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ABSTRACT

This study was conducted to investigate the attitudinal effects of presenting students with career information in two media forms, slide/tape and print. Subjects were 186 ninth-grade students from a junior high school in a lower-middle-class metropolitan area. Interviews with role models working in careers not traditional for their gender were used as a means of presenting the career information in both the slide/tape and print treatment groups. Students in a control group received no career information. All students completed an occupational survey to assess their attitudes about the suitability of eight jobs for both men and women and their own interest in and confidence of success in the jobs. The data were analyzed using three separate multivariate analyses of variance. Students in both the slide/tape and print treatments were significantly more positive about the careers being suitable for both men and women than were students in the control group. Subjects also showed more positive attitudes toward jobs they learned about than jobs they did not learn about. Attitudes of students in the print group did not differ significantly from those in the slide/tape group. Students were significantly more interested in and confident of success in jobs traditionally for their own gender, and neither presentation had a significant effect on interest and confidence. Although both types of presentations produced positive changes in attitudes towards suitability of careers for both men and women, more comprehensive programs appear necessary to increase the probability of changes in interest and confidence of success in nontraditional careers. (Author/KC)

Career Role Models in Two Media: Effects on Student Attitudes Towards Non-Traditional Careers

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Abstract

This study was conducted to investigate the attitudinal effects of presenting students with career information in two media forms, slide/tape and print.

Subjects were 186 ninth grade students from a junior high school in a lower middle-class metropolitan area. Interviews with role models working in careers not traditional for their gender were used as a means of presenting the career information in both the slide/tape and print treatment groups. Students in a no-treatment control group received no career information. All students completed an Occupation Survey to assess their attitudes about the suitability of the eight jobs for both men and women and their own interest and confidence of success in the jobs. The data were analyzed using three separate multivariate analyses of variance.

Students in both the slide/tape and print treatments were significantly more positive about the careers being suitable for both men and women than were students in the control group. Subjects also showed more positive attitudes towards jobs they learned about than jobs they did not learn about. Attitudes of students in the print group did not differ significantly from those in the slide/tape group.

Students were significantly more interested in and confident of success in jobs traditionally for their own gender. Neither the slide/tape nor the print role-model presentations had a significant effect on interest and confidence. Female students were found to be less sex-biased than male students, and female jobs were rated to be more suitable for both men and women than

were male jobs.

Both print and slide/tape presentation of information and role models produced positive changes in attitudes towards suitability of careers for both men and women. However, the development and evaluation of more comprehensive programs appear necessary to increase the probability of changes in interest and confidence of success in non-traditional careers.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Introduction

Social learning theorists have advocated the position of Bandura (1977) that attitudes can be changed via the use of human modeling of desired behaviors. Based on this theory, career development specialists have recently suggested the use of positive role models to influence student attitudes towards careers. Krumboltz (1979) proposes that an individual is more likely to express an interest in a career if that individual has observed a valued model successfully engaged in that career. Exposure to models has been shown to produce more positive attitudes toward blacks (Kraus, 1962), to increase aggressive and affectionate behavior in preschoolers (Franzini, Litrownik, & Blanchard, 1978), to increase adults' donations to a charity (Pomazal, 1977) and to influence high school students' levels of moral reasoning (Norcini & Snyder, 1983).

Results of two studies demonstrate the influence of exposure to role models on sex-typed behavior. Wolf (1973) found that exposure to a same-sex model promoted elementary school children's play behavior with a sex-inappropriate toy. Perry and Bussey (1979) reported that eight and nine year old children imitated the behaviors of same-sex models rather than the behaviors of opposite-sex models under the same circumstances.

Sex-stereotyping of careers has been identified as one of the critical factors in limitation of career options for women (Gottfredson, 1981; Fitzgerald & Crites, 1980; Osipow, 1983). Research on student sex-stereotyping of careers has demonstrated

the effects of providing career information to students via positive role models. Lockheed and Harris (1978) surveyed fourth and fifth graders regarding their experience with men and women working in roles not traditional for their sex within the school environment. Their results indicated that students who had experienced non-traditional role models held less sex-stereotyped attitudes towards the roles of men and women in society than children who had not experienced these role models. Written descriptions of males and females who work in careers that are traditionally associated with the opposite sex were presented to ninth graders by Greene, Sullivan and Beyard-Tyler (1982). Students who read the descriptions of the models showed significant attitude change, rating more traditionally sex-stereotyped careers as being more appropriate for both sexes.

One issue regarding the influence of role models relates to the media in which the models are presented. Gagne and Briggs (1979), while stressing the importance of presenting human role models in influencing student attitudes, contend that models need not be directly seen. They suggest models may be observed in audiovisual materials and read about in print form.

The critical conditions for learning the attitudes modeled must be met regardless of medium (Gagne, 1977; Simonson, 1980). According to Gagne, these conditions include communication of key concepts and information, establishment of the model's appeal and credibility, and opportunity to observe the model demonstrate, and be reinforced for, the desired course of action. Bandura and Jeffrey (1973) report that incentives and opportunity to respond to the message behaviorally must also be present. These elements

can be included along with role models in career materials in both print and audiovisual form.

Presentation of models in film and television has been shown to influence the learning of new behaviors and attitudes. Bandura (1965) reported that children imitated a series of novel aggressive behaviors after viewing a film of a model exhibiting these behaviors. Jones and Gelatt (1979) recommend the integration of audiovisual materials which illustrate successful career role models into sequences of career development resources.

Savenye (1983) investigated the effects of an audiovisual program such as that recommended by Jones and Gelatt (1979). Role models working in careers not traditional for their sex were presented in both slide/tape and print media. The results of this study indicated both presentation forms had a significant effect in reducing sex-stereotyping of the jobs by students. Though the two forms did not yield signif cantly different attitudes from one another, this lack of effect may have been due to the fact that both the booklet and slide/tape were simple and unenhanced. Producing two presentations which best utilize the particular strengths of each medium according to established media design principles (Fleming & Levie, 1981) may result in differential effects.

Simonson (1980) has recommended maximum use of realistic types of media to effect attitude change. Researchers such as Schau (1978) have shown attitudes towards careers can be changed by presenting role models via the print medium. A greater change

may result from using media such as slide/tape programs which allow more realistic depiction of role models. As recommended by Clark (1983), such media presentations should be well-developed and exhibit the characteristics of good instructional methods.

In addition to the use of role models, sex of the student is another factor that relates to attitudes toward careers. Plost and Rosen (1974) reported that female junior high school students expressed preferences for occupations depicted by like-sex models more frequently than males. In a study in which Hispanic students read about non-traditional role models, Haas, Beyard-Tyler and Sullivan (1984) also found that more female students rated jobs as being appropriate for both men and women than did male students.

The traditional sex of workers in jobs also is related to attitudes about the jobs. Many studies have shown that people believe certain jobs are appropriate for men and others for women (Panek, Rush & Greenawalt, 1977; Shinar, 1975). O'Connor (1982) asked college students to rate jobs on several dimensions, including prestige, power, complexity and traditional gender of jobholder. Results indicated that jobs rated as similar in several dimensions cluster into those traditionally held by males and those traditionally held by females. Traditionally male jobs are often those rated as higher in prestige, power, and financial reward and are thus often viewed as more desirable jobs. Greene et al. (1982) reported that after students were exposed to nonsex-typed information about both traditionally male and traditionally female jobs, the male jobs such as civil engineer and computer technician were more often rated as being

appropriate for both men and women than were the traditionally female jobs.

Generalization of sex-typed attitudes from jobs which students learn about to other careers is also a matter of concern. Greene et al. (1982) reported that students who read about role models working in jobs changed their attitudes not only towards those jobs but towards jobs that they did not read about. Savenye (1983) found a significant difference between effects of a slide/tape and a print presentation of role models on attitudes towards jobs about which students had received no information. Students who had viewed the slide/tape career presentation showed more positive attitudes towards jobs not learned about than did students who read the career descriptions. This suggests that effects obtained with a slide/tape presentation may have greater generalization potential than those obtained with a print presentation.

In addition to sex-stereotyping of jobs, career educators have identified two other factors as important in the development of positive attitudes towards varied careers. These factors are expressed interest in careers and self-efficacy expectations, or beliefs about one's ability to perform successfully in careers. Expressed student interest in careers has been shown to be related to adult choice of careers (Cairo, 1982; Gottfredson & Holland, 1975; Holland & Gottfredson, 1975; Laing, Swaney, & Prediger, 1984). Interest in careers is strongly gender-linked, with males and females preferring careers traditionally held by persons of their own gender (Gottfredson, 1981; Gregg & Dobson,

1980; O'Leefe & Hyde, 1983).

In support of social learning theory, the interest factor appears to be influenced by presentation of role models. Plost and Rosen (1974) found that eighth graders demonstrated a preference for occupations depicted by models of the same sex as themselves.

Confidence of success, or self-efficacy, is a crucial factor in career development (Hackett & Betz, 1981). Expectations of success with regard to mathematics have been shown to be related to choice of various types of science as college major (Betz & Hackett, 1981; Hackett, 1985). Self-concept of ability has also been shown to be an important variable in predicting academic success (Robinson & Cooper, 1984). Females typically express lower confidence of success in tasks they perceive as male-linked (McMahan, 1982), in mathematics-related achievement (Betz & Hackett, 1983) and in academic achievement in general (Rosen & Aneshensel, 1978). Thus, enhancement of confidence of success, especially in girls, may be an important objective for student career materials.

Bandura has identified observation of role models as one of the methods for developing confidence of success. He suggests that viewing successful models encourages an individual to think he or she can also be successful and that such forethought is a precursor to action (Bandura, 1984). Brown and Inouye (1978) tested one aspect of the effects of models on self-efficacy. In their study students who were told they were more competent than a model prior to observing the model were more successful at a task after observing the model fail at it.

The purpose of this study was to investigate the effects of career information presented in two different forms on student attitudes toward careers. In one form the career information was presented in print, complemented by comments and photographs of non-traditional role models. In another the same information and role models were presented in a slide/tape presentation. A no-treatment control group was also included. The relationships between attitudes, student gender and traditional sex of the job-holder were also investigated, as was the generalization of the attitudes to jobs about which information was not presented.

Attitudes were assessed on sex-stereotyping of the jobs, personal interest in them, and confidence of potential success in them.

Method

Subjects

Subjects were 186 ninth grade students, 91 males and 95 females, enrolled in required English classes at a suburban junior high school in the Phoenix metropolitan area.

Materials

The experimental materials were developed according to methodology adapted from Greene, Sullivan and Beyard-Tyler (1982). Each set of materials included a brief introductory passage followed by one-and-one-half page career descriptions prepared from information obtained in interviews with men and women working in careers not traditionally associated with their sex. The descriptions averaged 480 words in length and had readability scores ranging from 6.2 to 7.0 as determined by the Dale-Chall Readability Formula (Dale & Chall, 1948).

Eight occupations were selected for the career descriptions. Equal numbers of traditionally male and traditionally female jobs and of professional and nonprofessional jobs were included, as shown below.

Male	Female
industrial engineer	librarian
architect	elementary school teacher
drafter	x-ray technician
electrician	bank teller

The eight occupations met a standard set of criteria. Each is described in the Occupational Outlook Handbook (Bureau of Labor Statistics, 1984) as having better than average projections

for employment in the 1980s and early 1990s. At least
those currently employed in each of the careers are of
traditionally associated with those careers, according
1980 U.S. population census (Bureau of the Census, 1984
addition, the jobs were selected from those determined
typed by young people and adults in recent studies (O'
1982; Panek, Rush, & Greenawalt, 1977; Shinar, 1975).
by Betz and Hackett (1981) and Teglasi (1981), levels
and financial reward associated with traditionally mal
female occupations even in the same field are inherent
in our society and thus could not be equally matched
selection of jobs in this study.

The experimental materials were prepared in two
form consisted of the written introductory passage fo
slide/tape program depicting role models performing o
associated with their jobs. The second form consiste
booklet containing the introductory passage and then
the role models and showing them in several black an
photographs. The narrations for the slide/tape pres
role models were identical to the print role model o

Content of the career descriptions included inf
related to eight topics about which jobholders were
Five topics, nature of the work, working conditions
outlook, training requirements and earnings, are re
of standard content included in job descriptions in
Occupational Outlook Handbook (Bureau of Labor Stat
Information related to three additional topics, how

chosen, lifestyle and advice for students, were also included in the career descriptions.

The slide/tape presentation of role models included descriptions and photographs of each of the individuals employed in non-traditional careers. Each career vignette was illustrated with 14 to 18 35mm color slides. Close-up, medium and wide shots were included in the following categories of shots: 1) individual performing two to three different job tasks, 2) products of the job, such as students in the case of the elementary school teacher, and maps and reports in the case of the industrial engineer, 3) individual smiling at camera to introduce him or her, 4) general job setting or environment, 5) aspect of individual's lifestyle, 6) aspect of training required for job, 7) individual talking with coworker or client.

The eight job descriptions were divided into two sets of four jobs each: one male professional, one female professional, one male nonprofessional and one female nonprofessional.

The final version of the experimental materials was developed after conducting three pilot tests of drafts of the materials and procedures with a total of 40 seventh and eighth graders from four classes. Students read the booklets, viewed the slide programs and completed the survey and questionnaire. They were also interviewed regarding their knowledge of the jobs, understanding of the materials, perceptions of attractiveness of role models, and preferences for types of photographs. As a result of the pilot tests a number of changes were made. Several jobs which either were not strongly sex-stereotyped or were extremely sex-stereotyped were eliminated from the study, order

of items on the survey was revised, one model perceived as unattractive was replaced, and primarily "action" photographs were included in the print booklets.

Procedures

Four trained experimenters conducted the study during regularly scheduled classes. Two were males and two females; three were graduate students and one had completed a Ph.D. degree. The treatments administered by each experimenter were systematically varied to counterbalance experimenter gender across treatments.

Students were randomly assigned by gender to the two treatment groups (slide/tape or print) and the control group. The two print booklets, each containing four of the eight jobs, were randomly assigned to students in the print group. Students in the slide/tape group were randomly assigned to view one of the two slide/tape programs. Thus each of the two sets of materials was used by approximately equal numbers of students.

Students in each treatment group completed the Occupation Survey following the treatment. Students in the control group completed the Occupation Survey only.

Criterion Measure

The Occupation Survey was designed primarily to measure student attitudes about the appropriateness for both men and women of the eight jobs included in the experimental materials. Students were directed to mark the response they thought best completed the following sentence for each job title:

I think this job is appropriate for.

_____ men

_____ women

_____ both men and women

For each occupation one item each dealing with success and interest were included. Success was measured by student ratings of confidence of potential success in the careers. Interest was measured by student ratings of their interest in the careers.

A brief questionnaire to determine student attitudes toward the presentations which they received was completed by the students following the Occupation Survey.

Design and Data Analysis

Three separate multivariate analyses of variance were employed for treatment group and control group comparisons on the three dependent variables. As recommended by Bray and Maxwell (1982), univariate comparisons at or beyond the .05 level in this study are interpreted as significant only when the overall multivariate ratio is also statistically significant.

The first of the three analyses performed was a 3 (treatment groups) x 2 (sex of student) x 2 (sex of job) MANOVA. The mean scores of the two experimental groups, slide/tape and print, on the four jobs presented were compared to each other and to the mean score of the control group on all jobs. This MANOVA was used to determine whether the presentation of the job information to the two experimental groups influenced their scores in contrast with the control group.

The second analysis was a 2 (experimental groups) x 2 (sex of subject) x 2 (presented or not presented) x 2 (sex of job)

MANOVA. Its major purpose was to compare the mean scores between the two experimental groups on the jobs presented and the jobs not presented, as well as to provide information on the effects of sex of student and sex of job.

The third analysis for each dependent variable was a 3 (treatment groups) x 2 (sex of student) x 2 (sex of job) MANOVA using the mean score of the two experimental groups on jobs not presented and of the control group on all jobs. This analysis indicated whether the presentation of information about four jobs had a generalizing effect towards jobs about which no information was presented.

Preliminary multivariate analyses of variance were performed to investigate the effects of experimenter gender on the three dependent variables. These analyses revealed no significant main-effect differences. Therefore, experimenter gender was not included as a factor in the final data analyses.

A separate multivariate analysis of variance was employed for slide/tape and print group comparisons on the items on the career materials questionnaire.

Results

Results are discussed below, first for the administration of the Occupation Survey and then for the questionnaire responses.

Job Suitability

The mean scores for job suitability are shown in Table 1. The totals beneath the table reveal that the means for the four jobs presented to subjects were .88 for the print treatment and .86 for the slide/tape treatment. The means for jobs not presented were .83 for print, .79 for slide/tape and .75 for control.

The direct effects of presentation of information about a job via different media were analyzed by comparing the mean score for jobs presented (.88 for print and .86 for slide/tape) with the mean of .75 for the control group, to whom no job information was presented. The multivariate analysis of variance (Table 2) yielded a significant difference for jobs presented over control, $F(2,180) = 5.99$, $p < .003$. Post-hoc contrasts revealed that the small difference in scores between the print and slide/tape versions was not statistically significant.

The effects of presenting information over not presenting information within the experimental groups were analyzed by comparing the mean score for all jobs presented (.87) with the mean score for all jobs not presented (.81) across the two groups who received information, the print and slide/tape groups. The multivariate analysis of variance (Table 3) yielded a significant difference for jobs presented over jobs not presented, $F(1,129) = 9.65$, $p < .002$.

Table 1

Mean Scores for Suitability

Subject Gender	Experimental Groups						Control Group		
	Presented			Not Pres.			Not Pres.		
Present. Mode	FJ	MJ	Tot.	FJ	MJ	Tot.	FJ	MJ	Tot.
Females									
Slide	.99	.82	.90	.90	.83	.87			
							.90	.66	.78
Print	90	.86	.88	.93	.81	.87			
Males									
Slide	.88	.78	.83	.75	.68	.72			
							.77	.68	.72
Print	.88	.87	.88	.81	.77	.79			
Total	.91	.83	.87	.85	.77	.81	.83	.67	.75

Note. N=186

Mean Totals, Jobs Presented:

Presentation Mode	Sex of Subject	Sex of Job
Slide/Tape = .86	Male = .85	Male = .83
Print = .88	Female = .89	Female = .91

Mean Totals, Jobs Not Presented:

Presentation Mode	Sex of Subject	Sex of Job
Slide/Tape = .79	Male = .74	Male = .74
Print = .83	Female = .84	Female = .84
Control = .75		

Table 2

Univariate and Multivariate ANOVA Source Table
Jobs Presented and Control

Source of Variance	df	Univariate SS	MS	F	p	Multivariate F	p
Presentation Mode (P)						3.86	.001
Suitability	2	1.09	.55	5.99	.003		
Interest	2	.76	.38	1.53	.22		
Confidence	2	1.63	.81	2.47	.09		
Sex of Subject (SS)						.86	.46
Suitability	1	.17	.17	1.92	.17		
Interest	1	.01	.01	.03	.86		
Confidence	1	.24	.24	.73	.39		
Sex of Job (SJ)						20.35	.000
Suitability	1	1.07	1.07	22.89	.000		
Interest	1	1.77	1.77	8.76	.004		
Confidence	1	.01	.01	.04	.84		
P X SS						1.32	.25
Suitability	2	.09	.04	.48	.62		
Interest	2	1.02	.51	2.04	.13		
Confidence	2	.40	.20	.60	.55		
P X SJ						1.25	.28
Suitability	2	.28	.14	2.96	.05		
Interest	2	.22	.11	.53	.59		
Confidence	2	.33	.17	.85	.43		
SS X SJ						36.91	.000
Suitability	1	.15	.15	3.27	.07		
Interest	1	18.61	18.61	92.20	.000		
Confidence	1	20.65	20.65	105.23	.000		
P X SS X SJ						.93	.47
Suitability	2	.06	.03	.64	.53		
Interest	2	.37	.18	.91	.41		
Confidence	2	.19	.10	.49	.62		
Within Subject (Error)							
Suitability	180		.09				
Interest	180		.25				
Confidence	180		.33				

Table 3

Univariate and Multivariate ANOVA Source Table
All Jobs

Source of Variance	df	Univariate SS	MS	F	p	Multivariate F	p
Presentation Mode (P)						.87	.46
Suitability	1	.08	.08	.58	.45		
Interest	1	.64	.64	1.83	.18		
Confidence	1	.66	.66	1.27	.26		
Sex of Subject (SS)						2.21	.09
Suitability	1	.81	.81	5.64	.02		
Interest	1	.18	.18	.51	.48		
Confidence	1	.08	.08	.16	.69		
Sex of Job (SJ)						17.52	.000
Suitability	1	.78	.78	13.47	.000		
Interest	1	1.39	1.39	4.50	.04		
Confidence	1	.34	.34	1.14	.29		
Presented or Not (Pres)						4.14	.008
Suitability	1	.47	.47	9.65	.002		
Interest	1	.35	.35	2.15	.15		
Confidence	1	.35	.35	2.28	.13		
P X SS						.43	.73
Suitability	1	.17	.17	1.15	.29		
Interest	1	.01	.01	.03	.87		
Confidence	1	.04	.04	.07	.79		
P X SJ						1.17	.32
Suitability	1	.07	.07	1.25	.27		
Interest	1	.37	.37	1.19	.28		
Confidence	1	.18	.18	.60	.44		
P X Pres						1.02	.39
Suitability	1	.02	.02	.46	.50		
Interest	1	.16	.16	1.01	.32		
Confidence	1	.00	.00	.01	.93		
SS X SJ						31.27	.000
Suitability	1	.06	.06	1.01	.32		
Interest	1	25.90	25.90	83.89	.000		
Confidence	1	25.94	25.94	85.70	.000		

Table 3 (Cont')

Source of Variance	df	Univariate SS	MS	F	p	Multivariate F	p
SS X Pres						2.81	.04
Suitability	1	.20	.20	4.08	.05		
Interest	1	.00	.00	.005	.95		
Confidence	1	.21	.21	1.39	.24		
SJ X Pres						2.16	.10
Suitability	1	.00	.00	.05	.82		
Interest	1	.66	.66	3.91	.05		
Confidence	1	.89	.89	6.25	.01		
P X SS X SJ						.02	1.00
Suitability	1	.00	.00	.03	.86		
Interest	1	.00	.00	.01	.93		
Confidence	1	.01	.01	.03	.86		
P X SS X Pres						3.67	.01
Suitability	1	.00	.00	.002	.97		
Interest	1	1.58	1.58	9.82	.002		
Confidence	1	.42	.42	2.75	.10		
P X SJ X Pres						1.04	.38
Suitability	1	.09	.09	2.02	.16		
Interest	1	.20	.20	1.22	.27		
Confidence	1	.02	.02	.16	.69		
SS X SJ X Pres						.04	.99
Suitability	1	.00	.00	.01	.91		
Interest	1	.02	.02	.10	.75		
Confidence	1	.01	.01	.07	.79		
P X SS X SJ X Pres						1.87	.14
Suitability	1	.03	.03	.64	.42		
Interest	1	.65	.65	3.86	.05		
Confidence	1	.12	.12	.81	.37		
Within Subject (Error							
Suitability	129		.14				
Interest	129		.35				
Confidence	129		.52				

The generalization effects of presentation of information about particular jobs on attitudes towards other jobs were analyzed by comparing the mean score for the four jobs not presented to experimental subjects (.83 for print and .79 for slide/tape) with the mean of .75 for the control group, to whom no jobs were presented. The multivariate analysis of variance (Table 4) revealed that the differences between the slide/tape, print and control groups were not statistically significant.

In addition to the differences related to treatment effects and presentation of information, two other sets of significant differences were obtained for suitability. As shown in Table 1, female jobs were consistently rated as being more suitable for both sexes than male jobs. This occurred on jobs presented across print, slide/tape and control groups, $F(1,180) = 22.89$, $p < .0001$, on jobs not presented across all groups, $F(1,180) = 17.16$, $p < .0001$, and on all jobs within the experimental group, $F(1,129) = 13.47$, $p < .0001$.

Significant differences were also obtained for sex of student in one analysis. On jobs not presented, significantly more female students rated all jobs more suitable for both sexes than did male students, $F(1,180) = 7.73$, $p < .006$.

Only one significant interaction related to job suitability was obtained in the three analyses of variance. That interaction occurred between sex of subject and whether information was presented or not presented in the experimental groups only analysis across all jobs. The interaction reveals a pattern in which mean scores of girls were relatively the same regardless of whether jobs were presented (.89) or not presented (.87) whereas

Table 4

Univariate and Multivariate ANOVA Source Table
Jobs Not Presented and Control

Source of Variance	df	Univariate SS	MS	F	p	Multivariate F	p
Presentation Mode (P)						1.55	.16
Suitability	2	.36	.18	1.65	.19		
Interest	2	.15	.07	.26	.78		
Confidence	2	.86	.43	1.21	.30		
Sex of subject (SS)						2.65	.05
Suitability	1	.83	.83	7.73	.006		
Interest	1	.01	.01	.05	.82		
Confidence	1	.00	.00	.00	.97		
Sex of Job (SJ)						14.64	.000
Suitability	1	.96	.96	17.16	.000		
Interest	1	.19	.19	.87	.35		
Confidence	1	1.30	1.30	6.13	.01		
P X SS						1.16	.33
Suitability	2	.17	.08	.79	.46		
Interest	2	1.35	.67	2.31	.10		
Confidence	2	.14	.07	.20	.82		
P X SJ						1.05	.39
Suitability	2	.15	.08	1.38	.26		
Interest	2	.59	.29	1.36	.26		
Confidence	2	.19	.10	.46	.64		
SS X SJ						33.12	.000
Suitability	1	.13	.13	2.36	.13		
Interest	1	17.38	17.38	81.56	.000		
Confidence	1	19.63	19.63	92.36	.000		
P X SS X SJ						.88	.51
Suitability	2	.09	.04	.80	.45		
Interest	2	.28	.14	.67	.51		
Confidence	2	.16	.08	.38	.68		
Within Subject (Error)							
Suitability	180		.11				
Interest	180		.29				
Confidence	180		.35				

mean scores of boys were lower on jobs not presented (.75) than on those presented (.85), $F(1,129) = 4.08$, $p < .05$.

Interest and Confidence

The mean scores for interest and confidence of success in jobs are shown in Tables 5 and 6, respectively. As shown beneath Table 5, the mean interest scores for the four jobs presented were .70 for the print and .57 for the slide/tape groups. On jobs not presented, the mean scores were .72 for the print, .68 for the slide/tape and .67 for the control groups.

Table 6 reveals that the mean confidence scores for the jobs presented were .80 for the print and .78 for the slide/tape groups. Mean confidence scores on jobs not presented were .86 for the print, .78 for the slide/tape and .90 for the control groups.

The three multivariate analyses of variance (Tables 2-4) yielded no significant main-effect differences related to presentation mode for either interest or confidence. That is, the scores across treatments did not differ significantly from one another in the comparisons for jobs presented and control (Table 2), jobs presented versus not presented within the experimental groups (Table 3), and jobs not presented across all three groups (Table 4). Thus, the experimental treatments had no statistically significant direct or indirect effects on either interest or confidence.

Two significant main-effect differences were found for interest, both on the sex of job variable. For the jobs presented analysis (Table 2), the mean interest score of .73 for traditionally male jobs was significantly higher than the mean of

Table 5

Mean Scores for Interest

Subject Gender	Experimental Groups						Control Group		
	Presented			Not Pres.			Not Pres.		
Present. Mode	FJ	MJ	Tot.	FJ	MJ	Tot.	FJ	MJ	Tot.
Females									
Slide	.72	.53	.63	.79	.42	.60	.91	.53	.72
Print	.81	.44	.63	.97	.54	.76			
Males									
Slide	.28	.85	.56	.44	1.07	.76	.35	.87	.61
Print	.42	1.12	.77	.52	.83	.67			
Total	.56	.73	.65	.68	.71	.70	.63	.70	.67

Note. N=186

Mean Totals, Jobs Presented:

Presentation Mode	Sex of Subject	Sex of Job
Slide/Tape = .59	Male = .67	Male = .73
Print = .70	Female = .63	Female = .56

Mean Totals, Jobs Not Presented:

Presentation Mode	Sex of Subject	Sex of Job
Slide/Tape = .68	Male = .68	Male = .71
Print = .72	Female = .69	Female = .66
Control = .67		

Table 6

Mean Scores for Confidence

Subject Gender	Experimental Groups						Control Group		
	Presented			Not Pres.			Not Pres.		
Present. Mode	FJ	MJ	Tot.	FJ	MJ	Tot.	FJ	MJ	Tot.
Females									
Slide	.99	.63	.81	1.03	.49	.77			
Print	1.04	.56	.80	1.17	.57	.87	1.22	.60	.91
Males									
Slide	.43	.90	.67	.63	1.00	.81			
Print	.56	1.06	.81	.73	.96	.85	.67	1.10	.89
Total	.75	.79	.77	.89	.75	.82	.95	.85	.90

Note. N=186

Mean Totals, Jobs Presented:

Presentation Mode	Sex of Subject	Sex of Job
Slide/Tape = .74	Male = .74	Male = .79
Print = .80	Female = .80	Female = .75

Mean Totals. Jobs Not Presented:

Presentation Mode	Sex of Subject	Sex of Job
Slide/Tape = .78	Male = .85	Male = .79
Print = .86	Female = .85	Female = .91
Control = .90		

0.56 for traditionally female jobs, $F(1,180) = 8.76$, $p < .004$. Similarly, for the jobs presented versus jobs not presented analysis within the experimental groups only (Table 3), the mean interest score of .72 for male jobs was significantly higher than the mean of .62 for female jobs, $F(1,129) = 4.50$, $p < .04$.

The only significant main-effect difference for confidence occurred in the comparison of jobs not presented across the three treatment groups (Table 4). Students were more confident of success in female jobs not presented (.91) than in male jobs not presented (.79), $F(1,180) = 6.13$, $p < .01$.

Several significant interactions were obtained. The strongest pattern of interactions was for sex of subject by sex of job and occurred on both the interest and confidence variables. These interactions, which occurred at the .0001 level for both variables on all three analyses, reveal a pattern in which students are more interested in and also more confident of success in the jobs that are traditional for their own gender.

The sex of subject by sex of job interaction patterns are reflected in the mean scores of all subjects across all treatments. With respect to interest in the job, male ratings were .95 for male jobs and .39 for female jobs. Female ratings, on the other hand, were .49 for male jobs and .83 for female jobs. For confidence of success in the job, male ratings were 1.00 for male jobs and .59 for female jobs. In contrast, female ratings were .57 for male jobs and 1.08 for female jobs. These interactions for interest and confidence are illustrated in Figure 1.

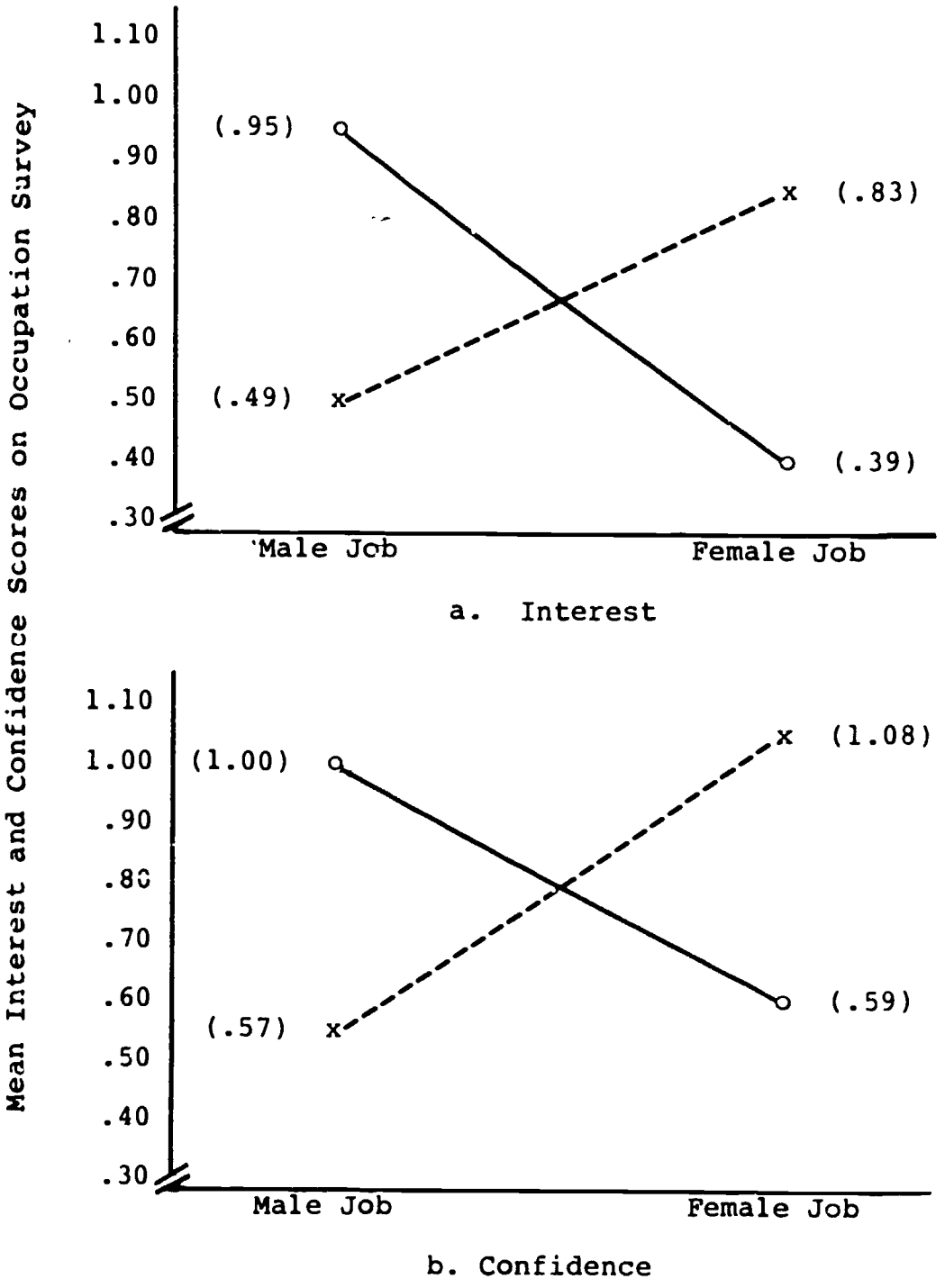

Figure 1. Sex of subject by sex of job interaction on interest and confidence

One significant three-way interaction for interest was obtained: presentation mode by sex of subject by presented or not presented, $F(1,129) = 9.82$, $p < .002$. In the slide/tape form, male subjects had higher interest scores for jobs not presented (.76) than for jobs presented (.56), whereas in the print treatment, males had higher interest scores for jobs presented (.77) than not presented (.67). In contrast, female scores were slightly lower for jobs not presented (.60) than for jobs presented (.63) in the slide/tape treatment, and higher for not presented (.76) than for presented (.63) in the print group. This interaction is illustrated in Figure 2.

Questionnaire Responses

Responses to the seven five-choice items on the questionnaire are summarized in Table 7. The multivariate analysis of variance yielded no significant main effects or interactions by item for presentation mode. Of the 154 students who completed the questionnaire in the slide/tape and print groups, 64 percent responded that the materials were interesting, 96 percent that the information was clear, 71 percent that they liked the fact that the career materials included real people, 72 percent that it was helpful to get career information of this type, and 50 percent that they liked the career materials.

Students also completed several open-response items. When asked what they liked most about the career materials, 51 students (33%) responded that they liked the career information they received, 35 (23%) that they liked the specific careers described, and 17 (11%) that they liked the fact that the materials showed real people. With regard to what they liked

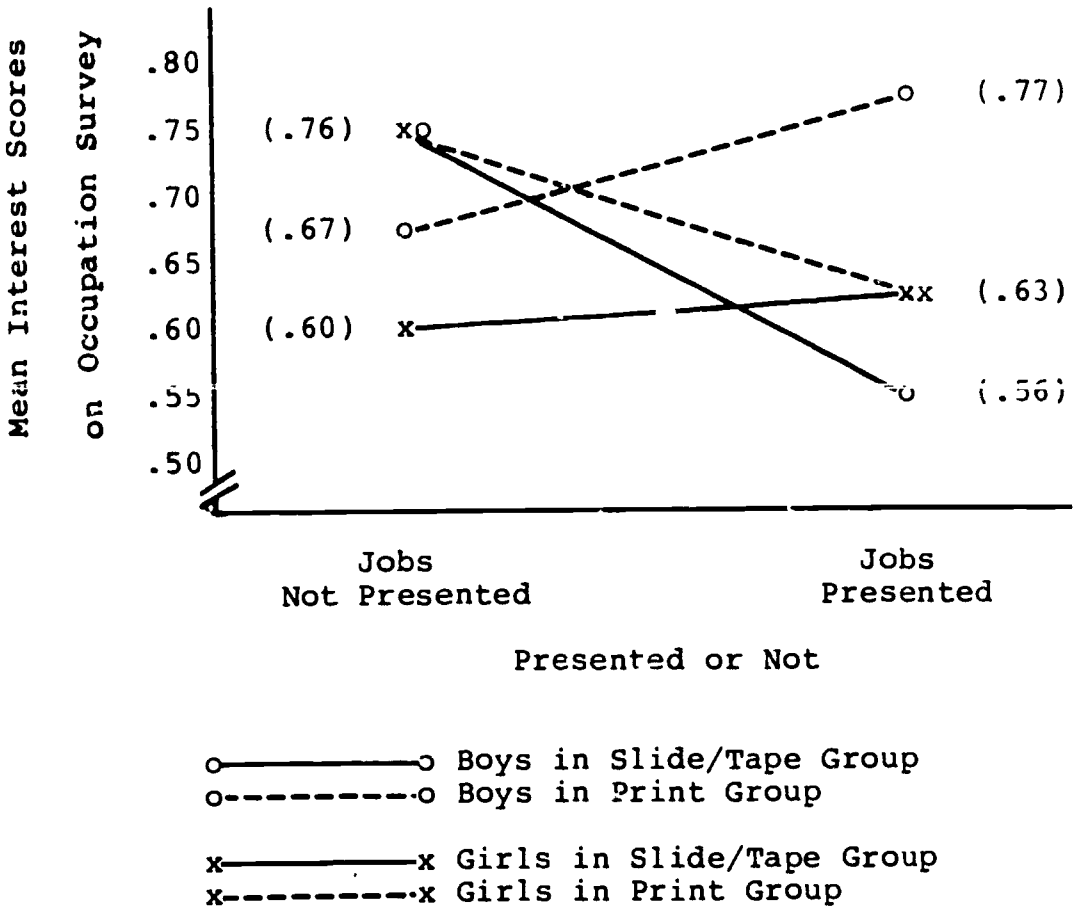

Figure 2. Presentation mode by sex of subject by presented or not presented interaction

Table 7

Percent of Responses to Questionnaire by Item and Treatment

Item	Treatment	% of Responses AS	A	N	D	DS	Mean Score
Materials interesting	Print	6	58	20	15	1	3.54
	Slide	10	44	39	6	1	3.56
Information clear	Print	34	62	3	1	0	4.30
	Slide	21	65	11	3	0	4.05
Liked real people	Print	30	41	26	3	0	4.01
	Slide	44	36	19	1	0	4.23
Information helpful	Print	29	43	22	4	2	3.93
	Slide	34	41	20	5	0	4.05
Liked materials	Print	6	44	28	19	3	3.35
	Slide	6	32	44	11	7	3.19
Tried hard to learn	Print	10	35	36	15	4	3.31
	Slide	7	33	45	12	3	3.31
Lesson easy	Print	37	44	18	1	0	4.15
	Slide	40	39	21	0	0	4.19

Note. Mean scores were computed on the basis of 5 for agree strongly, 4 for agree, 3 for neither agree or disagree, 2 for disagree, and 1 for disagree strongly

Mean Totals for Treatment Conditions: Print = 3.80
Slide/Tape = 3.80

least about the materials, 41 students (27%) responded that they disliked some of the careers, 27 (18%) that they would have preferred a greater variety of careers or more information, and 17 (11%) that they did not dislike any aspect of the materials.

Discussion

This study was conducted to investigate the actitudinal effects of presenting students with career information in two media forms, slide/tape and print. Students were presented with information about men and women working in careers not traditional for their sex. Students in the slide/tape treatment and those in the print treatment were significantly more positive about the careers being suitable for both men and women than were students in a no-treatment control group. In addition, students showed more positive attitudes toward jobs they learned about than jobs they did not learn about. Attitudes of students in the print group did not differ signi cantly from those in the slide/tape group.

The effectiveness of the use of positive role models to influence student attitude, as suggested by Bandura (1977), Fleming and Levie (1978) and Gagne (1977), is supported by the results on the suitability variable in this study.

That the attitudes of the print and slide/tape groups did not differ significantly from each other may be due to the design of the two presentations. Presentations in both forms were prepared using the same content according to the recommendations of Fleming and Levie (1978) and Gagne (1977) for effective attitude change. Students' responses to the questionnaire indicate that they liked both forms about equally well and that they tried about equally hard to learn the lesson in each form.

In his review of cognitive learning studies, Clark (1983) reported that varying instructional medium only when content and method were kept constant generally produced no difference in

achievement. Although attitudes rather than achievement were investigated in the present study, the lack of significant differences between the two media forms is consistent with Clark's conclusion. It appears from this study that print and slide/tape materials that have similar content and that are developed using similar techniques may be relatively equally effective in changing attitudes. For greater variety, materials in both forms could be included in more concentrated programs designed to change attitudes.

Although Savenye (1983) reported a greater generalization of attitudes resulting from slide/tape than print, no such difference was found in the present study. No photographs were used with the print materials in the 1983 study, and the addition of photographs in this study may have enhanced the effectiveness of the print materials. This is suggested by the consistently, though not significantly, higher suitability scores of the print group over the slide/tape group in the present study.

Students' positive attitudes towards jobs they viewed or read about did not generalize towards other jobs about which they received no information. This result is consistent with the non-significant finding of Haas et al. (1984) for Hispanic students, but not with the positive results of Savenye (1983) for slide/tape and Greene et al. (1982) for print. That this generalization effect has not occurred consistently across studies, even when similar methodology is used, suggests that it may not be a very powerful one.

Students were more interested in jobs which traditionally

have been held by persons of their own gender, and they were also much more confident of success in such jobs. These results are consistent with those of other researchers investigating sex-stereotyping (Gregg & Dobson, 1980; Frost & Diamond, 1979; Plost & Rosen, 1974; Warren & Lanning, 1984). In her theory of the development of career aspirations, Gottfredson (1981) indicates that the tendency to consider jobs of one's own gender is the strongest limiting factor in choosing jobs. Thus, success in influencing both interest and positive attitudes toward suitability of jobs traditionally held by the other gender should help students to overcome this limitation.

Neither the slide/tape nor the print presentation had a strong effect on student interest or confidence of success, although presentation of role models has been recommended by researchers to enhance interest in careers (Krumboltz, 1979) and feelings of confidence related to careers (Betz & Hackett, 1981; Gottfredson, 1981). While suitability, interest and confidence in jobs are all strongly related to the student's own gender and traditional gender of the job, attitudes about suitability were more easily changed by the materials used in this study. This may be due to the fact that the survey items assessing attitudes toward suitability of jobs for both men and women measured students' attitudes about others, while the interest and confidence items measured students' attitudes about themselves. The materials used in this study were designed to influence attitudes towards suitability by presenting the benefits the role models receive from working in non-traditional careers. The materials were not, however, designed to produce changes in

interest and confidence. They did not directly assist students' in assessing their own interests, nor did they provide reasons students might feel confident they themselves would be successful in the careers. It is thus not surprising that the materials were not effective in changing these attitudes students hold about themselves.

Career materials which are developed to increase student interest and confidence of success in careers should provide students with opportunities to assess their own interests and abilities, information regarding careers, and guidance in matching their own interests and abilities with plans for their careers (Holland, Magoon, & Spokane (1981). Materials could emphasize the range of opportunities available to both young men and women and might show interesting and rewarding aspects of many careers. Confidence might be enhanced by providing students reasons to believe they might be successful in those careers. Talking with career role models and visiting work and training sites might give students a better basis for determining their possible success in different careers. It is important that students are provided with information which allows them to make as realistic an assessment of their future success as possible.

Students rated female jobs higher than male jobs with regard to their suitability for both men and women. The opposite finding was obtained in several previous studies (Greene et al., 1982; Haas et al., 1984). This difference is most likely due to the fact that female jobs used in previous studies (e.g. Panek, Rush & Greenawalt, 1973; Shinar, 1975) were rated as being highly

sex-stereotyped. In contrast, the jobs for the current study were intentionally selected to be less stereotyped, and therefore subject to being perceived as more suitable for both sexes.

Attitudes of boys towards suitability of jobs for both men and women were more affected by presentation of information than were attitudes of girls, as indicated by the significant interaction for sex of subject by presented or not presented. This differential change most likely was due to the fact that boys' attitudes without treatment were more sex-stereotyped than those of girls, and boys thus had more room for change. Overall, significantly more females than males rated jobs as suitable for both men and women, a finding consistent with other research on student sex-stereotyping of careers (Gregg & Dobson, 1980; Frost & Diamond, 1979; Warren & Lanning, 1984).

These results indicate that students are more interested in male jobs than female jobs. These results are similar to those of several studies in which students rated traditionally male jobs as higher in prestige, power, and financial reward than traditionally female jobs (O'Connor, 1982; Teglasi, 1981; Betz & Hackett, 1981). It is likely that the prestige and power perceived as inherent in male jobs also makes these jobs more interesting to students. Students were, however, more confident of success in female jobs than male jobs on jobs not presented. In the O'Connor study students rated female jobs as less complex, defined by O'Connor as requiring less intelligence, than male jobs. It may be that students in the present study perceived female jobs as easier and that they therefore were more confident of succeeding at them.

Interest and confidence of boys on jobs presented were more affected by print, while girls were more influenced by slide/tape. Generalization of attitudes towards jobs not presented, however, showed nearly the opposite pattern. This pattern is indicated by the three-way interaction for presentation mode by sex of subject by presented or not presented on interest. This pattern of differential media effects for boys and girls has not been reported in previous studies, and further research certainly would be necessary to determine its stability. If a consistent pattern of gender-related differential effects were found, it would have important implications for the development of educational materials.

The results of the present study indicate that well designed slide/tape or print materials which present role models working in non-traditional careers can affect student attitudes regarding the suitability of careers for both men and women.

Further study should investigate effects of more concentrated programs than the twenty-minute program presented in this study. Such programs could include group activities in which students discuss their own career interests, opportunities for career-related experience, and possible approaches for handling both family and job responsibilities. Students could be guided in writing or discussing reasons why all careers should be open to both men and women, and why certain cross-sex careers might be desirable for themselves and/or others. Having students generate their own arguments in this way has been shown to foster persistence of influenced attitude change (Elms, 1966; Watts,

1967). Classroom discussions with live role models could be arranged, as could student visits to local work sites.

In such a program students might also be taught specific career planning skills and provided with guidance in assessing their own interests and abilities in terms of non-traditional choices open to them. These suggestions would be consistent with those of Jones and Gelatt (1979) for career interventions built upon social learning theory. Such interventions might ideally be conducted periodically throughout the regular school curriculum from the early grades through high school as recommended by Sankey (1981). Media programs, such as the one discussed in this study, which present credible, realistic career role models could be incorporated throughout such a long-term curriculum.

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