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ABSTRACT

A study was conducted to examine the ability of women who enroll in traditionally male occupations to receive equal training and equal employment benefits to those of males enrolled in the same programs. (A traditionally male occupation was defined as an occupation which employed 80% or more males.) The eight programs included in the study were those which were defined as traditionally male and which enrolled and graduated females who were successfully followed up. Programs were selected using data obtained from the 1970 Minnesota Census Data and from the Minnesota Vocational Follow-Up System data tapes for 1971-72 and 1972-73 graduates. From the sampling procedure, a total of 21 females from the eight program areas and a total of 21 males were drawn in such a way that there was an equal number of males and females drawn from each program area. Based on the results of the study it appears that the traditionally male instructional programs offered by the Minnesota area vocational-technical institutes are open to women and that women rate the quality of the programs similarly to men. However, few women enter these programs and even fewer complete them. Results imply that not only do proportionally less women get employed in training-related traditionally male occupations but they receive significantly less salary. They also seem to be less satisfied with their jobs and see less potential for advancement. (SH)

THE SUCCESS OF VOCATIONALLY TRAINED WOMEN IN TRADITIONALLY MALE OCCUPATIONS

by
David J. Pucel*

Introduction

With the equal rights movement, there has been increasing pressure to remove sex discrimination from our society. This movement has led to the amendment of the Civil Rights Act of 1964 to include specific sections relating to sex discrimination. The guidelines describing the amendment issued as of March 31, 1972, quite specifically spell out unlawful discrimination practices in employment. The underlying principle of non-discrimination is that individuals must be considered solely on the basis of individual capacities and not on the basis of any characteristics generally attributed to a group. With the passage of federal law related to employment practices, states began to develop their own sex discrimination laws. In many cases these laws went beyond the federal law. The Minnesota Law defines that sex discrimination can only take place where there is a factual basis for believing that all or substantially all members of one sex would be unable to safely and efficiently perform the duties of the job involved. The key word in this statement is that there be a factual basis. It concludes with a statement indicating that affirmative action should be taken by employers to recruit and hire women for those jobs where they have previously been excluded.

The philosophy of non-discrimination also has become a major movement in education. In 1972, the Congress took a position regarding sex discrimination in schools in Title IX of the Educational Amendments of 1972. The Amendments prohibit sex discrimination in educational programs or activities that receive federal funds.

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The then U.S. Commissioner of Education, Dr. Bell, was quoted in an article appearing in the October, 1974, issue of the AVA Journal as saying: "Title IX's implementation will bring major changes and require large adjustments in vocational education. I'm not sure yet, however, how many girls will be enrolled in courses for diesel mechanics or operating heavy equipment. But long-established behavior patterns in counseling will have to change. There will have to be much more counseling into vocational education."

State laws have been adopted consistent with federal law making sex discrimination in the public schools unlawful. For example, in 1972 the Minnesota State Board of Education passed a position paper indicating that affirmative action is proposed to provide equal opportunity for women and to eliminate sex biased practices in our educational system. Among other things the Minnesota State Board requested the State Department to review all state board rules and regulations and to take steps to eliminate all sex biased courses and extra-curricular activities for students. It also requested that local boards and administrators provide equal access for all pupils to local school facilities, programs, equipment, staff and financial resources.

Since most vocational educational programs receive funding through the Federal Government, they are not only covered by the sex discrimination laws of the state but also by the sex discrimination laws of the federal government.

In light of the environment described above, the vocational education community has had to sit back and reflect on changes that have to be made in order to comply with the new laws and public sympathies. Many schools have begun to revise their administrative and counseling procedures. Most programs such as machine shop, welding and electronics, which have been considered closed to women by most counselors are now being opened. Counseling aids, such as interest inventories, which were designed to determine the occupational interest of men, have to be reviewed to

determine their applicability for similar use with females. In many cases the decision has been that they are not appropriate.

Now that laws have been passed and educational institutions are becoming adjusted to the concept that sex is not a basis for determining who enrolls in a particular program, most programs are becoming open to both sexes. However, there has not been a great rush of women into traditionally male vocational programs or men into traditionally female vocational programs. For example, a check of the enrollment trends for the area vocational technical institute programs in Minnesota revealed that few women are enrolling in traditionally male programs and few men are enrolling in traditionally female programs. This finding will be discussed in more detail later.

Purpose

This study was done to examine a portion of the impact of this changing societal concept on vocational education. Specifically, it addresses the ability of women who enroll in traditionally male occupational training programs to receive equal training and equal employment benefits to those of males enrolled in the same training programs.

Four basic questions were asked:

(1) Are women exercising their right to enroll in the traditionally male occupational training programs of the Minnesota Area Vocational-Technical Institutes?

(2) Do women who enroll in traditionally male programs judge the training programs similarly to men enrolled in the same programs?

(3) Do women who graduate from traditionally male programs receive or perceive equal benefits in the world of work?

(4) Do employers of the women who graduate from traditionally male programs judge them equal to men?

Samples

In order to obtain the data required to answer these questions, it was necessary to define a traditionally male occupation. A traditionally male occupation was defined as an occupation which employed 80 percent or more males. The male occupations were identified by referring to the 1970 Minnesota Census Data and selecting all occupations which employed 80 percent or more males. The listing of programs offered in the Minnesota AVTIs was then reviewed to determine which training programs were offered for traditionally male occupations. This provided a list of training programs preparing people to enter traditionally male occupations. Data were obtained from the Minnesota Vocational Follow-Up System data tapes for the 1971-72 graduates and the 1972-73 graduates to determine which of these programs enrolled and graduated women. The final programs included in the study were those which were defined as traditionally male and which enrolled and graduated females who were successfully followed up. These programs are listed in Table 1 along with the number of females who enrolled and graduated from each of them for whom follow-up data were available. Table 1 also indicates the number of males who were randomly sampled from the male graduates of each program area to make up the male control group.

Table 1

Traditionally Male
Occupational Areas and Sample Compositions

Occupational Area	Percent Male Employment	N-Females	N-Males
Automotive	99%	2	2
Mechanical Drafting	95%	3	3
Architectural Drafting	95%	3	3
Nursery & Landscape Technology	85%	2	2
Chemical Technology	83%	4	4
Jewelry	95%	4	4
Farrier (Horseshoeing)	99%	1	1
Traffic Transportation Management	89%	2	2
		21	21

Eight programs were identified which could be considered as preparing students for traditionally male occupations, and which graduated females who were successfully followed up. One can see that the number of females from each program varied from one to four. This is a very small number when you consider the enrollment in each of these programs. The total enrollment in these programs during the 1971-72 and 1972-73 school years was 3,920. The enrollment breakdown for the program areas will be discussed more later.

Table 1 indicates that 21 females were identified for whom data were available. At the point of determining that the sample was this small, I discussed whether to continue to study with some of my colleagues and concluded that the likelihood of obtaining a larger sample in the near future was not great. I also concluded that findings in this important area, even though they would be tentative because of sample size, would be worth reviewing. Few others would be in a position to gather more data than were available. Based upon these factors, the study was continued. In light of this small sample size, however, you should be cautious in making weighty decisions based on the findings of this study.

After the females were identified, an equal number of males were randomly sampled from each of the curriculum areas. The result of the sampling procedure was a total of 21 females from the eight program areas and a total of 21 males sampled in such a way that their were an equal number of males and females drawn from each program area. Table 1 indicates the number of males and females from each of the program areas included in the samples.

Follow-up data for each member of the samples were then obtained from the Minnesota Vocational Follow-Up System data tapes. Additional data were obtained from the tapes in order to identify the total number of females who enrolled in each of these traditionally male programs during 1971-72 and 1972-73.

Data

The enrollment data included the following:

A. sex

B. program area in which enrolled

The follow-up data included the following:

A. Data gathered from graduates concerning the instructional programs

1. Quality of teaching
2. Instructor knowledge
3. Instructor interest in student
4. Counseling with personal problems
5. Would student choose program again

B. Data gathered from graduates concerning their employment

1. Employment history
   a. Salary received in first job
   b. Salary received in job after one year
   c. Employment status one year after graduation
   d. Further training after graduation
   e. Formal advancement during the year
2. Graduates' perceptions of employment
   a. Job satisfaction one year after
   b. Satisfaction with co-workers
   c. Perceived potential for advancement

C. Data gathered from employers concerning the graduates

1. Quality of work
2. Quantitiy of work
3. Job-related knowledge
4. Equipment operation

Findings

Question (1) Are women exercising their right to enroll in the traditionally male occupational training programs of the Minnesota Area Vocational Technical Institutes?

In order to answer this question, data were obtained on all men and women who enrolled in the eight programs which were defined as traditionally male. Table 2 presents the information for 1971-72 and 1972-73.

Table 2

Number of Men and Women Who Enrolled In
The Minnesota AVTI Traditionally Male
Occupational Training Programs During 1971-72 and 1972-73

Program	1971-72		1972-73	
	Male	Female	Male	Female
Automotive	1186	8 (1%)	1132	6 (1%)
Mechanical Drafting	324	6 (2%)	326	20 (6%)
Architechural Drafting	314	8 (2%)	352	19 (5%)
Nursery & Landscape	87	6 (6%)	147	28 (16%)
Chemical Technology	22	23 (51%)	37	31 (46%)
Jewelry	15	4 (21%)	10	4 (29%)
Farrier	13	1 (7%)	19	2 (10%)
Traffic & Transportation Management	37	5 (12%)	48	2 (4%)

Table 2 shows that relatively few women were enrolling in these programs. The largest percentage of female enrollments were in chemical technology (with 51% and 46% for each of the two years) and jewelry programs (with 21% and 29%). The smallest percentage female enrollment (1%) was in the automotives program.

Although the enrollment of females was relatively small, the number of graduates was even smaller. Of the 173 females who enrolled in these programs, Table 1

shows that only 21 graduated and were successfully followed up. Since the Vocational Follow-Up System has a history of successfully following up at least 82% of the graduates, this means that approximately 26 out of the 173 females who enrolled in the programs graduated. Although some of them could possibly still be in school, the message appears clear. Relatively few women are enrolling the traditionally male occupational programs and substantially fewer complete the program.

This study was originally going to be replicated to determine what happens to male graduates of female programs, but even fewer males enrolled in traditionally female programs which were defined as employing 80 percent or more females.

Table 3 presents data on the number of males who enrolled in traditionally female occupational programs for which data were available through the vocational follow-up system. The data were gathered on 1971-72 and 1972-73 enrollees.

Table 3

Number of Women and Men Who Enrolled in
The Minnesota AVTI Traditionally Female
Occupational Training Programs During 1972-73

Program	1971-72		1972-73	
	Male	Female	Male	Female
Secretarial	18 (1%)	1468	29 (2%)	1268
Practical Nursing	15 (2%)	875	23 (2%)	965
Dental Assistant	0 (0%)	102	20 (8%)	241
Cosmetology	2 (1%)	261	10 (3%)	380
Child Development Assistant	0 (0%)	82	3 (3%)	117

The only program enrolling more than 3% males was the dental assistant program which enrolled 8% during 1972-73. A check of the follow-up data that were available through June 30, 1974 indicated that only one male graduated from these programs and was successfully followed up.

The scarcity of females in traditionally male occupations and of males in traditionally female occupations could be interpreted in a number of different ways. First, maybe the institutes are not allowing members of the opposite sex to enroll. A review of Minnesota State Law and discussions with counseling personnel throughout the State would make this explanation unlikely. The institutes have an open door policy and the overwhelming philosophy of personnel in the institutes is for equal rights and for providing students with equal opportunities to develop their potential.

A second possible explanation was that the nature of the instructional programs was such that members of the other sex did not find them satisfactory. Results obtained as an answer to question-two of this study indicate that this is not the case for females who enroll in male programs. These results will be discussed in detail later.

The most plausible explanation is that stereotypes of the roles of men and women tend to restrict them from preparing for occupations which are thought to primarily employ the opposite sex. Therefore, they tend to exclude these occupations as options. This explanation seems reasonable in terms of explaining why they do not enroll, however, why do so few of those who do enroll graduate?

After much thought, I could think of only one possible hypothesis. Peer group pressures as they proceed through the program. These peer group pressures need not be open or hostile, but they might be sub-conscious. They need not be in the classroom but might be in informal relationships. For example, a woman enrolling in an automechanics program might not be included in some of the joke telling sessions or discussions of what happened on Saturday night. Or she might become the object of jokes. She may not feel a part of informal conversations and activities. In other words, she may lack a feeling of belonging to a group. The peer group would require conformity with the group but due to societal values, it would be difficult for a woman to conform to the values of the group. If this is the problem, it should

become less as the number of women entering the traditionally male programs increases. With more women in the programs, they should be more able to develop peer groups which will be more compatible with their psychological needs, therefore, creating an atmosphere which will be more appealing to still more women.

A study of why women and men leave training programs which traditionally enroll the opposite sex should be done to determine whether this hypothesis is correct. There definitely seems to be some phenomenon operating which makes it difficult for men or women to continue in occupational programs which have traditionally enrolled the opposite sex which go beyond the official policy of a school or the staff in the school.

Data related to questions two, three and four were obtained from the 1971-72 and 1972-73 follow-up data of the Minnesota Vocational Follow-Up System. The data were analyzed using Chi-Square to determine whether or not males and females enrolled in traditionally male occupations viewed their training and subsequent employment significantly different. The data were also analyzed to determine if employers viewed the male and female graduates differently. All of the men and women had successfully graduated from the eight traditionally male occupational training programs included in this study.

Although only the analysis of first job salary information proved to be statistically significant at the .05 level, some interesting possible trends have been uncovered which may have practical significance. They are discussed as potential relationships which must be substantiated in the future. A primary reason why this study had difficulty yielding significant results is the small sample size discussed earlier.

You will notice that the data tables which present the analyses results have varying numbers of males and females. This is because different numbers of people responded to the various questions. For example, some of the people who were

followed up were not employed, therefore, they did not respond to employment related questions.

Question (2) Do women who enroll in traditionally male programs judge the training programs similarly to men enrolled in the same programs?

The womens judgements of the training programs were compared with the mens judgements of the programs on five variables: (1) quality of teaching, (2) instuctor knowledge, (3) instructor interest in student, (4) counseling with personal problems, and (5) whether the student would choose the program again. All of the analyses of differences between female and male judgements of their training programs were not significant nor were the differences large enough to warrant discussion. This seems to indicate that the males and females are equally satisfied with the instructional programs and tends to argue against women leaving traditionally male training programs because the instructional programs do not suit their needs.

Question (3) Do women who graduate from traditionally male programs receive or perceive equal benefits in the world of work?

Data were obtained on graduates for each of eight variables. The data were provided by graduates one year after graduation, regardless of the occupation in which they were employed. This is an important point because the men and women graduates could have been employed in different occupations. The data were grouped into two categories (a) employment history and (b) graduates' perceptions of employment.

The five employment history variables are discussed first. Analysis of only one of the five employment history variables, first job salary, yielded significant differences between the males and females at the .05 level. Table 4 presents the "first job salary" results.

Table 4

First Job Salaries

	Male	Female
$550 - $700 and Above	33.3%	12.5%
$400 - $549	41.7%	12.5%
Under $250 - $399	25.0%	75.0%
	N = 12	N = 16

SIG = .031

Although the males and females were equally trained, the first job salaries of the women were significantly lower than those of the men. Seventy-five percent of the women earned less than $400 per month as contrasted with 25% of the men.

This salary differential trend continued through their employment during the first year after graduation although the trend was no longer statistically significant. Table 5 shows that one year after graduation 61.5% of the males were making more than $549 per month as contrasted with 27.3% of the females.

Table 5

Salaries Received in Jobs at One Year

	Male	Female
$550 - $700 and Above	61.5%	27.3%
$400 - $549	30.8%	36.4%
Under $250 - $399	7.7%	36.4%
	N = 13	N = 11

SIG = .140

The salary data indicated that females do not receive the same salaries as comparably trained males.

Table 6 presents information on the employment status of the males and females one year after graduation.

Table 6

Employment Status
One Year After Graduation

	Male	Female
Employed Related	66.7%	38.1%
Employed Unrelated	14.3%	23.8%
Unemployed or Unavailable	19.0%	38.1%
	N = 21	N = 21

SIG = .176

Although the employment status differences were not statistically significant, they were substantial. Whereas 66.7% of the males were employed in occupations related to their training one year after graduation, only 38.1% of the females were employed in occupations related to their training. Whereas 38.1% of the women were unemployed or unavailable for employment one year after graduation, 19% of the men were unemployed or unavailable for employment.

The data presented in Table 6 indicate that equally trained men and women do differ in their employment statuses one year after graduation.

An examination of the data concerning amount of further training during the first year after graduation indicated that both the males and females took part in about the same amount of additional training (males 38% and females 29%). An examination of the data concerning formal advancement during the first year after

graduation indicated no difference between the males and females. About 17.6% had experienced formal advancement while 82.4% had not.

In summary, the job history data revealed that fewer females became employed in training related jobs than males and that females received significantly lower salaries.

Three pieces of information were gathered concerning the graduates' perception of their employment. None of the female perceptions were statistically significantly different than the male perceptions. The analysis of male and female perceptions of co-workers on the job were quite similar, 86.7% of the males were satisfied with their co-workers while 72.7% of the females were satisfied with their co-workers. About 6.7% of the males were dissatisfied with their co-workers as compared to 9.1% of the females.

Although the differences were not statistically significant, there were substantial differences between the perceptions of males and females in terms of their overall job satisfaction and perceived potential for advancement. Table 7 shows that while 93.8% of the males liked their jobs one year after graduation, only 72.7% of the females liked their jobs. Table 7 also shows that while 18.2% of the females disliked their jobs one year after graduation, only 6.3% of the males disliked their jobs.

Table 8 shows a considerably higher proportion of women dissatisfied with their perceived potential for advancement after one year than men, 45.5% of the women were dissatisfied as contrasted with 21.4% of the men.

In summary, an examination of the data pertaining to the graduates' perceptions of their employment indicates that women who receive training equal to men are not as satisfied with the employment they enter as the men are with the employment they enter.

Table 7

Job Satisfaction
After One Year

	Male	Female
Like Job	93.8%	72.7%
Neutral	0 %	9.1%
Dislike	6.3%	18.2%
	N = 16	N = 11

SIG = .269

Table 8

Perceived Potential for Advancement
After One Year

	Male	Female
Satisfied	35.7%	18.2%
Neutral	42.9%	36.4%
Dissatisfied	21.4%	45.5%
	N = 14	N = 11

SIG = .40

Question (4) Do employers of women who graduate from traditionally male programs judge them equal to men?

Data were gathered on four variables which reflected the employers judgements of the graduates: (1) quality of work, (2) quantity of work, (3) job related knowledge, and (4) equipment operation. The person doing the rating was the graduate's immediate supervisor on the job.

None of the employer ratings reflected statistically significant differences between the males and females. However, the employers did rate the men and women quite differently in terms of quality of work, quantity of work produced, and job-related knowledge.

Table 8 shows that the employers rated the quantity of the work of 53.3% of the males to be above average as contrasted with 37.5% of the females.

Table 9

Quality of Work
(Employer Rating)

	Male	Female
Above	53.3%	37.5%
Average	40.0%	62.5%
Below	6.7%	0 %
	N = 15	N = 8

SIG = .507

Table 10 shows that employers rated 40.6% of the male graduates as producing an above average quantity of work as contrasted with 25% of the females. In addition, 12.5% of the females were rated as producing a below average quantity of work as compared with 0% of the males.

Table 10

Quantity of Work
(Employer Rating)

	Male	Female
Above	40.6%	15.0%
Average	60.0%	62.5%
Below	0.0%	12.5%
	N = 15	N = 8

SIG = .330

Table 11 presents information on the employers' ratings of the job related knowledge of the graduates. Employers rated 53.3% of the males as having above average job-related knowledge as contrasted with 25.0% of the females.

Table 11

Job-Related Knowledge
(Employer Rating)

	Male	Female
Above	53.3%	25.0%
Average	40.0%	75.0%
Below	6.7%	0.0%
	N = 15	N = 8

SIG = .256

The men and women were rated essentially equally on their ability to operate the equipment.

In summary, it appears that the employers of comparably trained men and women rated the women lower than the men. This might be due to a number of factors. First, substantial numbers of the women and men probably were employed in different jobs. This can be seen by examining the percentages of males and females employed in related jobs presented in Table 6. Second, the ratings could represent a bias toward women; and third, there may have actually been a difference in the way comparably trained men and women performed on the job. At this point it does not appear possible to determine if any of these possible reasons account for the differences in ratings.

Conclusions

Based on the results of this study it appears that the traditionally male instructional programs offered by the Minnesota Area Vocational-Technical Institutes are open to women and that women rate the quality of the programs similarly to men. However, few women enter these programs and even fewer complete them. Other factors beyond the schools and the laws affecting education may tend to be biased against women entering these programs, continuing in the programs, and receiving equal benefits from employment after graduation. Social value patterns and pressures may be the primary factors affecting the enrollment of women into and the graduation of women from traditionally male training programs.

It is difficult to determine why the men and women have different post-graduation employment histories and why they are rated differently by employers. Again, social value patterns and traditional employment reward patterns may be the causes for equally trained men and women not receiving equal benefits from the world of work. This study implies that not only do proportionally less women get employed in training related traditionally male occupations but they receive significantly less salary. They also seem to be less satisfied with their jobs and see less

potential for advancement. Once on a job they tend to receive lower employer ratings than the men.

Whether or not educators can significantly improve this situation is questionable. Certainly they can eliminate programmatic barriers to students enrolling but they can not force women to enroll or stay in the programs. Also, they can not be solely responsible for whether the employment market treats equally trained women the same as men. Educators can attempt to change the patterns but the discrimination against women in the world of work will not end until society changes its value patterns. Maybe this will gradually occur as more women become employed in traditionally male occupations and demonstrate their ability to perform.