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PERCEPTIONS HELD BY VOCATIONAL EDUCATORS TOWARD FEMALE PARTICIPATION IN NONTRADITIONAL PROGRAMS

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Running Head: Female Participation

Abstract

This study investigated vocational educators' perceptions toward female participation in nontraditional postsecondary programs by examining the underlying dimensionality of their perceptions and then determining the relative influence of select variables (gender, ethnic group, age, educational level, and current position) on those dimensions. A self-administered questionnaire containing 22 perception statements was mailed to a systematic sample of 315 vocational educators at 2-year postsecondary technical institutes in Georgia. A 61.58% response rate found a positive perception toward female participation in nontraditional programs. An exploratory factor analysis using a principal components procedure with varimax rotation generated 4 dimensions (promotion of females in nontraditional programs, perceived educators' role in nontraditional programs, female enrollment in nontraditional programs, and barriers for females entering the male's world). MANOVA and post hoc ANOVA procedures revealed that gender and current position had significant impact on educators' perceptions toward female participation in nontraditional programs; female vocational educators' perceptions were more positive than their male counterparts, and counselors were more likely to promote females entering nontraditional programs than administrators and instructors.

Vocational education is part of the solution of the problem of workforce competitiveness (Buzzell, 1993) and is uniquely positioned to prepare students for skilled jobs in today's labor market. However, most vocational occupations remain strongly gender segregated, though there have been countless programs to encourage females to enter nontraditional occupations (Ehrhart & Sadler, 1987). For several decades, females seemed to be the "forgotten half" in vocational education because they have been either prepared for occupations in homemaking or low-pay, dead-end jobs. This ultimately contributes to inappropriate vocational 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.

Although more and more vocational educators are aware of this serious situation, females still constitute a small minority in male-dominant programs. It seems that females contemplating entering nontraditional programs face numerous barriers, and one of them is gender stereotype (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). But a general lack of research exists on vocational educators' perceptions toward female participation in nontraditional programs.

Purpose of the Study and Research Objectives

The purpose of this study was to investigate and compare vocational educators' perceptions toward female participation in nontraditional postsecondary programs. Select variables were examined to determine possible influences on educators' perceptions. Specific research objectives were:

1. To describe vocational educators' perceptions toward female participation in nontraditional programs.
2. To identify the underlying dimensions that comprise vocational educators' perceptions toward female participation in nontraditional programs.
3. To compare differences, if any, in vocational educators' perceptions toward female participation in nontraditional programs based on gender, ethnic group, age, educational level, and current position.

Review of Literature

For decades most American women stayed at home raising their children. Nash (1991) recalled that any American who owned a television set in the 1950s and 1960s would recognize the "typical" American family portrayed on such programs as "Father Knows Best," "Leave it to Beaver," "The Adventures of Ozzie and Harriet," and "The Donna Reed Show." In these prime-time programs, father worked in an office while mother stayed home with two or three children. While this scenario by no means accurately portrayed every American household, it did closely reflect the values and ideals of a majority of women in the country at that time.

The situation has changed markedly over the last 30 years with the gender balance in the workforce expected to shift still further before the end of the century. Initially, social change during the late 1960s and early 1970s, coupled with genuine financial necessity, allowed women to gain a foothold in the business world, essentially redefining their role to include paid employment as a norm rather than an exception (Nash, 1991). Nash forecasted that these trends would persist for the remainder of this century. Thus, between 1985 and 2000, white males, who only a generation ago made up the dominant segment of the labor market, will comprise only 15% of net additions to the U. S. workforce. The majority of new entrants will be women and non-white minorities. By the year 2000, about 47% of the workforce will be comprised of women, while 61% of all American women will be employed (Johnston & Packer, 1987).

Despite their growing visibility 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 (Nash, 1991). According to the U. S. Department of Labor (1990a), women represented 80% of all administrative support workers (including clerical) in 1989, but only about 9% of all precision production, craft, and repair workers. Women constituted 68% of all retail and personal services, but less than 40% of all executives, managers, and administrators. Statistics indicate that the situation is changing, but very slowly. A scant 9% of working women are in jobs considered nontraditional for their gender (Stenberg & Tuchscherer, 1992).

Most working women are still heavily concentrated in low-paying jobs. The average woman earned about 70 cents for every dollar earned by the average man when 1989 median weekly earnings of full-time wage and salary workers were compared (U. S. Department of Labor, 1990a). Forty-three percent of women workers are currently in jobs that pay below poverty level wages, compared to only 27% of men. It does appear, however, that women's earnings are slowly climbing when compared with men's earnings (U. S. Department of Labor, 1990b). In 1991, according to the U. S. Labor Department's Bureau of Labor Statistics, the ratio of women's-to-men's earnings reached an unprecedented 75%. This may be caused by the continual increase of women's participation in the workforce that patterns men. Another factor may be that women's educational investment and occupational choices are also becoming similar to men's (U. S. Department of Labor, 1990b).

Vocational education is in a unique position to prepare women for various occupations because of its direct link between school and work. However, most vocational occupations remain strongly gender segregated. Burge and Culver (1990) 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, in the seven traditional vocational education program areas, six tend to be heavily gender-typed and nontraditional for one gender or the other (Burge & Culver, 1990). Bitters and Foxwell (1990) reported that only 13.1% of female students nationwide were enrolled in vocational programs nontraditional for their gender. Given the critical importance of vocational education to provide 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.

Barriers inhibiting female participation in nontraditional programs are complex and interrelated. Vocational educators could restrain females' access to nontraditional programs if they themselves believe vocational opportunities are limited by gender; transmit their gender biases in classrooms, counseling situations, and other activities; ignore or do not implement the 1990 Carl D. Perkins Vocational and Applied Technology Education Act which benefits females; or use gender-biased and stereotyped materials for assessment, guidance, and education. 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. This can range from

subtle discouragement through comments such as "Are you sure?," "This is a male-dominated field," and "Why do you want to choose that major?" to refusal to enroll female students in programs considered nontraditional for their gender. In either case, the result is to effectively block certain vocational preparation opportunities to females. As Burge and Culver (1990) concluded, the willingness of vocational educators to be innovative in recruitment and retention activities can make a difference in women's lives. Wrightsman and Keaux (1981) pointed out that perceptions and attitudes have been assumed to guide people to adopt different vocational and life roles. In turn, 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.

Research Methods

Design and Instrumentation

A survey technique was used to determine the current perceptions of vocational educators at technical institutes in Georgia toward female participation in nontraditional programs. Since a measurement instrument considered adequate for the present study was not available, the instrument was developed by the researchers as a booklet with two sections: (a) perception statements and (b) demographic information.

Section one contained 22 statements which addressed perceptions toward female participation in nontraditional programs. Perception statements were derived from checklists of Changing roles of men and women: Educating for equity in the workforce (Nash, 1991) and from literature related to female participation and barriers to female participation in nontraditional programs. Statements included perceptions toward recruitment, enrollment, career information, counseling, teaching materials, instruction, funding, facilities, job opportunity, placement, program appropriateness, and career choice. Perception statements were measured using a 4-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). On this scale, a low score indicated a negative perception toward female participation in nontraditional programs, while a high score represented a positive perception. However, for those items negatively set in this study, low scores represented positive perception when interpreted reversely. The questionnaire was validated by a panel of individuals knowledgeable of female participation in vocational education programs nontraditional for their gender. A Cronbach alpha of 0.85 was determined in a test-retest pilot study.

In section two, demographic information was requested for each participant on questions associated with gender, ethnic group, age, educational level, and current position (i.e., instructor, counselor, or administrator).

Participants

The target population for this study included all vocational instructors, counselors, and administrators at 2-year postsecondary technical institutes in Georgia. A directory of vocational instructors, counselors, and administrators was obtained from the Georgia Department of Technical and Adult Education. Due to the varying size of each subgroup, different sampling techniques were used. Systematic sampling was used to select a subgroup of vocational instructors at technical institutes in Georgia from a total population of 1,011. According to a formula proposed by Jaeger (1984), the minimum required sample size for a population of 1,000 at a 95% confidence level is 88 individuals. Considering that some instructors might not respond to the survey, the researchers selected 126 vocational instructors for participation. The related populations of counselors (i.e., recruitment, support services, and single-parent programs) and administrators (i.e., director of admissions, vice president of student development services, vice president of instructional services, and division dean) were also included. Three hundred and fifteen questionnaires were sent to representatives of the three identified subgroups, including 126 vocational instructors, 90 counselors, and 99 administrators. Of those mailed, 194 questionnaires were returned which represented a total return rate of 61.58%. Seventy-five

out of 126 vocational instructors returned their completed questionnaires accounting for a 59.52% return rate. Forty-nine out of 90 counselors returned questionnaires (54.44%). Seventy out of 99 administrators sent back their questionnaires (70.70%).

Less than half the respondents (43.3%) were female. Among females, less than one-third were administrators. Male administrators accounted for 42.7% of the male respondents. A majority of participants were White (89.6%), while Black respondents accounted for 9.3%. The age range of respondents was 26 to 68 years. The average age of respondents was 46.51 years with a standard deviation of 8.13. Three-fourths of all respondents were 35 through 55 years of age.

The level of education for respondents ranged from high school diploma to doctorate degree. For those who earned a high school diploma and a 2-year degree, almost all were vocational instructors. In contrast, most administrators held the master's degree or higher, and four-fifths of the administrators held doctoral degrees. The majority of counselors possessed a bachelor's degree or advanced degree.

Approximately 39% of those responding were vocational instructors, 36% were administrators, and the remaining 25% were counselors.

Procedure

Since sample members were located throughout Georgia, a mailed survey questionnaire was used. The first mailing consisted of a cover letter and questionnaire. To assist participants in accurately completing the questionnaire, directions and definitions of terms were included with each section of the questionnaire. The instrument was pre-addressed and pre-stamped to facilitate returning the completed questionnaire. A follow-up mailing was sent one month later to those not responding to the initial questionnaire. This procedure resulted in a total of 194 usable questionnaires being returned for a response rate of 61.58%.

Since survey research has potential for bias between those who responded and those who did not respond, Whipple and Muffo (1982) suggested a way to check for bias by treating late respondents (those who responded to the second mailing) as "nonrespondents." T-tests were performed on the 22 perception statements to determine if significant differences existed between early respondents (first mailing) and late respondents (second mailing). Results showed that no significant differences were observed. Thus, the chance for nonresponse bias was considered low.

Data Analysis

A combination of descriptive and inferential statistics were used to address stated research objectives. Descriptive statistics were employed to describe vocational educators' perceptions toward female participation in nontraditional programs. Factor analysis was used to identify latent dimensions underlying the 22 scale items that measured vocational educators' perceptions toward female participation in nontraditional programs. Multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) were used to analyze the differences in perceptions among vocational educators based on gender, ethnic group, age, educational level, and current position at 0.05 significance level.

Results

Research Objective 1

Vocational educators' perceptions toward female participation in nontraditional programs. Twenty-two statements were used to describe the perceptions of vocational educators at technical institutes in Georgia toward female participation in nontraditional programs. Generally speaking, vocational educators' perceptions toward female participation in nontraditional programs were quite positive. Though overall mean scores for the 22 individual scale items ranged from a high mean of 3.79 to a low mean of 1.15 (1 = strongly disagree;

4 = strongly agree), all low means were actually items set negatively (items 1, 2, 4, 7, 9, 12, 17, 18, 19, and 21). In that case, low means represent positive perceptions when interpreted reversely. Table 1 displays means and standard deviations for each scale item.

Table 1
Descriptive Statistical Summary of Vocational Educators' Perceptions

Item	**Item Statement**	**M**	**SD**
1.	Some vocational programs, like electronics technology, should only enroll males.	1.15	0.37
2.	Career choice is not as important for females as for males.	1.16	0.44
3.	Females entering vocational programs nontraditional for their gender will have more job opportunities and better pay than those entering traditional programs.	2.52	0.82
4.	Vocational educators should attempt to maintain a definite male and female role separation in vocational programs.	1.28	0.50
5.	Money should be set aside in my school's budget for promoting female participation in vocational programs nontraditional for their gender.	2.59	0.87
6.	Females should be able to enter any vocational programs in which they are interested and capable of completing.	3.79	0.45
7.	I doubt that I will provide the same learning activities and projects for females in vocational programs nontraditional for their gender.	1.30	0.54
8.	The course content of male dominated occupations should include projects and examples that acknowledge the presence of females in the field.	3.07	0.93
9.	Females enrolled in programs such as engineering technology, drafting, and industrial maintenance cannot solve problems as well as males.	1.24	0.45
10.	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.	3.42	0.69
11.	Separate facilities such as locker rooms and restrooms should be available for females who are enrolled in vocational programs nontraditional for their gender.	3.41	0.62
	There is little vocational educators can do to prevent sexual harassment in those		

12.	programs nontraditional for females.	1.40	0.53
13.	Vocational educators need to make employers aware of gender bias/gender stereotyping/gender discrimination in hiring practices.	3.02	0.82
14.	The impact of gender biased teaching materials should be minimized through class discussion.	3.25	0.72
15.	Vocational 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.	3.48	0.60
16.	Vocational counselors have special responsibilities to encourage females to consider enrollment in vocational programs nontraditional for their gender.	2.98	0.83
17.	Few females have the fortitude and ability to compete in a male's world.	1.48	0.69
18.	It's difficult for vocational educators to convey the same expectations to female and male students in vocational programs.	1.66	0.63
19.	Females are not physically capable of working in all occupations.	2.22	0.83
20.	Sexual harassment has a negative effect on female students who are in vocational programs nontraditional for their gender.	3.18	0.69
21.	Female students would be a burden to vocational instructors if they enrolled in vocational programs nontraditional for their gender.	1.49	0.60
22.	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.	3.53	0.60

Note. Respondents were asked to rate each research statement using a 4-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree).

Vocational educators strongly agreed that females should be able to enter any vocational programs in which they are interested and capable of completing (M = 3.79; SD = .45). They strongly agreed that procedures should be established for describing and communicating to the general community that all vocational programs are available to both females and males (M = 3.53; SD = .60). To facilitate females contemplating nontraditional programs, educators agreed that guidance materials (pamphlets, brochures, etc.) which promote female participation in nontraditional programs should be visibly evident in admissions and other relevant offices (M = 3.42; SD = .69), and vocational 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 = 3.48; SD = .60).

Vocational educators strongly disagreed that some vocational programs, like electronics technology, should only enroll males (M = 1.15; SD = .37), and they strongly disagreed that females enrolled in programs such as engineering technology, drafting, and industrial maintenance cannot solve problems as well as males (M = 1.24; SD = .45). Though vocational educators agreed that sexual harassment has a negative effect on female students who are in nontraditional programs (M = 3.18; SD = .69), they disagreed that there is little vocational educators can do to prevent sexual harassment in those programs nontraditional for females (M = 1.40; SD = .53).

Vocational educators were not certain about funding for promoting female participation in nontraditional programs. They held moderate perceptions about setting aside promotional money for female participation in nontraditional programs (M = 2.59; SD = .87). They were also less certain about job opportunities and better pay for females entering nontraditional programs (M = 2.52; SD = .82).

Research Objective 2

The underlying dimensions that comprise vocational educators' perceptions toward female participation in nontraditional programs. The second research question sought to empirically identify underlying issues or themes inherent in vocational educators' perceptions toward female participation in nontraditional programs. Since a pre-existing data structure was not assumed, an exploratory principal components factor analysis with varimax rotation was selected to identify latent dimensions represented among the 22 perception scale items (Dixon, Brown, Engelman, Hill, & Jennrich, 1988).

In a principal components analysis, the first factor represents the combination of variables that accounts for the largest amount of total sample variance; while successive components explain progressively smaller portions of variance (Borg & Gall, 1989; Norusis, 1988). A varimax rotation was used to achieve a simpler data structure by spreading the variance more equally across identified factors and minimizing the number of variables with high factor loadings (Tinsley & Tinsley, 1987).

In this study, a 4-factor solution was adopted for rotation based on established selection criteria (Tinsley & Tinsley, 1987). Only factors with eigenvalues (the sum of squared-factor loadings which indicates a factor's contribution to explaining the common variance underlying all variables) of 1.50 or greater were considered and then corroborated by a screen test. Additional factors identified by this procedure were not selected for rotation as they accounted for extremely small percentages of total variance and were considered residual or error factors. The resulting 4-factor solution accounted for 49.59% of total variance as shown in Table 2.

Table 2
Varimax-Related Factor Loading Matrix for Principal Components Analyses of Vocational Educators' Perceptions

		Factorsa			
Items	**1**	**2**	**3**	**4**	**h2**
10	.703(.49)b	.228(.05)	.168(.03)	.009(.00)	.57
16	.701(.49)b	.010(.00)	.235(.06)	.250(.06)	.61

5	.669(.45)b	-.101(.01)	.088(.01)	.083(.01)	.48
14	.614(.38)b	.115(.01)	.092(.01)	.221(.05)	.45
8	.568(.32)b	.186(.03)	.094(.01)	.004(.00)	.36
22	.548(.30)b	.141(.02)	.096(.01)	.244(.06)	.39
11	.538(.29)b	.339(.11)	.084(.01)	-.414(.17)	.58
13	.496(.25)b	.077(.01)	.130(.02)	.147(.02)	.30
19	.447(.20)b	.433(.19)	-.022(.00)	.143(.02)	.41
18	.017(.00)	.738(.54)b	.066(.00)	.030(.00)	.54
12	.104(.01)	.685(.47)b	.231(.05)	.054(.00)	.53
7	.084(.01)	.679(.46)b	.058(.00)	.080(.01)	.48
21	.271(.07)	.658(.43)b	.268(.07)	.033(.00)	.57
9	.101(.01)	.575(.33)b	.339(.11)	.073(.01)	.46
15	.371(.14)	.448(.20)b	.394(.16)	.284(.08)	.58
1	.104(.01)	.160(.03)	.807(.65)b	.205(.04)	.73
2	.201(.04)	.095(.01)	.744(.55)b	-.051(.00)	.60
6	.178(.03)	.283(.08)	.654(.43)b	-.055(.00)	.54
4	.161(.03)	.368(.14)	.539(.29)b	.271(.07)	.53
20	.219(.05)	.163(.03)	.055(.00)	.671(.45)b	.53
17	.239(.06)	.315(.10)	.053(.00)	.618(.38)b	.54

3	.091(.01)	.051(.00)	.153(.02)	.323(.10)	.13
Eigenvalue	3.64	3.25	2.49	1.53	10.91
% of variance	16.55	14.77	11.32	6.95	49.59
% of trace	33.36	29.79	22.82	14.02	100.00

Note: Numbers in parentheses are the squares of each factor loading.

Factor names are:
1 = Promotion of Females
2 = Perceived Educators' Role
3 = Female Enrollment
4 = Barriers for Females.

only factor loadings >.40 were used to name factors.

In order to facilitate the analysis of factors in one direction, items 1, 2, 4, 7, 9, 12, 17, 18, 19, and 21 which were negatively set were reordered before factor analysis. A conservative criterion loading of .40 was used to determine whether scale items were included on a given factor. This cut-off loading was more stringent than the typical value of .30 and was arbitrarily selected to ensure a greater degree of confidence in the factor loadings. A criterion loading of .40 indicates that approximately 15% of the variance in a given variable is explained by that factor (Tinsley & Tinsley, 1987). As a result, only one item on Factor 4 did not meet the criterion cut-off and was not considered when identifying and naming each factor.

Nine items pertaining to the viability of promoting female participation in nontraditional programs were loaded on Factor 1. Positive responses on this factor indicated that female participation in nontraditional programs should be promoted using different strategies such as recruitment effort, guidance materials in admissions offices, counselors' encouragement, special funding, teaching materials, separate facilities, and focused efforts in placement. This factor accounted for 16.55% of the data variance and was entitled Promotion of Females in Nontraditional Programs. Higher scores revealed a general agreement for promoting females in nontraditional programs.

Factor 2 consisted of six items that described individual vocational educator's perceptions toward females in nontraditional programs and their perceived roles in those programs. This factor which accounted for 14.77% of the variance was named Perceived Educators' Role in Nontraditional Programs. An underlying theme here involved whether vocational educators should hold the same expectations, provide identical learning activities and instruction efforts to both males and females, and whether vocational educators can help prevent sexual harassment in those programs nontraditional for females.

Four items which loaded on Factor 3 focused attention on female enrollment in nontraditional programs. Issues within this factor included whether females should be enrolled in nontraditional programs, whether there should be a definite male and female role separation in vocational programs, and whether career choice is as important for females as for males. This dimension was labeled Female Enrollment in Nontraditional Programs and accounted for 11.32% of the variance.

The fourth identified factor consisted of three items which focused on barriers that vocational educators

perceived when females enter nontraditional programs or in their future careers. This factor was designated Barriers for Females Entering the Male's World and explained 6.95% of the total variance in the data.

Research Objective 3

The influence of select variables (gender, ethnic group, age, educational level, and current position) on vocational educators' perceptions toward female participation in nontraditional programs. The four identified perception factors were used as dependent variables in a MANOVA. The influence of five select independent variables (gender, ethnic group, age, educational level, and current position) were examined. MANOVA was followed by a post hoc univariate ANOVA for each independent variable showing statistical significance as shown in Table 3.

Table 3
Sequential Multivariate Analysis of Variance of Vocational Educators' Perceptions

	Multivariate Tests (MANOVA)	Univariate Tests (ANOVA)							
Source	Wilkes Lambda	F	Num df	Den	df	Promotion (Factor 1)	Edct Role (Factor 2)	Enroll (Factor 3)	Barrier (Factor 4)
Gender	0.84	8.97	4	189***	1	19.58***	22.17***	11.72	21.11***
Race	0.05	2.34	4	186	-	-	-	-	-
Age	0.91	1.42	12	477	-	-	-	-	-
Education	0.88	1.20	20	595	-	-	-	-	-
Position	0.86	3.77	8	376***	2	13.49***	2.00	4.34*	5.56**

*p<.05

**p<.01

***p<.001

Note: For race, the American Indian group and Asian/Pacific group were deleted because of small numbers. The age group under 25 was also deleted as no respondent was identified in this group. The "other" category in educational level was omitted because of small numbers.

A Bonferroni post hoc correction was used with each univariate test to control for experiment-wise error rate of univariate follow-ups and was accomplished by dividing the established level of significance by the

number of univariate tests performed (Haase & Ellis, 1987). Due to the possible effects of sample size on determining statistically significant results, composite mean and standard deviation scores for each factor are provided to allow the reader to determine if statistically significant differences are also of practical significance as shown in Table 4.

Table 4
Descriptive Statistics for Factors Derived from Educators' Perceptions

		Factor Scores			
Variables	**n**	**Promotiona (Factor 1) Mean (SD)**	**Edct Roleb (Factor 2) Mean (SD)**	**Enrollc (Factor 3) Mean (SD)**	**Barrierd (Factor 4) Mean (SD)**
Gender					
Female	84	29.49 (3.6)	22.21 (1.8)	15.56 (0.9)	9.69 (1.3)
Male	110	26.70 (4.9)	20.65 (2.6)	14.92 (1.5)	8.75 (1.5)
Race*					
White	173	27.64 (4.6)	21.28 (2.5)	15.17 (1.4)	9.20 (1.4)
Black	18	30.67 (3.4)	22.06 (1.8)	15.56 (0.9)	9.17 (2.0)
American Indian	1	29.00 (0.0)	22.00 (0.0)	15.00 (0.0)	8.00 (0.0)
Asian/Pacific	1	25.00 (0.0)	18.00 (0.0)	15.00 (0.0)	7.00 (0.0)
Age**					
25-34	16	27.25 (3.9)	21.44 (2.1)	14.69 (1.6)	9.44 (1.5)
35-44	57	27.47 (4.9)	21.39 (2.3)	15.42 (1.0)	9.16 (1.2)
44-55	86	28.44 (4.8)	21.58 (2.4)	15.22 (1.2)	9.14 (1.7)
Over 55	28	27.46 (3.4)	20.36 (2.8)	14.86 (1.8)	9.14 (1.3)

Education					
High School Diploma	11	25.45 (5.4)	21.82 (2.3)	14.91 (1.8)	8.55 (1.7)
2-year Degree	12	27.33 (4.2)	20.17 (1.9)	14.75 (1.4)	8.58 (2.3)
BA/BS	28	28.86(4.7)	21.61(2.4)	15.36(1.5)	9.39(1.2)
MA/MS/MED	68	28.53(3.9)	21.29(2.3)	15.28(1.2)	9.15(1.2)
EdS	40	27.50(4.5)	21.53(2.5)	15.35(1.2)	8.98(1.7)
PhD/EdD	29	28.10(5.5)	21.72(2.6)	15.28(1.3)	9.76(1.5)
Others	6	23.83(2.8)	18.50(2.0)	13.50(1.4)	8.67(1.5)
Position					
Instructor	75	26.03(4.4)	20.92(2.4)	14.88(1.6)	8.73(1.5)
Counselor	49	29.96(3.2)	21.78(1.9)	15.57(0.9)	9.57(1.3)
Administrator	70	28.49(4.7)	21.44(2.7)	15.27(1.3)	9.31(1.5)

a Factor 1 scores represent a cumulative mean score based on individual responses to nine scale items using a 4-point Likert type scale (range 9-32).

B Factor 2 scores represent a cumulative mean score based on individual responses to six scale items using a 4-point Likert type scale (range 6-24).

C Factor 3 scores represent a cumulative mean score based on individual responses to four scale items using a 4-point Likert type scale (range 4-16).

D Factor 4 scores represent a cumulative mean score based on individual responses to three scale items using a 4-point Likert type scale (range 3-12).

* Missing Observation = 1

** Missing Observation = 7

Results of the MANOVA revealed that variables of gender and current position selected for analysis generated significant differences on one or more of the four perception factor scores. Race, age, and educational level had no significant impact on vocational educators' perceptions toward female participation in nontraditional programs. The impact of gender and current position on the four factors is examined in subsequent paragraphs.

Factor 1: Promotion of females in nontraditional programs

Post hoc analysis revealed that two independent variables--gender and current position--significantly influenced perceptions on this factor. Female educators surveyed were more positive than male educators toward promoting female participation in nontraditional programs through different strategies such as recruitment effort, guidance materials in relevant offices, counselors' encouragement, special funding, teaching materials, separate facilities, and efforts in placement. Counselors who participated in this study were more likely to promote females entering nontraditional programs than administrators and instructors. At the same time, administrators were more likely to encourage females to enter nontraditional programs than instructors.

Factor 2: Perceived educators' role in nontraditional programs

The second factor considered the role of vocational educators in nontraditional programs. Follow up ANOVA results showed that gender was the only variable to have a significant impact on this perception factor. Female respondents were more likely to possess the same expectations for both male and female students, take the same actions in class instruction, and view prevention of sexual harassment as a role of vocational educators. Male respondents, in general, were less likely to understand the vocational educators' role in nontraditional programs.

Factor 3: Female enrollment in nontraditional programs

Two variables made a significant impact on educators' perceptions of female enrollment in nontraditional programs. Data revealed that female respondents were more positive than male respondents on issues of whether females should be enrolled in nontraditional programs, whether there should be a definite male and female role separation in vocational programs, and whether career choice was as important for females as for males. An examination of responses by instructors, counselors, and administrators revealed that counselors were significantly more positive than instructors toward female enrollment in nontraditional programs. Results also indicated that instructors were less positive than administrators on these issues.

Factor 4: Barriers for females entering the male's world

The last factor that described educators' perceptions was concerned with barriers that vocational educators perceived when females enter nontraditional programs or in their future careers. Two variables significantly influenced factor four scores including gender and current position. A post hoc univariate ANOVA revealed that female educators were more likely to perceive barriers for females entering the male's world. Instructors were less likely to perceive those barriers than counselors and administrators.

Discussion

For the past two decades, significant efforts have been made to eliminate gender discrimination and gender stereotyping in vocational education. Since Title IX of the Educational Amendments of 1972, the federal government has been promoting gender equity, thus insuring opportunities for education which had

previously been denied to people because of their gender.

Nevertheless, the overall status for females in nontraditional programs remains relatively low (Burge & Culver, 1990) despite great efforts to change and create a more favorable environment for females. Vocational educators sometimes have gender stereotyping attitudes and behaviors without these individuals even being cognizant of their detrimental effect. These have contributed to difficulties experienced by females who are either enrolled or are contemplating enrolling in nontraditional programs.

Gender equity is a topic frequently in the news (Plawin, 1993); however, little is known about vocational educators' perceptions toward female participation in nontraditional programs. The present study was a first step to develop empirical measures of vocational educators' perceptions toward female participation in nontraditional programs. As such, the study's purpose was exploratory, providing an assessment of perceptions.

Findings from the study provide a picture of vocational educators' perceptions toward female participation in nontraditional programs. Overall, perceptions of vocational educators at technical institutes in Georgia toward female participation in nontraditional programs was quite positive, as measured by their responses to 22 perception statements. Vocational educators surveyed generally believed that females should be able to enter any vocational programs in which they are interested and capable of completing, and females enrolled in programs such as engineering technology, drafting, and industrial maintenance can solve problems as well as males. This finding does not support the historical belief that there should be definite male and female occupational separation in vocational programs (Hollenback, 1985). It did demonstrate a change in educators' perceptions from an early study by Harrison (1979) who found that vocational educators were reluctant to have females in nontraditional programs. Part of the reason for changes from the past decades to the present might include federal regulations, social influence, gender equity workshops and inservice training, and the fact that more females are entering the workforce.

However, some vocational educators had a different opinion when discussing funding. One-fifth of the educators expressed that money set aside for promoting female participation in nontraditional programs should be cut without any objection when the budgets are tight or money set aside is not necessary, since most females entering nontraditional programs usually drop out.

Since this study sought a broad overview of vocational educators' perceptions, an exploratory factor analysis was conducted to determine if underlying dimensions which represented vocational educators' perceptions could be identified. The analysis revealed that vocational educators may form perceptions based on four discrete factors including promotion of females in nontraditional programs, perceived educators' role in nontraditional programs, female enrollment in nontraditional programs, and barriers for females entering the male's world. Future work in this area may expand and clarify these preliminary factors. In any event, it appears that vocational educators' perceptions toward female participation in nontraditional programs is a multidimensional construct.

The impact of select variables on vocational educators' perceptions was also examined in the study. Gender had an impact on all four identified factors. Female educators reported more positive perceptions toward female participation in nontraditional programs than did their male counterparts. This finding supported and extended the work of past researchers (Cunningham, Martin, & Miller, 1982; Lasonen, Burge, & Finch, 1990) who found that male vocational educators had more traditional attitudes than female counterparts, and that female educators held more egalitarian gender-role attitudes than male educators. However, the finding also demonstrated a great improvement in male educators' perceptions toward females from previous studies (Dittman, 1976; Hantijis, 1977; Hollenback, 1984; Manrow, 1978). Male educators today seem more positive toward females in nontraditional programs and in their future careers than ever before.

On the other hand, there were not significant differences in perceptions among vocational educators based on ethnic group, age, and educational level. This did not support Lasonen et al.'s findings (1990) which indicated younger educators were less traditional than older educators, and a higher educational level

promoted egalitarian gender-role attitudes. Part of the reason for this finding might be that the average age of respondents in this study was 46.51 years, which may have contributed to less differentiated perceptions. Furthermore, since only 12% of respondents possessed a degree lower than the bachelor's, there was also limited diversity among educational levels. As for the ethnic group, no test for differences was attempted because of the homogeneity of race of the respondents in the study.

Current position played a significant role in vocational educators' perceptions with the exception of Factor 2--the perceived educators' role in nontraditional programs. Counselors were more likely than administrators and instructors to promote females entering nontraditional programs, more positive toward female enrollment in nontraditional programs, and more likely to perceive barriers for females entering the male's world. At the same time, instructors appeared to be less likely to encourage females entering nontraditional programs, less positive toward female enrollment in nontraditional programs, and less likely to perceive barriers for females entering the male's world.

Results of this study extend our understanding of how vocational educators perceive female participation in nontraditional programs. The determination that vocational educators' perceptions may be a multidimensional construct, as opposed to unidimensional, may provide a clearer explanation of the relationship between educators' perceptions; their treatment of female students concerning enrollment, counseling, feedback, instruction, and placement; and their perceptions' impact on female students' perceptions and occupational choices.

Future research should focus on the perceptions of vocational instructors in nontraditional programs toward female participation in their programs, the connection of vocational instructors' perceptions and behavior toward female participation in nontraditional programs, and feelings of female students in nontraditional programs regarding vocational instructors' treatment toward them, as these would greatly affect female students' involvement in tech-prep and school-to-work transition.

Changes in composition of the workforce in combination with changes in labor market needs provide new challenges for vocational educators. Vocational educators need to help students develop a perception that they can reach their full potential and become successful regardless of gender (McBride-Bass, 1993). Vocational educators should continue their efforts to eliminate gender stereotyping related to occupational decision making and to emphasize the importance of considering nontraditional career choices for females since they will be the largest group of new entrants to the workforce in the near future. Vocational educators should also encourage females to be actively involved in tech-prep as it will provide them a pathway to many high-tech, nontraditional careers.

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