>
</tr>
<tr>
<td>21</td>
<td>Gender bias can be minimized</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Instructors can’t prevent sex-har</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Females may join all CTE programs</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Females should be able to enter any CTE program</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Girls bad in math &amp; technology programs</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Funds for promoting female participation</td>
<td>.955</td>
</tr>
<tr>
<td>12</td>
<td>Counselors Responsibility to encourage females</td>
<td>.458</td>
</tr>
<tr>
<td>20</td>
<td>Instructors should inform employers about gender biases</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Sexual harassment for females in nontrad CTE programs</td>
<td>.942</td>
</tr>
<tr>
<td>22</td>
<td>Same expectations from females in nontrad</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Female students are difficult to teach</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Career choice important for females</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Better jobs for females due to nontraditional programs</td>
<td>.978</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
- Rotation converged in 6 iterations.
- 4 components extracted.
nontrad = nontraditional
sex-har = sexual harassment

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Effects of Independent Variables on Perceptions: Results – Research Question 3

Does the difference in gender, age, level of education, years of experience in education, years of experience in counseling and school size affect school counselors’ perception of female participation in nontraditional CTE programs?

For the third research question, the impact of gender, age, level of education, years of experience in education, years of experience in counseling and school size, on school counselor’s perceptions were examined. The four ‘perceived’ factors were used as dependent variables in the study. For the analysis of variance, the multiple analysis of variance (MANOVA) was used to explore the influence of independent variables (gender, age, level of education, years of experience in education, years of experience in counseling and school size) upon dependent variables (equity, promotion, sexual harassment, and better jobs due to nontraditional CTE programs).

Multiple analysis of variance (MANOVA) was used to see the main and interaction effects of categorical variables on multiple dependent interval variables. The use of ANOVA was not applicable for the analysis as there was more than one dependent variable in the study. MANOVA uses one or more categorical independents as predictors, like ANOVA, but unlike ANOVA, there is more than one dependent variable (Gill, 2001).

In the study, there was more than one dependent variable, so MANOVA was conducted to identify the independent variables, which differentiated the dependent variables. Table 10 shows the results of MANOVA. For the procedure, the alpha level was assumed 0.05 ($\alpha = 0.05$) so the results are tested on 95% degree of confidence. The
sequential multivariate analysis of variance of school counselors’ perceptions is shown on Table 10.

Table 10
Sequential Multivariate Analysis of Variance of School Counselors’ Perceptions

<table>
<thead>
<tr>
<th>Source</th>
<th>Multivariate Tests (MANOVA)</th>
<th>F Value</th>
<th>Num df</th>
<th>Den df</th>
<th>P &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wilkes Lambda</td>
<td></td>
<td></td>
<td></td>
<td>Equity (Factor 1)</td>
</tr>
<tr>
<td>School</td>
<td>0.92</td>
<td>1.46</td>
<td>12</td>
<td>608</td>
<td>0.1356</td>
</tr>
<tr>
<td>Gender</td>
<td>0.09</td>
<td>5.77</td>
<td>4</td>
<td>230</td>
<td>0.0002</td>
</tr>
<tr>
<td>Age</td>
<td>0.94</td>
<td>0.77</td>
<td>16</td>
<td>703</td>
<td>-</td>
</tr>
<tr>
<td>Level of Education</td>
<td>0.92</td>
<td>1.51</td>
<td>12</td>
<td>608</td>
<td>0.0045</td>
</tr>
<tr>
<td>Years of Education</td>
<td>0.92</td>
<td>0.89</td>
<td>20</td>
<td>764</td>
<td>-</td>
</tr>
<tr>
<td>Years of Counseling</td>
<td>0.93</td>
<td>0.84</td>
<td>20</td>
<td>764</td>
<td>-</td>
</tr>
</tbody>
</table>

Gender proved to be the most important latent factor to influence the perceived factors (i.e. four factors derived by factor analysis). The smaller value of Wilkes Lambda reflects the significant gender impact on 'equity and 'promotion'. To determine which variables have the most impact on the discriminant function, it is possible to look at partial F values. The higher the partial F, the more impact that variable has on the discriminant function (Widaman, 1993). Gender has the highest ‘F’ value, (F value = 5.77), which reflects the impact of gender in the study. Wilkes Lambda test showed that 'years of education' was 0.92 with ‘F’ value of 1.51. Multivariate analysis of variance...
(MANOVA) also showed that the size of school is significant factor to influence the perception of school counselors ($F = 1.46$). Age also has a significant impact on equity.

The results of MANOVA showed that school size, gender, and level of education selected for the analysis had significant impact on one or more of the four perception factor scores. School size had significant effect on factor 1 (equity). Gender had the most significant effect among other independent variables. Level of education showed a significant impact with respect to two factors (equity, and sexual harassment). Age showed significant effect on factor 1 (equity). Years of employment in education and years of employment in counseling had no significant impact on school counselors' perceptions toward female participation in nontraditional programs in career and technical education (CTE).

**Factor 1 - Equity:** Post hoc analysis showed that four independent variables: school size, gender, age, and level of education significantly influenced perception on equity. Female counselors expressed a relatively more positive response than male school counselors regarding female participation in nontraditional CTE programs. The school size A and D showed a significant influence on the perception of 'equity.

**Factor 2 - Promotion:** Gender was the only independent variable, which influenced counselors' perception for the 'promotion' factor. Female respondents strongly favor the allocation of funds for the promotion of female students in nontraditional CTE programs.

**Factor 3 - Sexual Harassment:** The third factor showed that the level of education and age influenced the perception for 'sexual harassment' and that both male and female
counselors perceive this factor as an obstacle to female participation in nontraditional CTE programs.

**Factor 4 - Better Jobs Due to Nontraditional CTE Programs:** The fourth factor showed that gender influenced the perception on 'better jobs due to nontraditional CTE programs' and the youngest age group (22-29) showed more positive response to this fourth factor. There was no significant influence of any independent variables to influence the perception of having better jobs due to nontraditional CTE programs for female students. However, one point is notable that the post hoc test showed the mean of male perception toward this factor was slightly greater than that of mean of female perception (Male Mean =3.63, Female Mean = 3.43).

To control the experiment-wise error rate, the Bonferroni post hoc test was used. The Bonferroni correction is a multiple-comparison correction used when several dependent or independent statistical tests are being performed simultaneously (since while a given alpha value $\alpha$ may be appropriate for each individual comparison, it is not for the set of all comparisons). It effectively raises the standard of proof needed when a scientist looks at a wide range of hypotheses simultaneously, and the Boneferroni method is preferred when the sample is small (Keppel, 1991; Miller, 1991).

Table 11 provides the summary of the impact of independent variables (gender, age, level of education, years of education, years of counseling and school size) on four 'perceived' dependent variables (Factor, 1, 2, 3, and 4) were calculated. The mean and standard deviation scores for each factor show the statistical significant differences on dependent variables due to independent variables.
Table 11 shows the mean and standard deviation of all independent variables with respect to all dependent 'derived' perception factors. For 'equity' and 'promotion' female school counselors have a higher mean while for 'sexual harassment' and 'better jobs', male counselors showed a higher mean.

Table 11
Descriptive Statistics for 4-Factors Derived from School Counselors' Perception

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Factor Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>87</td>
</tr>
<tr>
<td>Female</td>
<td>186</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>22-29</td>
<td>13</td>
</tr>
<tr>
<td>30-39</td>
<td>54</td>
</tr>
<tr>
<td>40-49</td>
<td>71</td>
</tr>
<tr>
<td>50-59</td>
<td>124</td>
</tr>
<tr>
<td>60 and above</td>
<td>12</td>
</tr>
<tr>
<td><strong>Level of Education</strong></td>
<td></td>
</tr>
<tr>
<td>BA +15</td>
<td>6</td>
</tr>
<tr>
<td>MA</td>
<td>125</td>
</tr>
<tr>
<td>MA + 15</td>
<td>133</td>
</tr>
<tr>
<td>EdD or PhD</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 11—continued

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Age Mean (SD)</th>
<th>Equity Mean (SD)</th>
<th>Promotion Mean (SD)</th>
<th>Equity Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0-4</td>
<td>5-9</td>
<td>10-14</td>
<td>15-19</td>
</tr>
<tr>
<td>Years in Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4</td>
<td>20</td>
<td>25.15 (2.11)</td>
<td>5.75 (2.05)</td>
<td>3.70 (1.26)</td>
<td>3.70 (2.25)</td>
</tr>
<tr>
<td>5-9</td>
<td>32</td>
<td>25.38 (2.25)</td>
<td>6.22 (1.74)</td>
<td>3.68 (1.14)</td>
<td>3.66 (1.29)</td>
</tr>
<tr>
<td>10-14</td>
<td>39</td>
<td>24.84 (2.39)</td>
<td>5.97 (1.64)</td>
<td>3.87 (1.09)</td>
<td>3.49 (1.34)</td>
</tr>
<tr>
<td>15-19</td>
<td>41</td>
<td>24.60 (2.16)</td>
<td>5.88 (1.62)</td>
<td>3.46 (1.07)</td>
<td>3.46 (1.22)</td>
</tr>
<tr>
<td>20-24</td>
<td>39</td>
<td>25.00 (2.46)</td>
<td>6.21 (1.59)</td>
<td>3.28 (1.02)</td>
<td>3.10 (1.10)</td>
</tr>
<tr>
<td>25 or more</td>
<td>104</td>
<td>25.39 (2.48)</td>
<td>5.88 (1.40)</td>
<td>3.55 (1.06)</td>
<td>3.63 (1.24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-4</td>
<td>5-9</td>
<td>10-14</td>
<td>15-19</td>
</tr>
<tr>
<td>Years in Counseling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4</td>
<td>72</td>
<td>24.77 (2.24)</td>
<td>5.81 (1.84)</td>
<td>3.66 (1.19)</td>
<td>3.57 (1.40)</td>
</tr>
<tr>
<td>5-9</td>
<td>70</td>
<td>24.90 (2.12)</td>
<td>6.09 (1.41)</td>
<td>3.57 (0.94)</td>
<td>3.47 (1.24)</td>
</tr>
<tr>
<td>10-14</td>
<td>52</td>
<td>25.68 (2.44)</td>
<td>6.17 (1.58)</td>
<td>3.55 (1.21)</td>
<td>3.33 (1.18)</td>
</tr>
<tr>
<td>15-19</td>
<td>28</td>
<td>25.19 (2.80)</td>
<td>5.63 (1.69)</td>
<td>3.59 (1.05)</td>
<td>3.75 (1.08)</td>
</tr>
<tr>
<td>20-24</td>
<td>17</td>
<td>25.06 (2.36)</td>
<td>5.47 (1.50)</td>
<td>3.29 (1.05)</td>
<td>3.41 (1.23)</td>
</tr>
<tr>
<td>25 or more</td>
<td>36</td>
<td>25.44 (2.55)</td>
<td>6.29 (1.20)</td>
<td>3.51 (1.07)</td>
<td>3.61 (1.23)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Size</td>
<td></td>
<td>107</td>
<td>25.56 (2.29)</td>
<td>6.05 (1.40)</td>
<td>3.49 (1.06)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>78</td>
<td>25.25 (2.18)</td>
<td>5.86 (1.76)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>51</td>
<td>24.81 (2.31)</td>
<td>5.98 (1.57)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D</td>
<td>44</td>
<td>24.20 (2.64)</td>
<td>5.95 (1.72)</td>
</tr>
</tbody>
</table>

Age showed a gradual difference in the perception of all four perceived dependent variables. The youngest and the oldest age group has higher mean for the perception of all four factors. The '60 and above' age group of school counselors showed a higher mean in the perception of 'equity' and 'promotion'.

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The higher level of education influenced the perception of 'equity' (mean = 26.00). For better jobs, 'the lowest level of education' showed a higher mean (mean = 3.83), while the highest level of education' group showed a lower mean (mean = 3.20) for the perception of better jobs.

The 'years in education, and the 'years of counseling' did not reflect any significant mean differences in the perception of four perceived factors. The mean of 'equity' and 'promotion' is found higher in large school size.

The descriptive statistics for the factors derived from school counselors' perceptions are found on Table 11.

Summary

The key findings of the study were as follows:

1. The present study revealed that there was a strong agreement (96.4%) among school counselors supporting the participation of females in nontraditional CTE programs and that those programs are not primarily for males (94.6%).

2. Overall 66.7% of school counselors agreed to encourage female students' participation in nontraditional CTE programs.

3. There was a 96.10% agreement among the participant of the study for the importance of 'career choices' for females.

4. Gender bias and sexual harassment was perceived as a major obstacle for the participation of female students in the nontraditional CTE programs. A total of 56% school counselors agreed that sexual harassment prevails in nontraditional CTE programs.
5. 90.3% school counselors agreed that the instructors could prevent sexual harassment in the nontraditional CTE programs.

6. Also, 92% of them agree that gender biases can be minimized. The study revealed that gender is the most important factor to impact the school counselors’ perception.

7. The study results indicated that 80% of school counselors agreed that girls are not difficult to teach.

The factor analysis showed that there are four latent factors which incorporate the perceptions of school counselors. The first (equity) was consisted of: the provision of separate facilities for female student, the inclusion of female student in the course contents, to provide them similar learning activities as of their male counterparts, and the awareness of possibilities through community, guidance and recruitment material. The second factor (promotion) was comprised of: the allocation of funds to promote female participation in and to encourage female students for nontraditional CTE programs through school counselors. The third factor (sexual harassment) was identified as sexual harassment and the fourth factor (better jobs) was 'better jobs due to nontraditional CTE programs'.

The results of MANOVA showed that school size could have significant effect on the perception of 'equity'. The gender of school counselors reflected a significant influence on 'equity' and 'promotion' perceived variables. The school counselors' level of education came out as another statistical significant variable to influence the perception of 'equity' and 'sexual harassment' for females in nontraditional programs.
CHAPTER V

CONCLUSION AND RECOMMENDATIONS

This chapter provides results, recommendations, and conclusions. The purpose of the study was to explore high school counselors' perceptions toward female participation in nontraditional secondary career and technical education (CTE) programs in Michigan.

The population for the study was 448 high schools in Michigan and 280 school counselors from these schools responded. The school counselors' perceptions were assessed on the basis of 20 belief statements. Eight belief statements were used to assess school counselors' perceptions regarding counseling female students into nontraditional CTE programs; and twelve belief statements were used for their perceptions regarding female student participation in nontraditional CTE programs. The study also assessed the latent dimensions of their perceptions with each of the following independent variables: gender, age, level of education, years of employment in education, and years of employment in school counseling. School size was also treated as an independent variable to assess its potential affect on school counselors' perceptions. The database was obtained from the 2004-05 Michigan High School Athletic Association listing of Michigan High Schools and to determine the population under study.

The application of the statistical Package for the Social Sciences (SPSS Version 12.0 for windows) and SAS (Version 9.1) was used to analyze the data, and to construct the results of the study. A descriptive analysis of the total population with respect to belief statements and independent variables was completed. To identify the latent dimensions of school counselors' perceptions, a factor analysis was used. Through the application of principal components analysis (PCA) and varimax rotation, four
underlying factors were identified. The four factors were grouped into the following areas: equity, promotion, sexual harassment, and better jobs due to nontraditional CTE programs.

Multiple analysis of variance (MANOVA) was used to see the main and interaction effects of categorical variables (i.e. gender, age, level of education, years of employment in education and years of employment in school counseling and school size) on multiple dependent interval variables (i.e. equity, promotion, sexual harassment, and better jobs due to nontraditional CTE programs).

Gender, level of education, school size, and age were found to be statistically significant regarding school counselors' perceptions toward female participation in nontraditional CTE programs. Gender proved to be the most significant variable contributing to school counselors' perceptions toward female participation in nontraditional CTE programs. Gender had an overall significant affect on school counselors' perceptions (P > F = 0.0002). Level of education was the second most significant contributing variable in school counselors' perceptions. School size and age variables were statistically significant for the perception of 'equity', but did not have an overall significant affect.

Findings of the Study

This part of chapter five consists of four sections. The first section of the findings provides the demographic composition of the population and the related results of the study. The next three sections of the findings are based on three research questions.

Findings: Demographics. The main findings of the study were based upon 280 high school counselors in Michigan, who participated in the study. These findings give a demographic picture of the survey respondents.
1. Out of 280 respondents, 186 were females (66.4%) and 87 males (31.2%). Another study, which was conducted to assess vocational educators' perceptions toward female participation in nontraditional CTE programs, also found that 43.3% respondents were female (Sheng, et al., 1996).

2. The age of the participants ranged from 22 years to above 60 years. The largest population of participants was from the age range 50-59 (124 counselors representing 44.2% of the total population). The second largest population of participants was from the age range 40-49 years (71 counselors, representing 25.4% of the total population). The age range 60 and above, represented the smallest percentage (4.3%) of the total population.

3. The respondent in the study with EdD/PhD level of education represented 3.4% of the total population.

4. The majority of the participants (47.4%) held MA +15. The minimum level of education of the school counselors in the present study was BA +15.

5. The participants with maximum years of education (ranged from 25 or more years) were 37% of the total population in the study. The participants with the minimum years of education (ranged from 0-4 years) in the study comprised of 7.2%.

Findings: Perceptions of School Counselors toward Female Participation in Nontraditional CTE Programs – Research Question 1: What are the high school counselors' perceptions toward female participation in nontraditional CTE programs?

1. The survey respondents reflected very positive perceptions toward female participation in nontraditional CTE programs, as assessed through the belief statements on the survey. The participants of the study believed that females should be allowed to
enter any CTE programs and that career choices are equally important for them as of their male counterparts. The career choice statement in the survey received the highest positive mean score in the study ($M = 3.91$). This finding supports the results of another study conducted in post secondary technical institutes in Georgia (Sheng, et. al. 1996) on perception of vocational educators toward female participation in nontraditional programs. Though the study was not primarily focused on school counselors, nevertheless, school counselors were included in the Georgia study. Another study conducted on the role of vocational and non-vocational school counselors showed the similar positive response toward nontraditional CTE programs and equal opportunities for all students (Kitchen, 2001).

2. In a previous research study, the findings showed male and gender segregation issues were a concern because they were likely to lead to reinforcement of traditional gender divisions in education and training and to shrink the opportunities for girls (Edwards & Stephenson 2002). The findings of the present study showed that the school counselors (both male and female) did not support traditional gender division in CTE programs and showed strong counselor approval to open the opportunities for female students. Another study conducted by International Labor Organization (ILO) indicated that that there is considerable similarity all over the world in the types of occupation which are gender-stereotyped - determining and reinforcing the gender stereotypes (Anker, 1997). However, the results of the present study did not substantiate the justification frequently advanced for the fact that there tends to be a gendered separation of social roles of men and women. Nevertheless, the present study revealed that the school counselors in Michigan do not believe in that traditional line of thinking. The respondents
showed a 96.6% disagreement on the belief that nontraditional CTE programs are primarily for males. Many researchers and writers have argued that gender segregation into various roles leads to the creation of stereotypes; also, research evidence indicates that gender segregation becomes less of an issue for older females (Rubery & Fagan, 1995). The present findings also supported the argument of the previous research that older female become less concerned about gender segregation. In the present study, the older female counselors showed more liberal attitudes toward nontraditional occupational choices for female.

3. The findings of this study refute the traditional belief of occupational segregation. The traditional belief is that males, because of their greater physical strength and durability, are "more-suited" to a work role and females, on the other hand, are seen to be "more-suited", biologically, to a nurturing role (Blau, Simpson & Anderson, 1998). The findings indicated that the school counselors disagreed (96.6% of total population) with the belief statement that "females are not capable for all occupations." There was a strong positive response (96.4%) in the present study from school counselors that women should be allowed to "enter any field if they are interested and capable of completing the program."

4. The findings of this study showed a 96.1% participant agreement on the belief statement that "career choice is equally important for females as of their male counterparts."

5. The findings of this study showed that there was uncertainty among the school counselors' about dedicating the funds to promote female participation in nontraditional CTE programs. This finding concurred with the findings of a previous study done on
vocational educators perceptions toward female participation in nontraditional CTE programs (Sheng, et al., 1996). The Sheng et al. study also showed a difference of opinion on the allocation of funds for promotion of female participation.

**Findings: Factors Regarding Counselors' Perceptions About Equity, Promotion, Sexual Harassment, and Better Jobs – Research Question 2.** What are the underlying beliefs that affect school counselor's perceptions toward female participation in nontraditional CTE programs?

This research question was designed to detect the latent dimensions of school counselors' perceptions. Factor analysis revealed four distinct components including: (1) equity in nontraditional programs, (2) promotion of females through funds and school counselors' encouragement to female student, (3) sexual harassment and (4) the possibilities of better jobs. Later, these four factors were treated as dependent variables to check the impact of independent variables.

**Equity.** With the application of principal components analysis (PCA), the data reduction produced four factors. Factor one had seven items out of 20 belief statements. These seven items included (1) separate facilities for female students, (2) course content should include examples of females in nontraditional occupations, (3) the community should be aware of the fact that CTE programs are for all students regardless of their gender, (4) instructors should provide the same learning activities to males and females, (5) nontraditional CTE programs are not primarily for males, (6) availability of recruitment material for all students and (7) guidance material should be visibly available to female students.
These seven items showed the respondents have positive perceptions toward female participation in nontraditional programs. The respondent believed in providing equity and equal access to all CTE nontraditional programs for female students. This finding corroborates with the findings of previous research (Sheng et. al., 1996).

Promotion. Factor two (promotion) had two items out of 20 belief statements including (1) funds for the promotion of female participation and, (2) counselors' responsibility to encourage female students into nontraditional CTE programs. The school counselors seemed polarized on this statement because this item showed a variance of 13.075%.

Sexual Harassment. Factor three contained one item out of 20 belief statements for “sexual harassment.” This factor showed a variance of 10.474%. The finding indicated that the majority of the respondents agreed that sexual harassment is an obvious obstacle for female students in nontraditional CTE programs.

Better Jobs Due to Nontraditional CTE Programs. Factor four contained one item out of 20 belief statements that “due to nontraditional CTE programs females can find better jobs.” The variance on this item was 9.584% and showed that the respondents' perceptions about job possibilities is quite positive and seemed optimistic about job prospects for females due to nontraditional CTE programs.

Findings: Demographic Factors for Counselors’ Perceptions About Equity. Promotion, Sexual Harassment and Better Jobs – Research Question 3: Does the difference in gender, age, level of education, years of experience in education, years of experience in counseling and school size affect school counselors' perception of female participation in nontraditional CTE programs?
This research question examined the effect of independent variables upon four perceived factors: equity, promotion, sexual harassment, and better jobs (dependent variables). The independent variables were gender, age, level of education, years of employment in education, years of employment in counseling, and the school size.

1. It is believed that the increase of women's entry into labor force causes role change between women and men from private sphere to public sphere, and vice versa. The attention given to counselors' sex-role attitudes in the past raises concerns about what impact this has had on present counselors' attitudes and perceptions. When the effect of 'gender' as an independent variable was investigated in the study, it showed a significant impact on two derived factors, 'equity' and 'promotion' \( (P > F= 0.001 \) and 0.0380, respectively). This finding substantiated the other research findings, which indicated that 'gender' is the most significant factor of gender role attitudes (Panayotova & Brayfield 1997). In another study, about occupational sex-role stereotyping among 166 Israeli adolescents, gender effect was found significant regardless of gender identity, and the females expressed less sex-typed evaluations of occupations and less traditional perspectives of gender roles as compared to males (Kulik, 2000). The findings of present study revealed that male and female school counselors equally demonstrated less traditional perspective of gender roles with respect to occupations.

2. From the previous research by Sheng et al. (1996), gender showed significant impact on vocational educators' perceptions. The present study agrees with the previous research that gender is a significant factor, but female school counselors showed more positive response male school counselors. However, the overall responses of both male
and female school counselors were found quite positive toward female participation in nontraditional CTE programs.

3. The results of the study do not support the earlier claim by Sheng, et al. that 'educational level' has no significant impact on vocational educators' perceptions. The school counselors' level of education was examined in the study as one of the independent variables. Contrary to the previous findings by Kitchen (2001) and Sheng et al. (1996), the present study showed that regardless of their gender, 'level of education' did have a significant impact on school counselors' perceptions. Also, 'level of education' reflected a significant impact in school counselors' perception on two perceived factors, 'equity' and 'sexual harassment'.

4. Another important finding is related to the funds for the promotion of female participation. The previous study showed a difference of opinion on this issue among vocational educators (Sheng, et al.). The present study also showed the disagreement among school counselors on the allocation of funds for the promotion of female participation in nontraditional CTE programs. The data showed that 34% of the respondents agreed to allocate funds for promotion, but the same percentage of the respondents disagreed on the issue. The opinion on this statement was very controversial. The respondents showed the similar contradictory perceptions on the statement about "females having better jobs due to nontraditional CTE programs". On this 'better jobs' statement, the respondents were divided; some of them were strongly in favor, while some of them were strongly opposed it.
Age proved to be a significant factor with respect to equity variable ($P > F = 0.0612$). As compared to the younger respondents, the older respondents showed more inclination for equal access to females for females in all nontraditional CTE programs.

All respondents acknowledged the presence of sexual harassment in CTE non-traditional programs and considered it as a major barrier for female participation in nontraditional CTE programs. Many educational equity experts recognize sexual harassment as a gender barrier in education (Gatta & McKay, 2003, p. 20). Thom in 2001 also found that sexual harassment significantly affects girls' experiences in all educational programs, but is particularly destructive in the nontraditional programs, such as science, math, and technology. Similar to previous research findings, the present study found sexual harassment as a significant factor in nontraditional CTE programs and a negatively influence on female participation in nontraditional CTE programs. The respondents with higher level of education seemed more sensitive toward the issue of sexual harassment regarding female participation in nontraditional CTE programs.

School size, as an independent variable, showed a significant effect on the respondents' perception. The larger schools (A schools) and the smallest schools (D schools) revealed a significant contributing factor on school counselors perceptions. The findings of the study, pertaining to school size, concurred with other findings on the issue that school size matters (Cotton, 1996; Nathan & Febey, 2001). Previous research indicates compelling reasons to consider downsizing of schools (Howley & Bickel, 2000; Wasley & Lear, 2001) due to their importance as a key ingredient of a comprehensive approach to giving all students equal opportunities and success in life. Previous research is more favorable toward small size schools, while the data analysis of the present study
showed that size ‘A’ (largest schools) and ‘D’ (smallest schools) schools had an equal impact on school counselors’ perceptions with respect to female participation in nontraditional CTE programs.

The overall findings of the study found that the gender, the level of education, age of school counselors and the school size were statistically significant factors with respect to influencing school counselors’ perceptions toward female participation in nontraditional CTE programs. Gender factor showed statistically significant influence on equity and promotion of nontraditional CTE programs for female students. The age factor showed a statistically significant effect on “equity”, which may be due to the factor that the older school counselors have a better understanding of female inclusion in all CTE programs. Level of education also proved to be significant factor to impact school counselors’ perception. Level of education of the respondents showed significant influence on “equity” and “sexual harassment” with higher levels of education they showing more understanding and perceptions of these concerns. The results of the study provided an understanding of what factors may influence school counselors perceptions in Michigan about female participation in nontraditional CTE programs.

Recommendations

For the deeper insight into school counselors’ perceptions, schools, practitioners and administrators should consider the following recommendations:

Recommendations # 1. Additional research on the participation of female students based on other factors such as perceptions of family, peers, community, school, and the teachers should be explored. The study was conducted only from the context of school counselors’ perceptions. In nontraditional CTE programs, there may be many other
factors, other than schools counselors' perceptions, that may have a significant impact on female students' participation in CTE programs.

O'Keefe and Hyde (1983) refer to social learning theory and infer that through differential reinforcement by parents, teachers, and other adults; imitations; and role modeling, individuals learn to engage in gender appropriate behaviors and pursue gender appropriate academic subjects and occupations. Similarly, Gottfredson (1981) argues that career development occurs through different stages and at a young age children become aware of gender type, prestige level, and skill sets required for occupations. As children age, they undergo a "compromise" stage of development in which children adjust their occupational choices based on perceptions of gender, social value, intelligence, and their own unique traits. Therefore, the study cannot generalize its finding to other factors and it is very important to do similar studies with other groups or people.

Among many factors, perhaps more widely supported is the role of both parents' and teachers' expectations of their children, especially in regards to nontraditional fields of science, technology and mathematics (Gutbezahl, 2001). Since there are so many complicating factors such as, race, class, education, and career awareness of parents, family support, and general awareness of possibilities in different nontraditional occupations (Garrison, 1979). Because of all these factors and differential treatment based on gender in nontraditional fields, girls may be discouraged from nontraditional occupations later in life. Hence, school counselors' perception is not the only factor preventing females from participating in nontraditional CTE programs.

The present study looked into a very small aspect of the issue; future studies should be expanded to include not only school counselors' perceptions, but also the
perceptions of family, teachers, and peers. These individual groups greatly influence nontraditional vocational career choices of students (Edwards, 1997). Due to the strong influence of these factors on occupational choices, future research is needed to explore these relationships.

Recommendations # 2. It is recommended that this study should be replicated in other states for a better understanding of the perceptions and roles of school counselors in other locations. There is an absence of research on the perceptions and role of school counselors in high schools. The present study only examined school counselors in Michigan and not school counselors from the other states. Therefore, findings may not be generalized to include other school counselors in other states. Due to the intensive and essential role the school counselors play in students' lives, more studies should be conducted on this issue.

Recommendations # 3. The present survey instrument should be improved for the collection of information. The survey instrument used in the study was five-point Likert scale, and there were no open-ended questions. The study realized the need of open-ended questions after the responses were received from the respondents. In future studies, the inclusion of some open-ended questions on the survey instrument would enable the researchers to collect responses that might not otherwise be drawn through a forced-choice type questionnaire.

Recommendations # 4. Future research should also involve male students in the study. In the present study, school counselors' perceptions were measured only toward female students in nontraditional CTE programs. Future studies should expand school counselors' perceptions toward male students in nontraditional CTE programs too.
Recommendations # 5. In-service training programs should be designed for beginning or younger school counselors. In the study the level of education and age were two significant factors influencing school counselors' perceptions toward female participation, which reflected the need for additional training. In-service training can help all school counselors particularly beginning or younger school counselors, to understand the concept and importance of equity and to encourage female students participating in nontraditional CTE programs.

Recommendations # 6. Due to the perceived sexual harassment in CTE programs, CTE school instructors should also be provided training to address female participation in nontraditional programs. With the provision of appropriate training for instructors, a conscious effort to an equitable learning environment for female students in the nontraditional CTE programs might be possible.

Recommendations # 7. More efforts should be devoted, not only on school levels, but at community and nation wide level, to create general awareness about the opportunities for female in nontraditional occupations. Additional promotional activities, recruitment strategies, guidance materials for female students can expand their chances for participation in a variety of nontraditional CTE programs.

Recommendations # 8. In the present study, schools counselors' perceptions toward female participation in nontraditional CTE programs were assessed on the basis of their beliefs. In reality, beliefs may be different than their practice of equity. There is a need of further research which could measure their practice toward equity in nontraditional CTE programs for female students. Female students should be involved in future
studies to assess the school counselors' actual practice of their equity and equal access beliefs toward participation of female students in nontraditional CTE programs.

Conclusions

It is hoped that this study will be the beginning of an extensive analysis of the perceptions and impact of school counselors on counseling female students into nontraditional occupations. In doing so, it is also hoped that the present study will contribute to a national dialogue on gender equity for female students in nontraditional occupations that will lead to new research initiatives, and educational reforms. Women are expected to make up over half the workforce by 2020; and they need to be fully prepared to face the challenge of labor market not only in traditional but in nontraditional occupations.

A gap exists in the literature on the perceptions of schools counselors regarding female students in nontraditional CTE programs. This study was conducted to augment the body of literature in the area. In addition, the study was conducted with the intention that by investigating the perceptions of school counselors, a better understanding about their role can be obtained. There seems to be general agreement that counselors should play a major role in helping to remove barriers and create options for both sexes and that nonsexist counseling is essential for optimal growth of students. It is crucial that school counselors need to pay close attention to social, political, and economic realities of students and families, and aim to address these critical issues within the school counselors' role (Bemak & Conyne, 2004). By working with groups of students, teachers, and parents and the larger community, rather than with individuals, the school counselor can provide awareness to lead them toward social justice, equal opportunities, and parity (Kiselica & Robinson, 2001). School counselors might need to change their role by
emphasizing social and educational equity and equal opportunity for all students (Bemak & Chung, 2005).

Career and technical education plays a positive and very significant role in providing opportunities for students to develop their academic and technical skills needed to achieve these goals. While the issue of gender representation and equity in career fields and education programs is a complex one, the study reinforces the importance of the school counselors' perceptions and the role it plays for equal participation of female students in nontraditional secondary CTE programs.
Appendix A

Survey Instrument

Survey Statements from the Previous Study
School Counselors’ Perceptions about Female Participation in Nontraditional Secondary Career and Technical Education (CTE) Programs

*A nontraditional secondary CTE program is one in which 75 percent or more of the enrolled students are of a particular gender.

Directions: Please respond to all the survey questions below. Do not put your name anywhere on the form so that your responses remain completely anonymous. You may choose not to answer any question by simply leaving it blank. The survey should take about 10-15 minutes to complete.

Section I. Demographic Information

<table>
<thead>
<tr>
<th>1. Gender?</th>
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<tbody>
<tr>
<td>Male</td>
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<tr>
<td>Female</td>
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<table>
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<tr>
<th>2. Age?</th>
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<tbody>
<tr>
<td>22-----29</td>
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<tr>
<td>30-----39</td>
</tr>
<tr>
<td>40-----49</td>
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<tr>
<td>50-----59</td>
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<tr>
<td>60 and above</td>
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</table>

<table>
<thead>
<tr>
<th>3. Level of education? (check highest level completed):</th>
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<tbody>
<tr>
<td>BA +15</td>
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<tr>
<td>MA</td>
</tr>
<tr>
<td>MA+15</td>
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<tr>
<td>Ed.D or Ph.D</td>
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<tr>
<th>4. Total Years Employed in the Field of Education?</th>
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<td>0</td>
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<tr>
<td>5</td>
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<td>10</td>
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<td>15</td>
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<td>20</td>
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<tr>
<td>25 or more</td>
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<tr>
<th>5. Total Years Employed as a School Counselor?</th>
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<tbody>
<tr>
<td>0</td>
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<td>5</td>
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<td>10</td>
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<td>15</td>
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<tr>
<td>20</td>
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<tr>
<td>25 or more</td>
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</table>
Section II. Belief Statements about Counseling Female Students into CTE Programs

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Don’t know</th>
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<tbody>
<tr>
<td>6.</td>
<td>Some career and technical education (CTE) programs, like electronics</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>technology, automotive, or manufacturing technology should primarily</td>
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<td></td>
<td>enroll males.</td>
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<td>7.</td>
<td>Career choice is as important for females as for males.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>8.</td>
<td>Money should be set aside in the school's budget for promoting female</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td></td>
<td>participation in nontraditional CTE programs</td>
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<td>9.</td>
<td>Females should be able to enter any CTE programs in which they are</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>interested and capable of completing.</td>
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<td>10.</td>
<td>To promote participation in CTE programs nontraditional for their</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td></td>
<td>gender, guidance materials (pamphlets, brochures, videotapes, etc.)</td>
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<td></td>
<td>should be visibly present and available for females in the counseling</td>
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<td>office.</td>
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<td>11.</td>
<td>Career counseling and recruitment materials that are available to</td>
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<td>students should be free from implications that certain careers are</td>
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<td>more appropriate or &quot;realistic&quot; for one gender than the other.</td>
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<td>12.</td>
<td>Counselors have special responsibilities to encourage females to</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td></td>
<td>consider enrollment in CTE programs that are nontraditional for their</td>
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<td></td>
<td>gender.</td>
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<tr>
<td>13.</td>
<td>Females are not physically capable of working in all occupations.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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</table>

Section III. Belief Statements about Female Participation in CTE Nontraditional Programs

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Don’t know</th>
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<tbody>
<tr>
<td>14.</td>
<td>Females entering nontraditional CTE programs will have more job</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>opportunities and better pay than those entering traditional CTE</td>
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<td>programs.</td>
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<tr>
<td>15.</td>
<td>CTE instructors should provide the same learning activities and projects for females in their programs as for male students.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>16.</td>
<td>The course content in male dominated occupations should include projects and examples that acknowledge the presence of females in the field.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>17.</td>
<td>Females enrolled in programs such as engineering technology, drafting, and industrial technology cannot solve math problems as well as males.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>18.</td>
<td>Separate facilities, such as, locker rooms and restrooms should be available for females who are enrolled in CTE programs.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>19.</td>
<td>CTE instructors cannot prevent sexual harassment in CTE programs that are nontraditional for females.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>20.</td>
<td>CTE instructors need to make employers aware of gender bias, stereotyping, and discrimination in hiring practices.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>21.</td>
<td>The impact of gender bias can be minimized through class discussion and teaching activities in CTE programs.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>22.</td>
<td>It is difficult for CTE instructors to convey the same expectations to female and male students in CTE programs.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>23.</td>
<td>Sexual harassment exists for female students who are in nontraditional CTE programs.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>24.</td>
<td>Female students are more difficult for CTE instructors to teach in nontraditional CTE programs.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>25.</td>
<td>CTE programs should establish procedures for describing and communicating to the general community the fact that all CTE programs are available to both females and males.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

Thank you very much for your time and participation to complete the survey.

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<table>
<thead>
<tr>
<th>Item</th>
<th>Item Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Some vocational programs, like electronics technology, should only enroll males.</td>
</tr>
<tr>
<td>2.</td>
<td>Career choice is not as important for females as for males.</td>
</tr>
<tr>
<td>3.</td>
<td>Females entering vocational programs nontraditional for their gender will have more job opportunities and better pay than those entering traditional programs.</td>
</tr>
<tr>
<td>4.</td>
<td>Vocational educators should attempt to maintain a definite male and female role separation in vocational programs.</td>
</tr>
<tr>
<td>5.</td>
<td>Money should be set aside in my school's budget for promoting female participation in vocational programs nontraditional for their gender.</td>
</tr>
<tr>
<td>6.</td>
<td>Females should be able to enter any vocational programs in which they are interested and capable of completing.</td>
</tr>
<tr>
<td>7.</td>
<td>I doubt that I will provide the same learning activities and projects for females in vocational programs nontraditional for their gender.</td>
</tr>
<tr>
<td>8.</td>
<td>The course content of male dominated occupations should include projects and examples that acknowledge the presence of females in the field.</td>
</tr>
<tr>
<td>9.</td>
<td>Females enrolled in programs such as engineering technology, drafting, and industrial maintenance cannot solve problems as well as males.</td>
</tr>
<tr>
<td>10.</td>
<td>Guidance materials (pamphlets, brochures, etc.) that promote female participation in vocational programs nontraditional for their gender should be visibly evident in the admission and other relevant offices.</td>
</tr>
<tr>
<td>11.</td>
<td>Separate facilities such as locker rooms and restrooms should be available for females who are enrolled in vocational programs nontraditional for their gender.</td>
</tr>
<tr>
<td>12.</td>
<td>There is little vocational educators can do to prevent sexual harassment in those programs nontraditional for females.</td>
</tr>
<tr>
<td>13.</td>
<td>Vocational educators need to make employers aware of gender bias/gender stereotyping/gender discrimination in hiring practices.</td>
</tr>
<tr>
<td>14.</td>
<td>The impact of gender biased teaching materials should be minimized through class discussion.</td>
</tr>
<tr>
<td>15.</td>
<td>Vocational counseling and recruitment materials that are available to students should be free from implications that certain careers are more appropriate or &quot;realistic&quot; for one gender than the other.</td>
</tr>
<tr>
<td>16.</td>
<td>Vocational counselors have special responsibilities to encourage females to consider enrollment in vocational programs nontraditional for their gender.</td>
</tr>
<tr>
<td>17.</td>
<td>Few females have the fortitude and ability to compete in a male's world.</td>
</tr>
<tr>
<td>18.</td>
<td>It's difficult for vocational educators to convey the same expectations to female and male students in vocational programs.</td>
</tr>
<tr>
<td>19.</td>
<td>Females are not physically capable of working in all occupations.</td>
</tr>
<tr>
<td>20.</td>
<td>Sexual harassment has a negative effect on female students who are in vocational programs nontraditional for their gender.</td>
</tr>
<tr>
<td>21.</td>
<td>Female students would be a burden to vocational instructors if they enrolled in vocational programs nontraditional for their gender.</td>
</tr>
<tr>
<td>22.</td>
<td>Vocational programs should establish procedures for describing and communicating to the general community the fact that all vocational programs are available to both females and males.</td>
</tr>
</tbody>
</table>

Original Statements


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Appendix B

Cover Letter
November 25, 2004

Dear Counselor:

You are invited to participate in a research project entitled School Counselors’ Perceptions about Female Participation in Nontraditional Secondary Career and Technical Education (CTE) Programs.” The study is designed to investigate high school counselors’ perceptions toward female participation in nontraditional secondary CTE programs.

Dr. Carl A. Woloszyk, Professor Emeritus from the Department of Family and Consumer Sciences and Rashida Khatoon, Doctoral Student in Educational Leadership, Western Michigan University, is conducting the study. This research is being conducted for Rashida Khatoon as part of a Doctoral Degree requirement in Educational Leadership with a concentration in Career and Technical Education.

The first section of the survey instrument is comprised of five demographic questions. The second section of the survey comprised of eight statements regarding counseling female students into CTE programs. The third section of the survey contains 12 statements regarding female participation in nontraditional CTE programs. Your responses will be completely anonymous, please don’t write your name anywhere on the form. You may choose not to answer any question by simply leaving it blank. If you choose not to participate, you may either return the blank survey or you may discard it.

If you have any questions regarding the survey instrument, you may contact Dr. Carl A. Woloszyk at 269-387-3704 or Rashida Khatoon, at 269-387-6381. You may also contact the Chair, Human Subject Institutional Review Board (269-387-8293) or the Vice President for research (269-387-8298), if questions or concerns arise during the course of the study.

After you have completed the survey instrument, please return it in the enclosed pre-addressed and pre-stamped envelope.

The WMU Human Subjects Institutional Review Board as indicated has approved the consent form for use for one year by the stamped date and signature of the Chair in the upper right corner. You should not participate in this project if the stamped date is more than one year old.

Thank you in advance for your assistance with this survey and for your involvement in the study. Returning the survey will serve as your consent to participate in the study.

Sincerely,

Carl A. Woloszyk
Professor Emeritus
Career and Technical Education

Rashida Khatoon
Doctoral Candidate

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Appendix C

Follow Up Letter
December 8, 2004

Dear Counselor:

Recently you were invited to participate in a research project entitled “School Counselors’ Perceptions about Female Participation in Nontraditional Secondary Career and Technical Education (CTE) Programs.” As of this time, we have not received a response from you.

The enclosed survey consists of 25 questions about your perceptions toward female participation in nontraditional secondary CTE programs and takes only 10 minutes to complete.

If possible, please complete and return the survey before going on your Holiday vacation. If you choose not to participate, please return the blank survey or you may discard it.

Thank you for your time and effort in responding to this request.

Sincerely,

Carl A. Woloszyk, PhD
Professor Emeritus
Career and Technical Education
Western Michigan University
Kalamazoo

Rashida Khatoon Malik
Doctoral Candidate
Appendix D

Human Subjects Institutional Review Board

Letter of Approval
Date: October 27, 2004

To: Carl Woloszyk, Principal Investigator
Rashida Khatoon, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Interim Chair

Re: HSIRB Project Number: 04-10-24

This letter will serve as confirmation that your research project entitled "School Counselors' Perceptions about Female Participation in Nontraditional Secondary Career and Technical Education (CTE) Programs" has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: October 27, 2005
REFERENCES


Retrieved on March 17, 2004 from:

http://www.aflcio.org/issuespolitics/women/factsaboutworkingwomen.cfm


http://www.acteonline.org/policy/legislative_issues/Perkins_background.cfm


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http://www.nwrel.org/scpd/sirs/10/c020.html


Jacksonville, FL: Author.


Retrieved on January 10, 2003 from:
http://www.nwlc.org/details.cfm?id=1133&section=newsroom


American Association of University Women Educational Foundation (AAUWEF).

http://www.tc.columbia.edu/cice/articles/ag151.pdf


Hoyt, K. B., Hughey, J. K., & Hughey, K. F. (1994). *Helping school counselors meet the challenges to change found in tech prep.* Unpublished manuscript.


*Professional School Counseling, 4*, 31-41.


http://oak.cats.ohiou.edu/~howleyc/ARfin.htm


Kaiser Family Foundation (2002). *Women's health in the united states: health coverage and access to care*. Retrieved on April 1st, 2004 from:

http://www.aflcio.org/issuespolitics/women/factsaboutworkingwomen.cfm


Melymuka, K. (2001). If girls don't get it, it won't get girls. *COMPUTER WORLD, 1*(8).


Retrieved on January 13, 2005 from:

http://www.findarticles.com/p/articles/mi_m0FCG/is_2_30/ai_105478982


Ryan, Kathryn E. (1999). *Gender bias in industrial technology at the middle school level*. Saint Xavier University and IRI.


woman's issue

*Sex Roles: A Journal of Research.* Retrieved on March 17, 2003 from:

http://www.findarticles.com/p/articles/mi_m2294/is_2002_August/ai_95514610/p
g_2


Thom, M. (2001). *Balancing the equation: Where are the women and girls in science, engineering and technology?*’ NCROW Report.


Ohio University, Athens, Ohio.

United States Commission on Civil Rights (2000, July). *Equal educational opportunities and nondiscrimination for girls in advanced mathematics, science, and technology education: federal enforcement of Title IX*. Author


Valerie G. Ward, M.A., is a Senior Consultant with the Canadian Guidance and Counseling Foundation in Ottawa.


adult's sex-stereotyped perceptions of infants. *Sex Roles, 24 (9/10),* 605-616.


Women's Educational Equity Act (WEEA) (1992). *What is gender equity?*

Wonacott, M. E. (2002). Blending face-to-face and distance learning methods in adult and career-technical education. *Practice Application Brief no. 23*

