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## Performance Ratings for the Incongruent Worker in Sex-Stereotyped Professional and Unskilled Jobs

Joan M. Paulus  
*University of Central Florida*

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PERFORMANCE RATINGS FOR THE INCONGRUENT WORKER  
IN SEX-STEREOTYPED PROFESSIONAL AND UNSKILLED JOBS

BY

JOAN M. PAULUS  
B.A., St. John's University, 1975

THESIS

Submitted in partial fulfillment of the requirements  
for the degree of Master of Science: Psychology  
in the Graduate Studies Program of  
Florida Technological University

Orlando, Florida  
1977

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Women have been evaluated as less desirable than comparable men for masculine sex-typed jobs based on application forms, resumes, and interviewer comments (Fidell, 1970; Rosen & Jerdee, 1974; Shaw, 1972; Terborg & Ilgen, 1975). However, a reversal of this tendency seems to occur when the female's performance rather than her credentials are assessed for a male dominated position. Two recent studies showed that even when objective measures were defined, the female's performance, in a simulated work-sampling task of loading cans as a stock clerk, was rated higher than the equivalent male's performance (Bigoness, 1976; Hamner, Kim, Baird, & Bigoness, 1974). Due to a lack of difference in performance criteria, the distortion in the ratings was attributed to the type of task which was used. The job of stock clerk is one a man would be expected to hold and when the female performs equally well on the task she is seen as being a better performer than the male (Hamner et al., 1974). It is noteworthy that whether the raters were male (Bigoness, 1976) or a heterogeneous group of males and females (Hamner et al.,



1974) the bias was systematically in favor of the woman in the high performance condition. Low performing males and females were rated nearly identically though in both studies (Bigoness, 1976; Hamner et al., 1974).

Consistent with the above findings, females performing in a leadership role, basically a masculine entity, were perceived as doing a better job than male leaders by both male and female subjects, given that the actual performance of the two sexes was equivalent (Jacobson & Effertz, 1974). This result was interpreted on the basis of an existing low expectation for a female to perform well at all in the incongruent sex-typed role of a leader. Consequently, the research indicates an inclination on the part of both sexes to rate women higher than objective standards warrant when their performance in male oriented tasks is appraised.

Taynor and Deaux (1973, 1974) attempted to analyze the effect of sex-role congruence on rater's evaluations using the equity model (Adams, 1965). It was predicted that being a woman in a masculine situation would be perceived as a nonvoluntary constraint, and therefore the female should be rated as more deserving of reward than the male for equivalent



performance. Her performance should correspondingly be inflated to balance the increased deservingness of reward. While these predictions were confirmed for the female performing well in an emergency situation, previously shown to be more masculine than feminine, the model did not apply for the out-of-role male. Contrary to what was expected, the man was not over-evaluated on the reward or performance measures in the feminine task and male subjects also felt the man exerted less effort than the woman did (Taynor & Deaux, 1974). One potential moderator considered to be operating to counteract the equity prediction for the male in the feminine task is the disparate normative expectations for men and women in our society. It was explained that a woman may pursue a career with relative impunity but a man who engages in the care of the household, or a gender inconsistent behavior is actually downgraded. Accordingly, research is needed to determine whether men performing in traditionally female jobs are underrated compared to equally performing females because of the pejorative image of a man doing "woman's work."

The conception of male oriented jobs being "better" than female oriented jobs was noticed by Taynor and Deaux (1974) in their pretesting data



in which the majority of feminine tasks were seen as less socially desirable than the majority of masculine tasks. A perception of feminine tasks being somewhat easier than masculine tasks was also observed when an actor was rated as having more ability for performing the female tasks (Taynor & Deaux, 1974). It would not be surprising then to see a male or female doing a feminine task well, nor would it cause subjects to evaluate either sex as very deserving of reward. However, Deaux and Emswiller (1974) found that even when tasks of equivalent difficulty were used, a bias still occurred in which performance on the masculine task was seen as better than performance on the feminine task.

Touhey (1974a) found that the presence of women in male dominated jobs had negative social and psychological consequences. By increasing the proportion of females in certain high status professions as architect, physician, or scientist, the prestige and desirability of the occupation decreased. Furthermore, the occupations were perceived as being more passive, less successful, more insecure, and less useful than they were previous to admitting females. The reverse evaluations occurred when men entered occupations associated with females (Touhey, 1974 ). The



stereotypical assumption of female incompetency/male competency (Goldberg, 1963) seems to have an influence on the status of jobs which have a high concentration of a particular sex in them.

Expectations exist concerning the appropriateness of certain jobs being a male's domain and others being a female's (Epstein, 1970). and these attitudes perpetuate the polarization of the sexes in their respective positions. Gross (1967) noted that whenever large numbers of women entered an occupation, men began to seek employment elsewhere. The opportunity to enter jobs with predominantly female ratios was eschewed by men who refused to work in jobs in which 60% of the workers were females at the factory level (Bass, Krusell, & Alexander, 1971). This negative reaction was noted among male managers as well who did not like the idea of working with female supervisors, claiming they experienced a loss of self-esteem when women were put in positions comparable to their own. Bass et al. (1971) interpreted this on the basis of a sociohistorical bias in which it is felt that if a woman can do the job it is menial or unimportant. Furthermore, women's jobs are expected to remain predominantly female because in addition to job stereotypes, career counseling and vocational



education are geared toward short-term work for the woman (Lecht, cited in Bureau of National Affairs, 1976).

A person who is desirous of entering an incongruent job category will encounter some resistance which Cohen and Bunker (1975) noted in a tendency of job recruiters to hire the congruent gender for a sex-typed job. Women were disproportionately more acceptable for the editorial assistant position, previously shown to be more appropriate for females, than they were for the personnel technician position which pretesting had shown to have a male orientation. Concordantly, men were preferred for the personnel technician but not for the editorial assistant position. In a study in which subjects listed factors for a job description specified as merely a white collar position, females were perceived as more of a typical clerical employee, but males as more of an administrative management employee (Cecil, Paul, & Olins, 1973). The authors deduced that female applicants may experience more difficulty than male applicants in finding employment in the managerial ranks, just as males may find it difficult to secure employment in a typical clerical position.

Since the concentration of the sexes in certain



jobs is predicted to remain virtually the same at least until 1985 (Bureau of National Affairs, 1976), it needs to be determined whether sex-typing of jobs subtly influences performance ratings of the incongruent worker. This determination is particularly important because of the Griggs vs. Duke Power Co. (cited in Northcross, 1973) decision which holds an employer liable for any form of discrimination that may exist unrelated to measuring job capability regardless of his/her intentions.

It has been stated that once specific information concerning the quality of performance is given, sex-linked biases will be eliminated in the evaluation process (Deaux & Emswiller, 1974; Pheterson, Kiesler, & Goldberg, 1971; Piacente, Penner, Hawkins, & Cohen, 1974). Consistent with this notion, paintings in the winner condition did not get evaluated differently whether attributed to a male or female artist, but in the entry condition the male artist's work was rated higher than the same work done by the female artist (Pheterson et al., 1971). Apparently, when shown a piece of work which has uncertain status, as may be the case with resumes, the stereotype of male competency predominates. However, once on the job a worker's performance should speak for



itself. This was not the case in the studies which found a bias in favor of the female performing competently as a stock clerk (Bigoness, 1976; Hamner et al., 1974). Since the objectivity of performance criteria was deliberately controlled for, i.e. the amount of cans stocked were identical for the male and female worker, and ratees were trained such that motions, facial expressions, and quality of work were essentially equivalent for the filming of the work sample, it would be expected to find no sex-linked differences. Considering a bias was found and in the direction contrary to most stereotypical evaluations in which the male is rated higher, the author inferred a contrast effect was operating in favor of the woman performing well in the typically masculine job.

Before contrast effect will occur for the incongruent gender, it is conditional that the task be sex-typed. Consequently, Jacobson and Effertz (1974) who found females to be rated higher in a leadership role, suggested that the reason no bias occurred in the evaluation of paintings attributed to male and female artists once they were labeled winners is due to art being considered an egalitarian domain. Prior testing of the



stereotyping of jobs is necessary to avoid the development of research which has had to presume the existence of sex-typing in their post hoc explanations (Rosen & Jerdee, 1974a; Fidell, 1970).

Contrast effect was considered to be the determinant of the biased ratings because the out-of-role worker is presumably being evaluated against the normative expectations surrounding the sex-typed jobs (Epstein, 1970). Holmes and Berkowitz (1961) explained the presence of contrast effect in terms of an individual being judged against an anchor or standard formed from experiences with preceding individuals. It was hypothesized that a woman who has gained access and is performing competently in a masculine job will tend to be overrated in contrast to the stereotypical expectation that females as a group are not capable of doing well in a traditionally male job. On the other hand, it was felt a man working in a female oriented job would tend to be downgraded in contrast to the level of job he is expected to be in. Deaux and Taynor (1973) found males suffered greater devaluation than females in a low competency condition in which they were made to appear as unqualified applicants for a study-abroad



program. It may be that a man working in a female dominated position would be analogous to his being in the low competency state. The premise for the hypothesis that the incongruent sex is invalidly rated in gender-linked jobs is that the rater experiences "psychological distance" (Rowe, 1967) between the target individual and the comparison anchor formed from a high concentration of a particular sex in the job. Additionally, the greatest distortion would most likely occur for raters who have had little exposure to a successful male or female out of role.

While Rowe (1967) and Hakel, Ohnesorge, and Dunnette (1970) found contrast effects accounted for only one to two per cent of the variance from using target individuals of either low or high abilities, in the case of intermediate ability, 80% of the total variance in ratings could be attributed to contrast (Wexley, Yukl, Kovacs, & Sanders, 1972). Ceiling and floor effects were not a problem because of the considerable potential for upward or downward shifts in the ratings (Wexley et al., 1972). To study the operation of contrast effect a level of average competency was used in all jobs being tested.



A manipulation of professional and unskilled sex-typed jobs was necessary in the design of the experiment because of the possibility that the contrast effect may only occur in the unskilled condition for the woman (Bigoness, 1976; Hamner et al., 1974). At the professional level a bias against women in personnel decisions related to promotion, development, and supervision was found using in-basket exercises of managerial skill (Rosen & Jerdee, 1974). Taynor and Deaux (1973) felt that in situations where a female is perceived as being permanently out of role, contrast effect will not operate in her favor. The instances in which women were overrated in Taynor and Deaux's studies (1973, 1974) were such that the female was probably perceived as being only temporarily out of role because of the short-term nature of the tasks. Likewise, Jacobson and Effertz (1974) seemed to feel that the transitory association of tasks composed specifically for the occasion, with no past or future, influenced the operation of contrast effect in their leadership experiment. A female in a managerial role may be evaluated not only against the evidence directly presented, but also against assumptions of



long-term continuity.

Cohen and Bunker (1975) mentioned the possibility of tenure risk moderating personnel judgments because of a preconception that the incongruent gender may not be likely to endure a position that has not traditionally been associated with his/her needs or skills. A female in an unskilled male job compared to a professional male position may be perceived as more likely to maintain her performance at the lower level. The notion of tenure risk may be operating against the man in both unskilled and professional female jobs because it may be foreseen that he would be unwilling to stay in the relatively easy, socially undesirable (Taynor & Deaux, 1974) women's jobs.

Written lists of performance were used as the means of conveying the worker's behavior. To eliminate the possibility of not witnessing any variance because of the exact reporting of information, two forms were developed, a general and a specific one for each worker. The general list was somewhat ambiguous and if any bias did occur, it was felt it would be more obvious with the general form.

The manipulated variables in this study were:

(a) incongruent condition, in which you would find



a female in a male-type job or a male in a female-type job, vs. congruent condition; (b) professional vs. unskilled jobs; (c) sex of the worker; and (d) specific vs. general lists of performance.

The pertinent questions to be answered by this experiment were:

1. Are female workers rated higher than male workers overall because of a contrast effect operating in favor of the woman performing satisfactorily in masculine jobs and against the man working in feminine jobs?

2. If females are overrated in the incongruent jobs, does the bias only occur for unskilled jobs where the woman is not perceived as being as great a tenure risk as in professional jobs (Cohen & Bunker, 1975; Taynor & Deaux, 1973) ?

3. Are males underrated in all feminine jobs, unskilled as well as professional, because of the pejorative image of a man doing what is traditionally women's work (Taynor & Deaux, 1974) ?

4. If a bias due to the worker being in an incongruent job does exist, does it occur more on the general list which would allow for more interpretation on the part of the rater, than with the specific list of performance?



## Method

### Subjects

One hundred and sixty undergraduates, who were present in introductory psychology classes at Florida Technological University when the experiment was administered, participated in the study.

### Instruments

Pretest. Jobs were tested on the dimensions of difficulty level and sex-typing using seven point bipolar scales. Psychology students were asked to rate the degree to which they associated a job with men or women on a scale with female at one end and male at the other. They were also asked to rate the difficulty level of the same jobs on a scale with the anchors of "very easy" at one end and "very difficult" at the other. Subjects were supplied with job descriptions derived from the Dictionary of Occupational Titles, Vol. I (1965), including duties of the job and necessary vocational preparation. Professional and unskilled jobs were tested and the level of these jobs was determined from the amount of training or educational background required. Professional jobs had a minimum requirement of a four year college degree and the unskilled jobs required only about three months of on-the-job



training.

Testing was done until two professional jobs, one polarizing toward the male end of the seven-point scale and one polarizing toward the female end of the scale, were rated approximately equal on the difficulty dimension (t test at the .05 level showed no significant differences). Likewise, two unskilled jobs, one polarizing as male and the other female, were found which also showed no significant differences on difficulty (t test,  $p < .05$ ).

The female professional job of nurse-instructor had a mean of 5.13 on the scale measuring sex-typing, one benchmarked as male and seven as female. The male professional job of lobbyist had a mean of 2.41. For the unskilled jobs, cashier-checker was associated with females and had a mean of 5.48, and stock clerk was associated with males, having a mean of 2.25.

Two lists of behaviors of an incumbent were developed from the four job descriptions, a specific and a general type. The specific list contained about ten items of performance behaviors which were fairly explicit, i.e. a worker was said to have completed a task in two and a half hours while it would normally take two hours to do. However, the



general list of behaviors, which also included about ten items of performance, used somewhat vague terms as "occasionally", as well as some irrelevancies as membership in a state organization.

Subjects unaware of the polarization of the jobs on sex or their difficulty level, evaluated the worker for level of performance based on the lists he/she read. The pretest rating scale included five questions which overlapped on the dimension of performance and these five scores were averaged so that each subject had one overall rating. A mean rating across subjects was used as the indicator of competency level for each of the eight lists. Seven point bipolar scales were used on each of the questions, ranging from a low level of performance at number one and a high level at number seven. An overall mean of about four, indicating average performance, was desired for each of the lists. T tests were computed and only two lists, cashier-general and lobbyist-specific, showed significant differences with the other lists on performance to warrant modification ( $p < .05$ ). The cashier-general list was rated with a mean of 4.89 and consequently two items were made somewhat more negative; and the lobbyist-specific list, with a mean of 3.6 was



favorably modified.

Main Instruments The specific and general lists of performance for a neutral gender worker were changed to include a male's name, John T. Harrison, and a female's name, Susan T. Harrison. Four job descriptions, the same as those used in the pretest, were supplied to inform the subject of the duties and vocational preparation required (See Appendix A). The sixteen lists of performance may be found in Appendix B.

The dependent variable was a four question rating scale using seven point partially benchmarked continuums (See Appendix C). All of the questions were related to the dimension of performance: quality of work record, productivity, performance of the worker in comparison to what one would expect from similar individuals, and overall job performance. The four categories were worded this way to avoid the confusion exhibited by subjects using the pretest rating scale. Each question was analyzed separately.

#### Procedure

All subjects used were randomly assigned to one of the 16 ten-person experimental groups. They were told upon entering the classroom that the author was



conducting an experiment to study the judgment process of performance appraisal. Subjects were asked to read the job description and a list of behaviors for a worker and to evaluate the worker's performance on the four-question rating scale. To make sure the subject was aware of the sex of the worker he/she was asked to fill in the information asked for about the rater and the worker. The rater's information was not relevant except to make it less obvious that the experiment was concerned with the sex of the worker.

Each subject rated only one worker and he/she received three sheets of paper: a job description, a behavior list, and a rating scale. A set which a subject received had a small number on the front page corresponding to one of the sixteen conditions. The sixteen conditions were randomly mixed before distributing them and the numbering of the sets facilitated the compiling of results for the ten subjects in each category.

Subjects took about five to ten minutes to rate the worker and they were told not to discuss the experiment while it was being administered.



### Statistical Analysis

Findings were analyzed in terms of four 2 X 2 X 2 X 2 ANOVA'S, fixed effects model. Each of the four questions on the rating scale was considered as a separate dependent measure of performance. There were four independent variables, each being studied at two levels: (a) congruent condition vs. incongruent condition, (b) level of skill of the job, professional vs. unskilled, (c) sex of the incumbent, and (d) specificity of the list of performance, specific vs. general.

A "Fisher LSD" (Welkowitz, Ewen, & Cohen, 1976) was used to determine which pairwise means for significant interactions ( $p \leq .05$ ) were different enough from each other to be significant. It is found by:  $LSD = t \left[ \frac{MSW}{2/N} \right]^{\frac{1}{2}}$ , where  $t$  is chosen for  $df = \text{total amount of subjects minus the number of groups}$ . In this study there were 160 subjects and 16 groups, or 144 degrees of freedom (for the two tailed test at the .05 level). The  $MSW$  was extracted from the significant ANOVA table and  $N$  was the sample size for the means being compared.



## Results

The major concern of this study was to determine whether a bias occurred in the evaluation of performance of a worker in sex-typed jobs. Four ANOVA'S were conducted, one for each of the performance questions on the rating scale. The complete ANOVA tables may be found in Appendix D.

### Dependent Measure 1: Quality of Work Record

Main Effect. The analysis of variance indicated a significant main effect for level of skill. Unskilled jobs were rated higher than professional jobs with means of 4.3375 and 3.675, respectively.

Two-Way Interactions. It was found that the level of skill interacted significantly with the congruence of the condition (See Figure 1). Unskilled workers, whether in a congruent sex-typed job or an incongruent sex-typed job, were rated higher than professional workers in congruent sex-typed jobs. Professional workers in the incongruent sex-typed jobs were rated higher on quality of work record than those in the congruent sex-typed jobs.

Another significant two-way interaction dealt with the sex of the worker and the congruence of the condition (See Figure 2). Contrary to what was predicted females in male oriented jobs were not



Figure 1

Mean ratings on dependent measure 1 for the factors: level of skill and congruence (U = unskilled; P = professional).\*

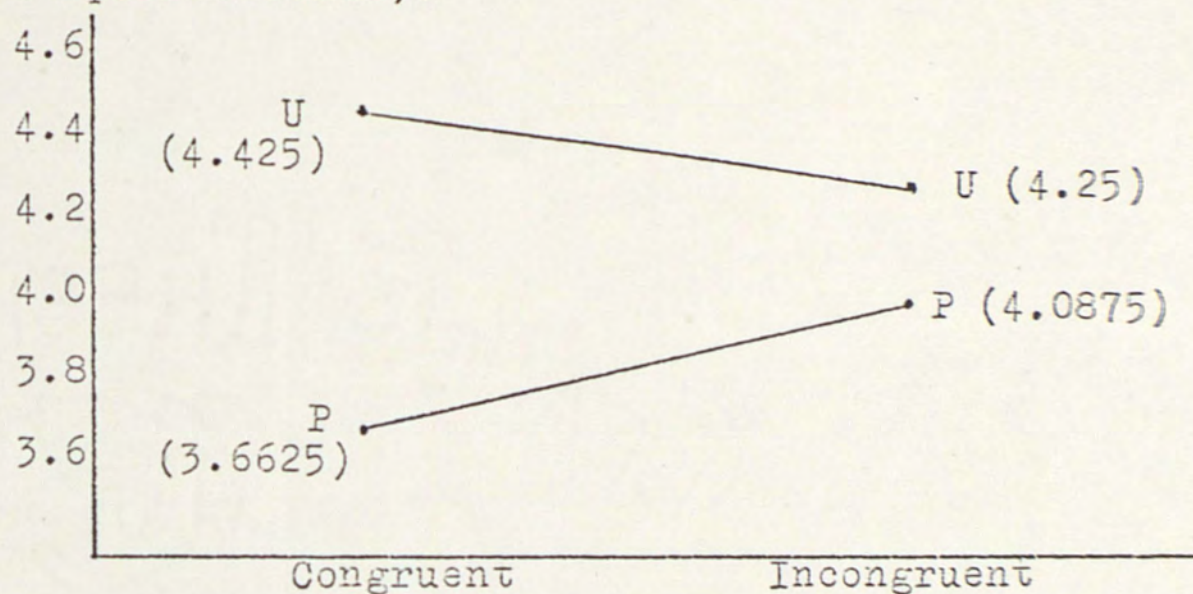
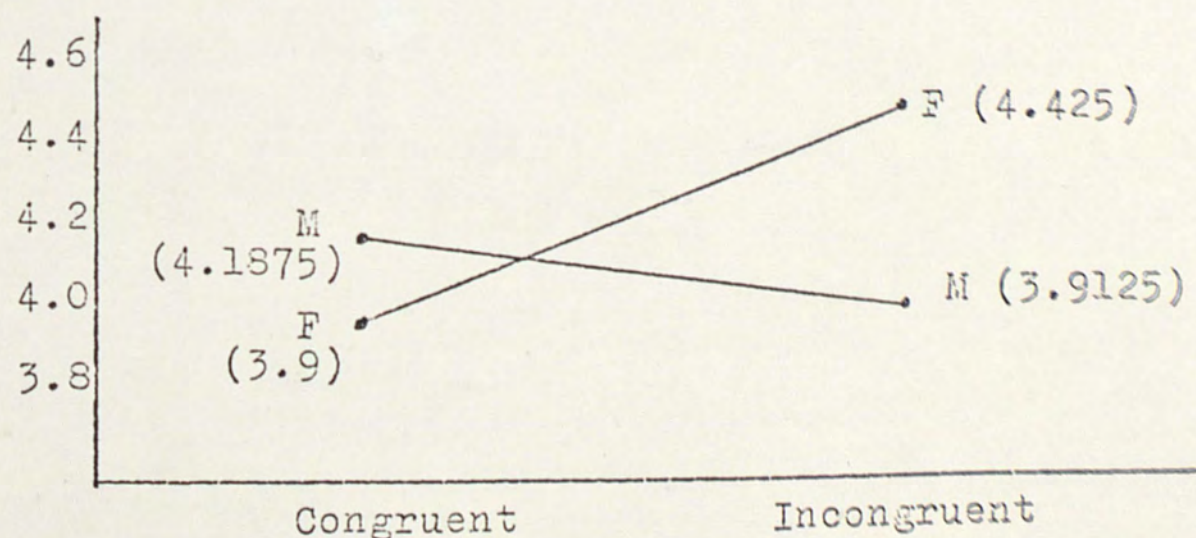


Figure 2

Mean ratings on dependent measure 1 for the factors: sex of worker and congruence (M = male; F = female).\*



\*Note. LSD between means = .4068; n for each M = 40.



rated higher than males in the same jobs. However, females in the masculine jobs were rated higher than females or males in the feminine jobs.

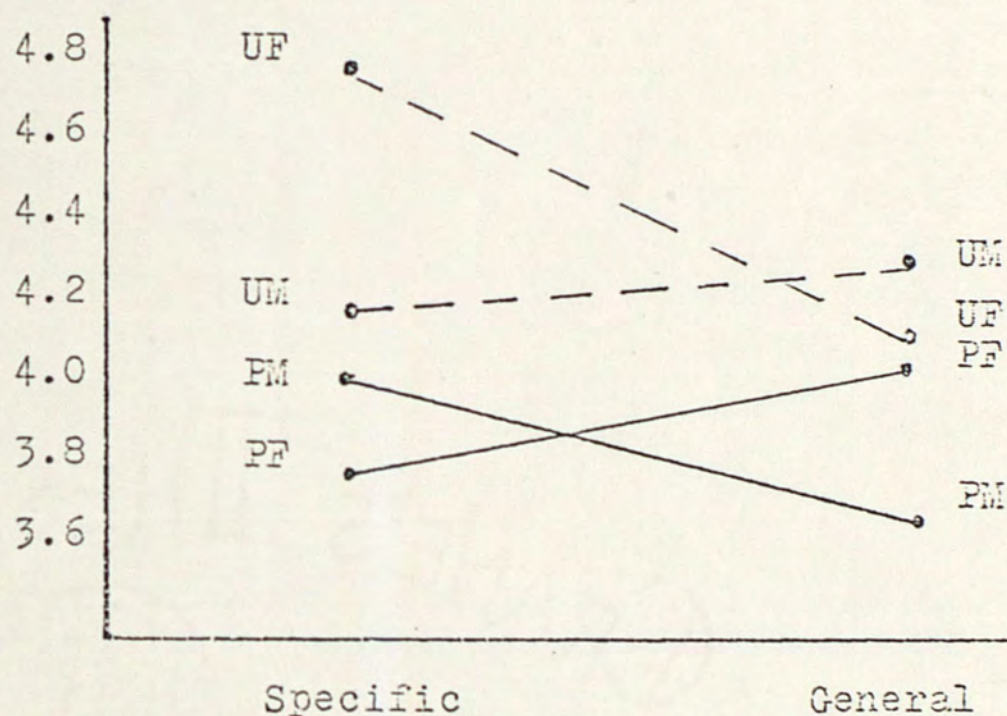
Three-Way Interactions. Sex of worker, level of skill, and specificity of list interacted significantly (See Figure 3, Table 1). Unskilled female workers were rated higher when described specifically than when described generally. This was not expected because it was thought the general lists would find the greatest variance. The unskilled female worker's performance described by the specific list was also rated higher than professional male or female workers' performance whether described specifically or generally.

Another significant three-way interaction was found for the factors: congruence of condition, level of skill, and specificity of list (See Figure 4, Table 2). The unskilled worker in the congruent job was rated higher with specific lists of performance than with general lists; and higher than professional workers in congruent or incongruent jobs described by either list. Professional workers in incongruent jobs were rated higher than those in the congruent jobs using specific lists of performance. Unskilled workers in the congruent jobs



Figure 3

Mean ratings on dependent measure 1 for the factors: sex of worker, level of skill, and specificity of list (UF=unskilled female worker, PF=professional female worker, UM=unskilled male worker, PM=professional male worker).



Note.  $n = 20$ ;  $LSD = .5754$ .

Table 1

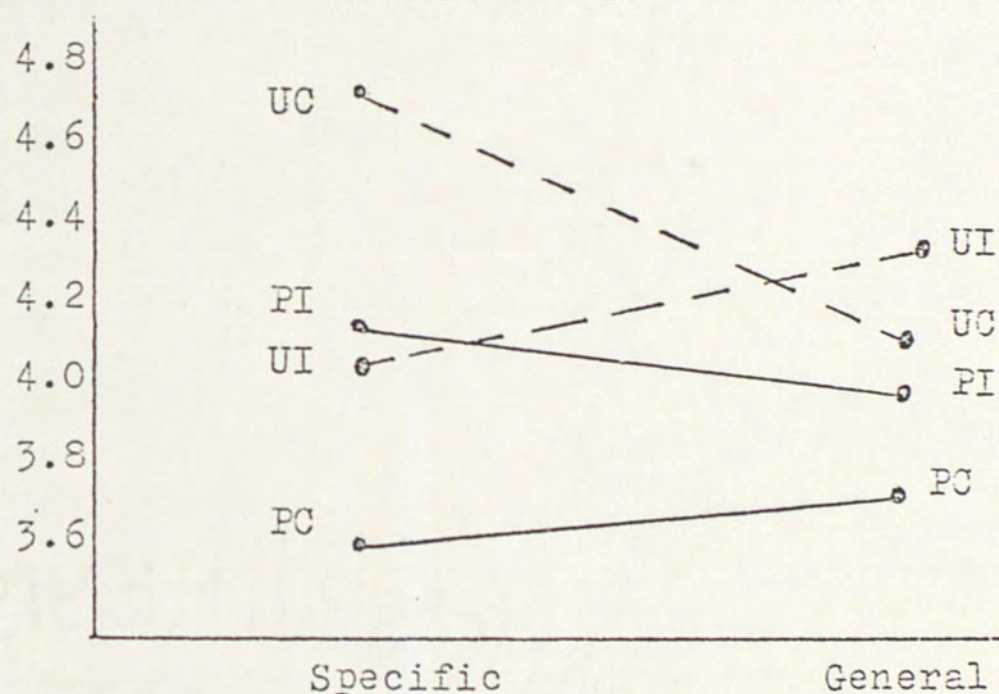
Mean ratings for Figure 3

	Specific	General
Professional		
Male	4.025	3.65
Female	3.75	4.075
Unskilled		
Male	4.175	4.35
Female	4.725	4.1



Figure 4

Mean ratings on dependent measure 1 for the factors: congruence, level of skill, and specificity of list (UC = congruent unskilled worker, UI = incongruent unskilled worker, PC = congruent professional worker, PI = incongruent professional worker).



Note.  $n = 20$ ;  $LSD = .5754$ .

Table 2  
Mean ratings for Figure 4

	Specific	General
Professional		
Congruent	3.6	3.725
Incongruent	4.175	4.0
Unskilled		
Congruent	4.75	4.1
Incongruent	4.15	4.35



jobs were rated higher than those in the incongruent jobs with specific lists of performance.

Dependent Measure 2: Productivity of Worker

The ANOVA for this measure of performance found no significant results,  $p < .05$ .

Dependent Measure 3: Performance of the Worker in Comparison to what one would Expect from Similar Individuals

Main Effects. Two main effects were found for the factors: level of skill and specificity of performance list. The unskilled worker was rated higher than the professional worker with means of 4.325 and 3.669 respectively. Specific lists of performance were rated higher than general lists with means of 4.2 and 3.78 respectively.

Two-Way Interactions. The factors congruence and sex of the worker interacted significantly. Contrary to predictions a female in a male oriented job was not overrated in comparison to the male in that same job (See Figure 5). But, women in the masculine jobs were rated higher than a worker of either sex in feminine jobs.

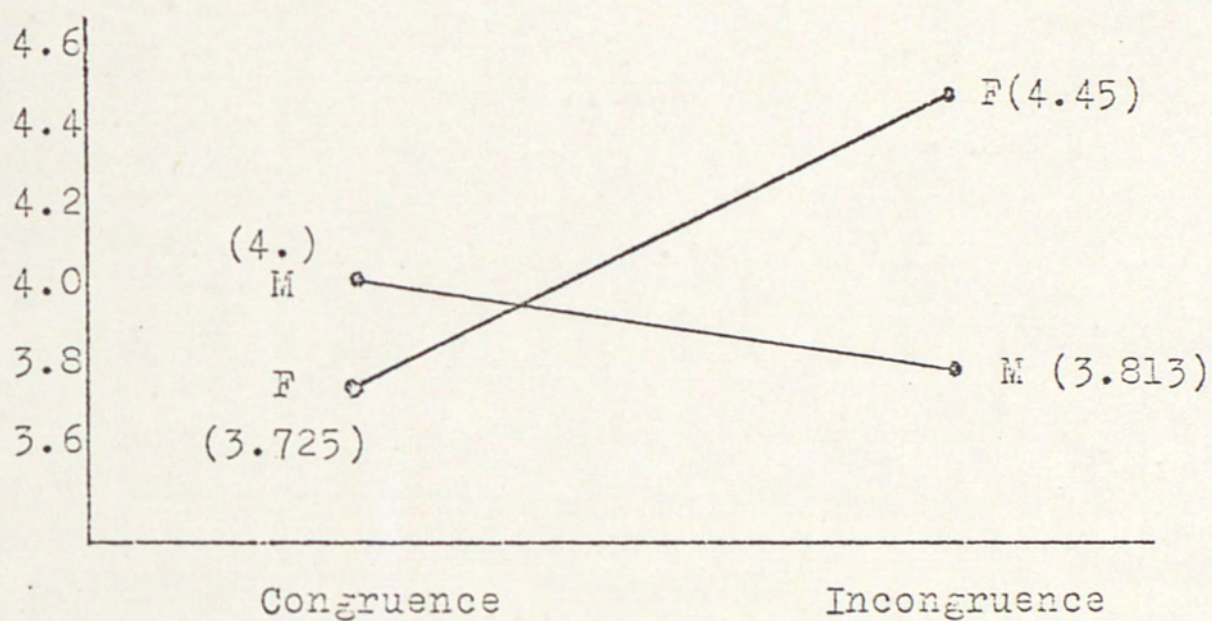
Level of skill and specificity of list were found to interact significantly (See Figure 6).

Performance in unskilled jobs when written specifi-



Figure 5

Mean ratings on dependent measure 3 for the factors: sex of worker and congruence (M= male; F= female).

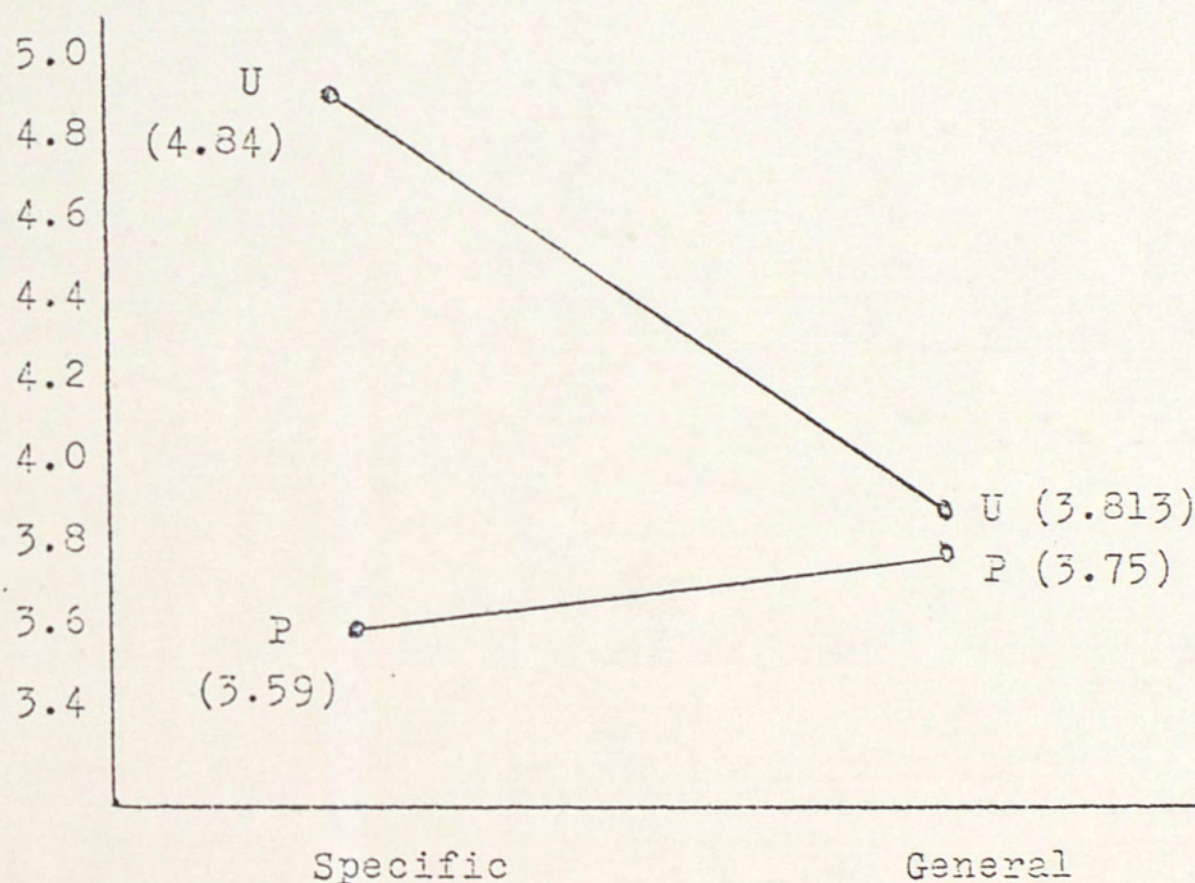


Note.  $n = 40$ ;  $\text{LSD} = .552$ .



Figure 6

Mean ratings on dependent measure 3 for the factors: level of skill and specificity of list (P=professional; U=unskilled ).



Note.  $n = 40$ ;  $ISD = .552$ .



cally was rated higher than when generally described. Specific lists of performance for unskilled workers were also rated higher than general or specific lists for professional workers.

Three-Way Interactions. The three factors: congruence, level of skill, and specificity of list interacted significantly (See Figure 7). Specifically written lists of performance for unskilled workers in congruent or incongruent jobs were rated higher than general lists for those workers. Professional workers in the congruent jobs were also rated higher with specific lists of performance. However, in the incongruent jobs professional workers were rated higher with general lists of performance.

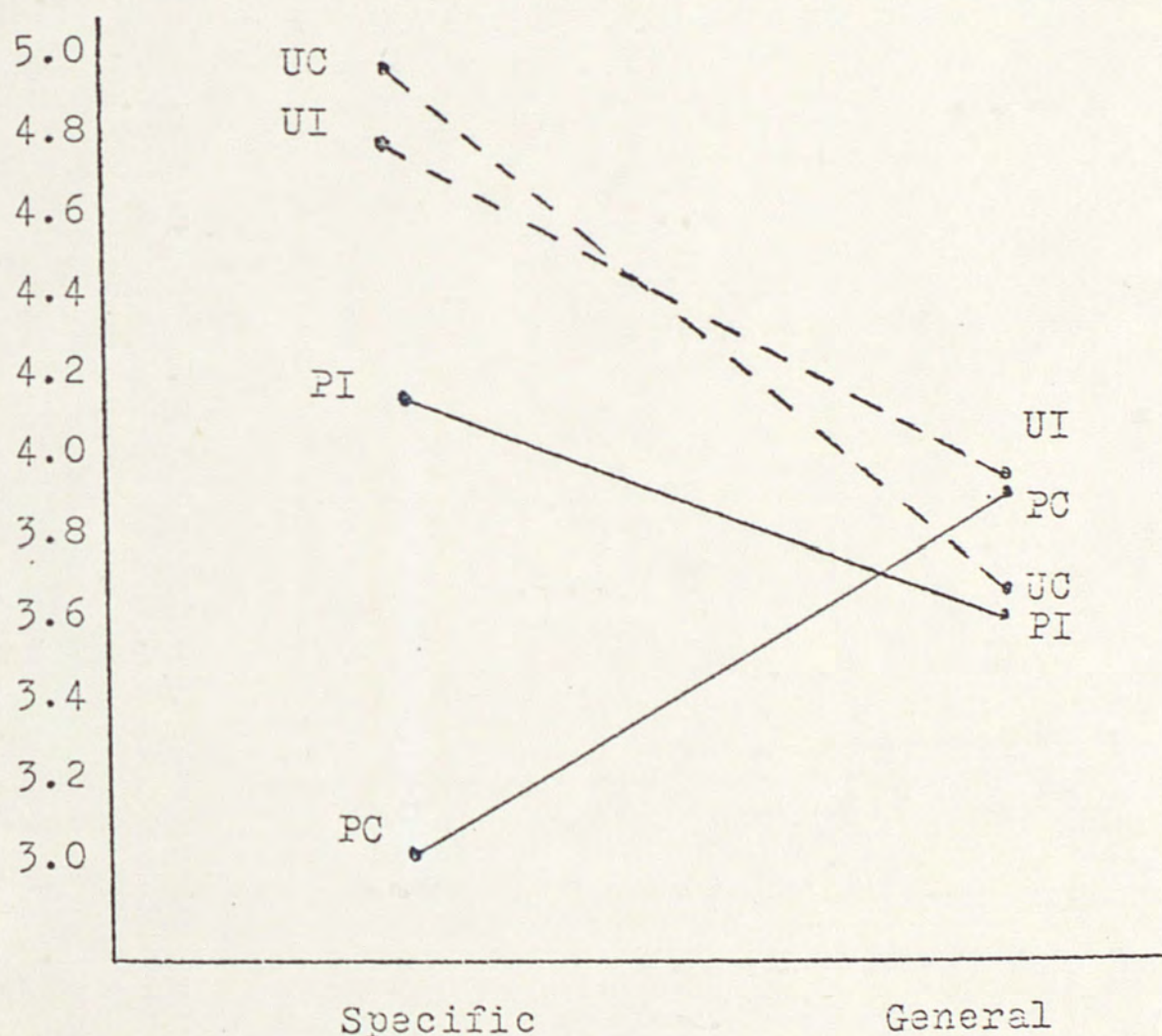
Other significant differences were found with specifically described unskilled workers, i.e. they were rated higher than congruent professional workers whether described specifically or generally; and they were also rated higher than incongruent professional workers described generally. (See Table 3).

Another significant three-way interaction dealt with the factors: sex of the worker, congruence, and specificity of list (See Figure 8, Table 4). The most relevant finding was that females described with specific lists of performance for masculine jobs



Figure 7

Mean ratings on dependent measure 3 for the factors: congruence, level of skill, and specificity of list (UC = congruent unskilled worker, UI = incongruent unskilled worker, PC = congruent professional worker, PI = incongruent professional worker).



Note.  $n = 20$ ;  $LSD = .78$ .

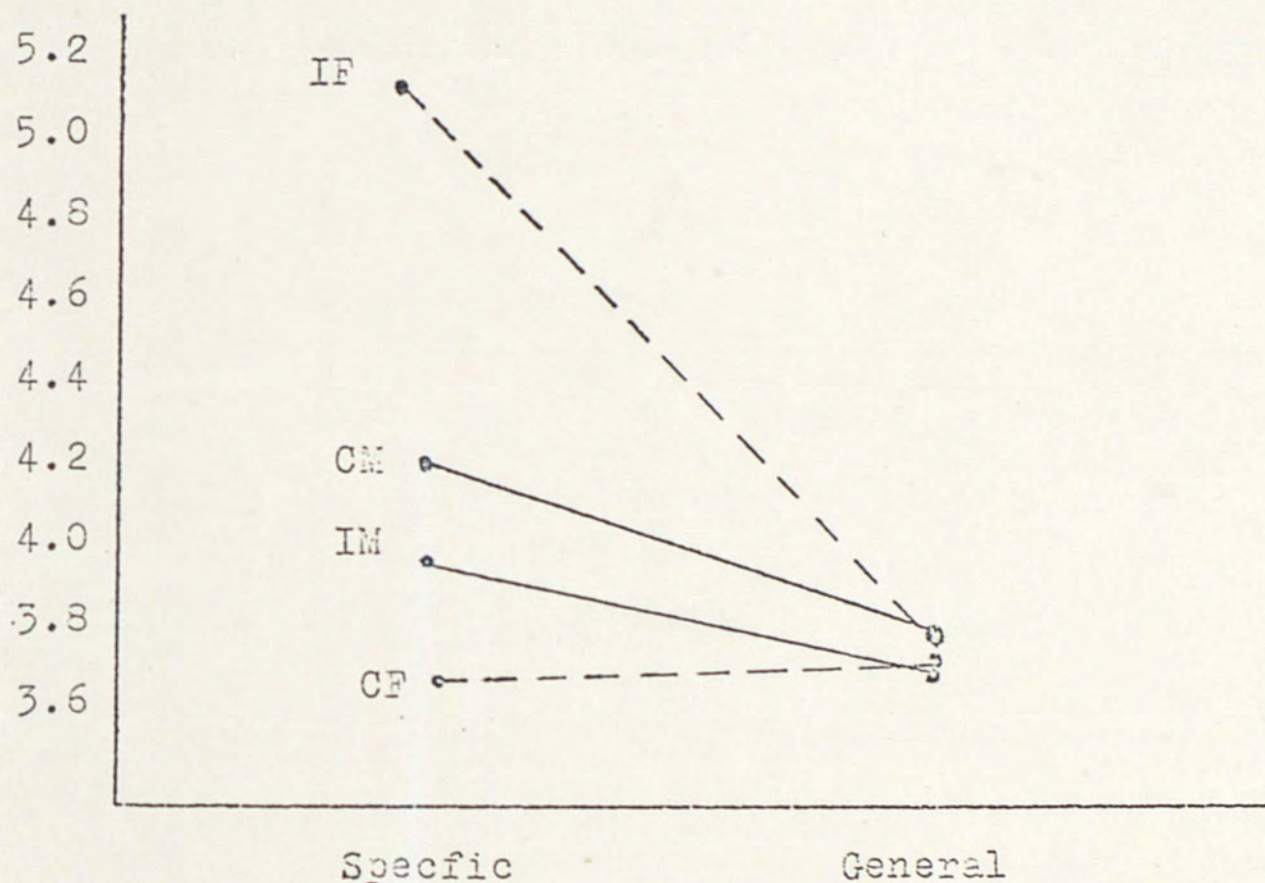
Table 3  
Mean ratings for Figure 7

	Specific	General
Professional		
Congruent	3.0	3.9
Incongruent	4.175	3.6
Unskilled		
Congruent	4.875	3.675
Incongruent	4.8	3.95



Figure 8

Mean ratings on dependent measure 3 for the factors: sex of worker, congruence, and specificity of list (CM = congruent male; CF = congruent female, IM = incongruent male, IF = incongruent female).



Note.  $n = 20$ ;  $LSD = .78$ .

Table 4

Mean ratings for Figure 8

	Specific	General
Congruent		
Male	4.2	3.8
Female	3.675	3.775
Incongruent		
Male	3.875	3.75
Female	5.1	3.8



were rated higher than equally performing males, described generally or specifically, in those same jobs. This supports the hypothesis that a woman in a male job is overrated in comparison to the man in that job. However, contrary to what was predicted for a man in a female job, he was not rated differently than the woman in that job.

Other significant differences were found with incongruent female workers whose performance was described specifically: they were rated higher than incongruent females described generally; and they were rated higher than males or females in feminine jobs using a specific or general list.

#### Dependent Measure 4: Overall Job Performance

Main Effects. Three main effects were found for the factors: level of skill, sex of the worker, and specificity of list. Unskilled workers were rated higher than professional workers with means of 4.256 and 3.6875. Female workers were rated higher on performance than males (4.132 vs. 3.825). This main effect of sex of the worker was predicted for the reason that it was felt women would be overrated in the incongruent jobs and men would be downgraded in the incongruent jobs. It is necessary to examine the interaction of sex of the worker and congruence



to determine the reason females were rated higher overall. A third main effect for specificity of list found specific lists with a mean of 4.175 were rated significantly higher than general lists with a mean of 3.769.

Two-way interactions. The factors congruence and sex of the worker interacted significantly (See Figure 9). As predicted females were rated higher than males in masculine jobs, but males in the feminine jobs were not rated significantly different from females in those jobs. Females in the masculine jobs were rated higher than either sex in the feminine jobs. Thus the high performance of females in male oriented jobs largely determined the main effect of females being rated higher than males.

Level of skill and congruence interacted significantly (See Figure 10). Professionally incongruent workers were rated higher than professionally congruent workers. Unskilled workers were not rated differently in congruent and incongruent jobs, but congruent unskilled workers were rated higher than congruent professional workers.

Level of skill also interacted significantly with specificity of list (See Figure 11). Unskilled



Figure 9

Mean ratings on dependent measure 4 for the factors: sex of the worker and congruence (M = male; F = female).\*

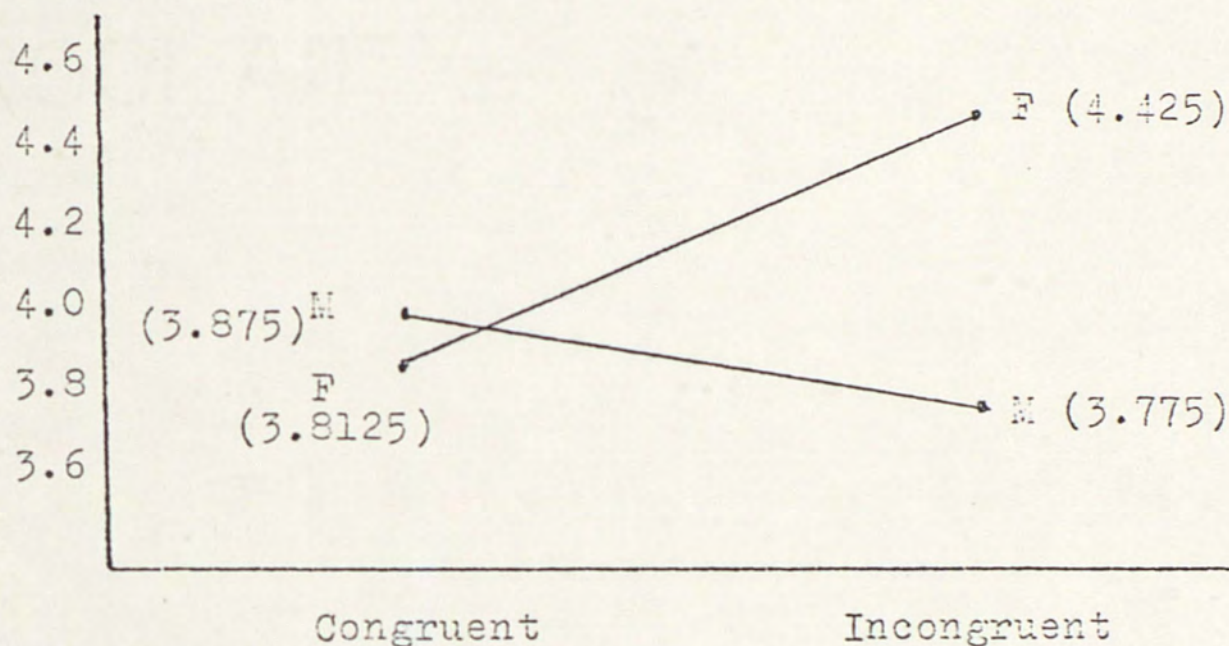
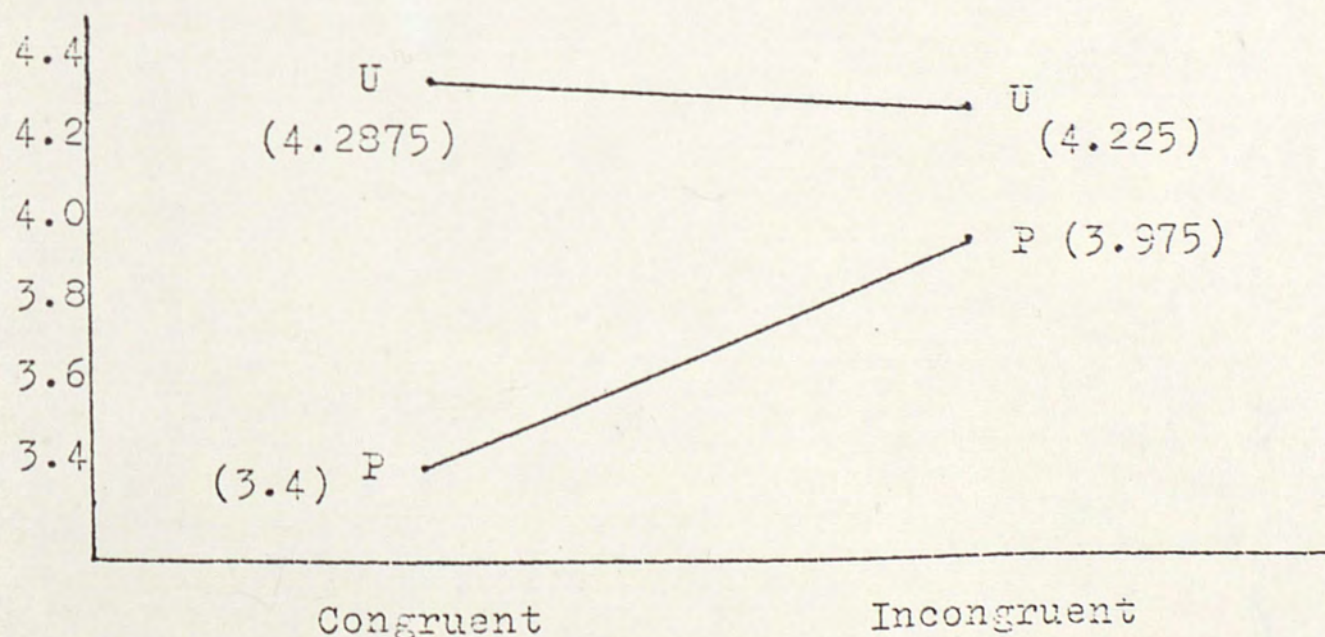


Figure 10

Mean ratings on dependent measure 4 for the factors: level of skill and congruence (U = unskilled; P = professional).\*

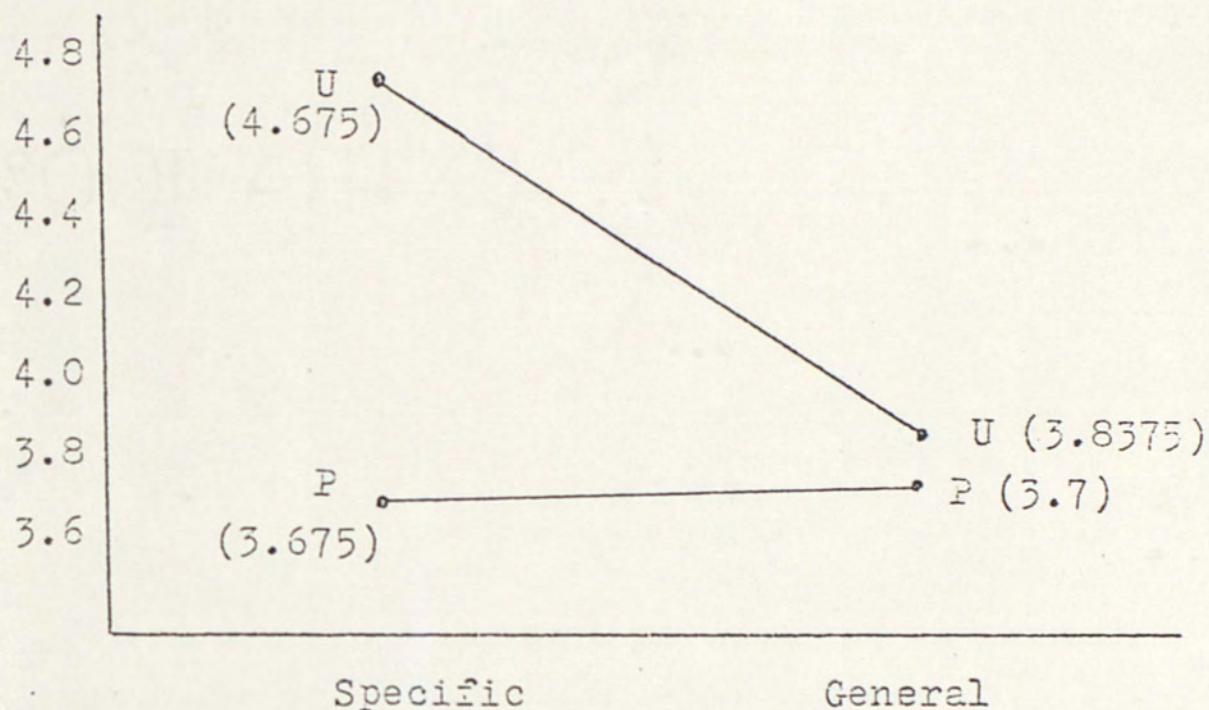


\*Note. LSD between means = .398; n for each M = 40.



Figure 11

Mean ratings on dependent measure 4 for the factors: level of skill and specificity of list (P=professional; U=unskilled).



Note. LSD between means = .398; n for each M = 40.



workers' performance described specifically was rated higher than when described generally. Type of list did not differ with professional workers. Unskilled workers described specifically were also rated higher than professional workers described with either type of list.

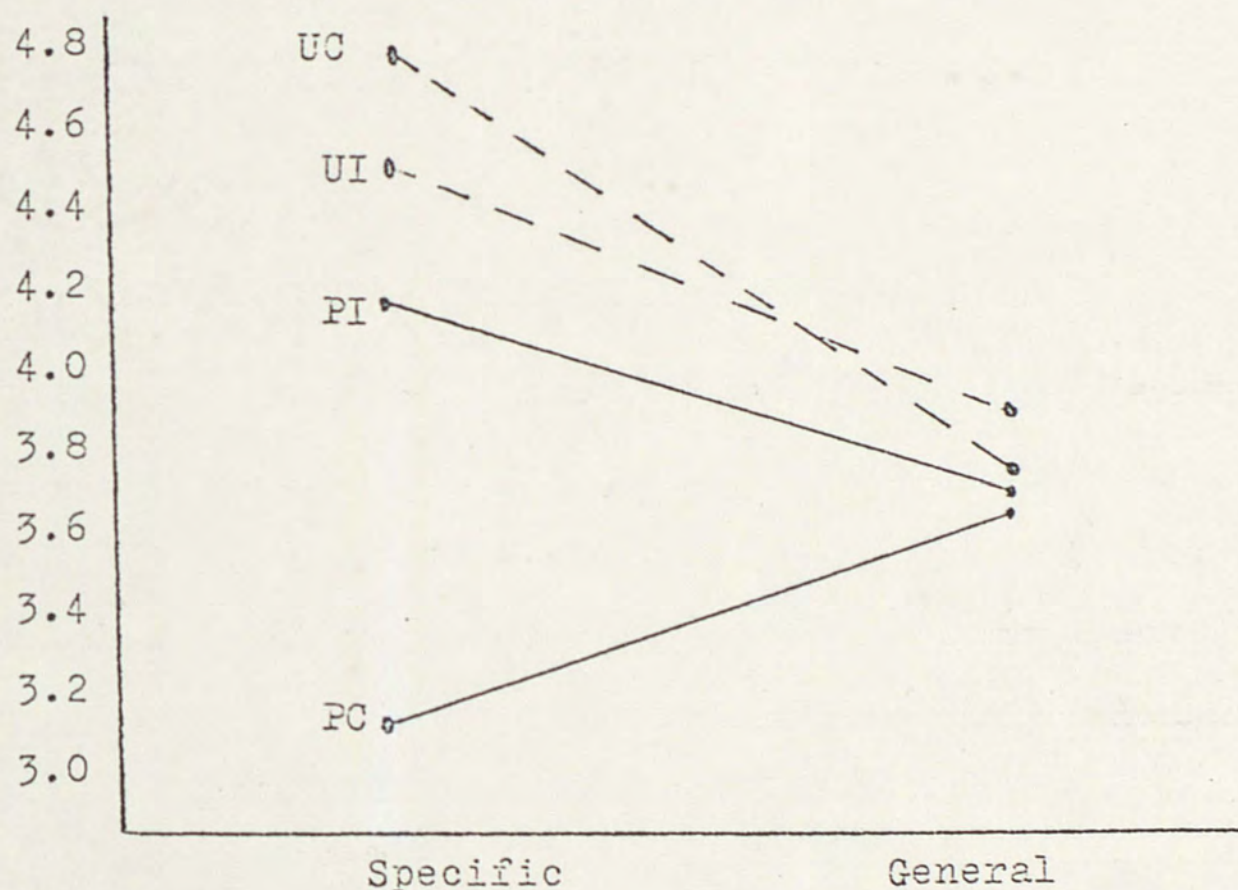
Three-way interaction. One significant three-way interaction was found with the factors: level of skill, congruence, and specificity (See Figure 12; Table 5). Unskilled workers were rated higher with specific lists than with general lists whether in congruent or incongruent jobs. Neither professional incongruent workers nor professional congruent workers were rated differently if their performance was described with specific or general lists.

Other significant differences found were: unskilled congruent workers described specifically were rated higher than all professional workers in congruent and incongruent jobs with any type of list. Unskilled incongruent workers described specifically were rated higher than professional congruent workers with either type of list, but only greater than professional incongruent workers described generally. Professional incongruent workers were rated higher than professional congruent workers when specific



Figure 12

Mean ratings on dependent measure 4 for the factors: level of skill, congruence and specificity of list (UC = unskilled congruent worker; UI = unskilled incongruent worker; PI = professional incongruent; PC = professional congruent worker).



Note. LSD between means = .5634; n for each M = 20.

Table 5  
Mean ratings for Figure 12

	Specific	General
Unskilled		
Congruent	4.8	3.775
Incongruent	4.55	3.9
Professional		
Congruent	3.15	3.65
Incongruent	4.2	3.75



lists of performance were used.

Four-way interaction. Only on this measure of "overall job performance" did all four factors: congruence, skill level, sex of the worker, and specificity of list, interact significantly. None of the workers described with general lists differed from one another. Relevant findings are noted below with the specific lists.

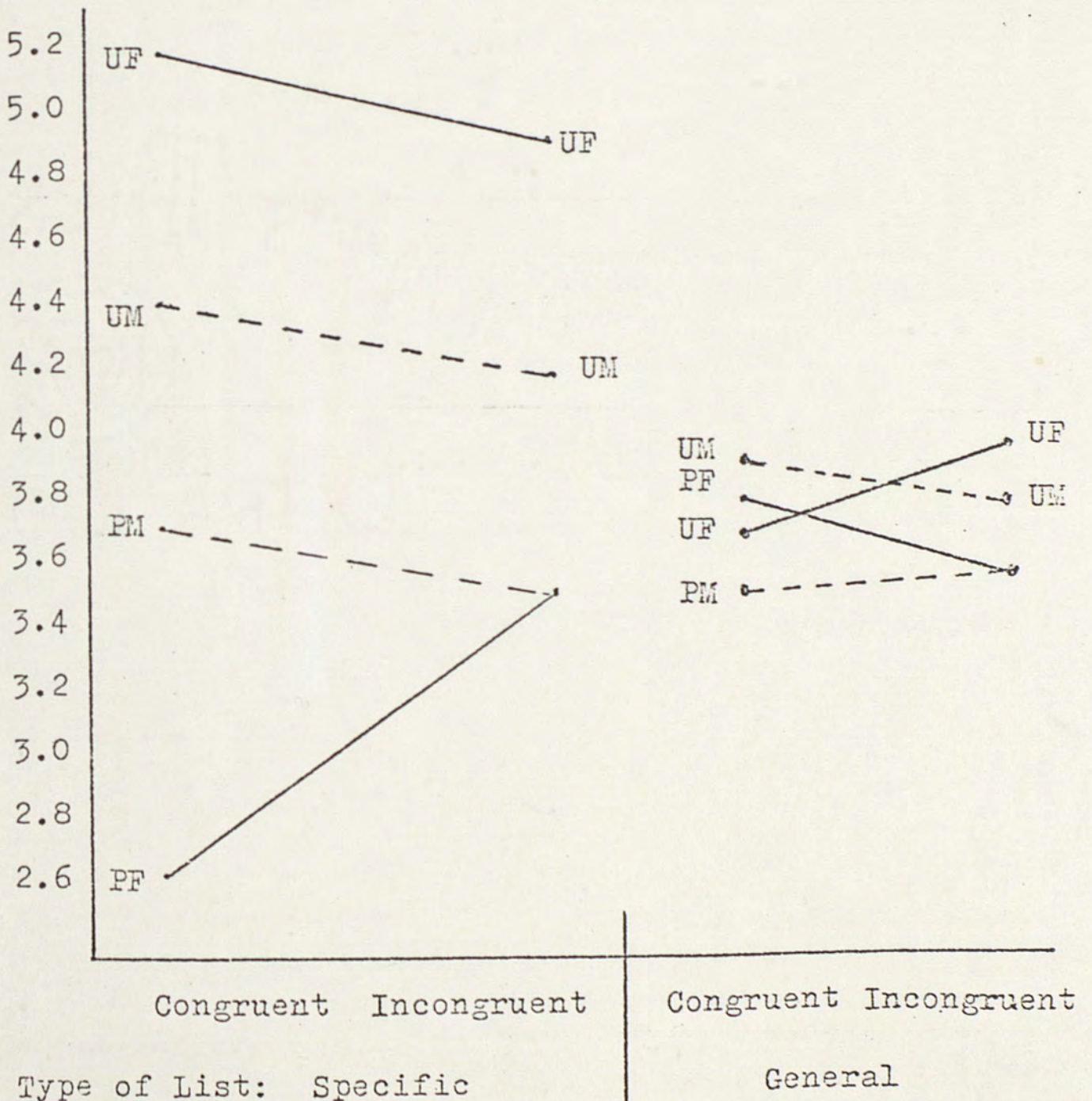
At the unskilled level, the hypothesis that a man in a female job would be rated lower than an equally performing woman in that job was confirmed for the job of cashier. The male stock clerk was also rated lower than the female cashier. A bias did not occur in favor of the female stock clerk contrary to earlier studies (Bigoness, 1976; Hamner et al., 1974).

At the professional level a female in the incongruent job of lobbyist was not overrated as predicted in comparison to the same performance for a male in that job. A female in the congruent job of nurse-instructor was found to be rated lower than a male in the congruent job of lobbyist. The hypothesis that a man would be underrated in the job of nurse-instructor because of its female



Figure 13

Mean ratings on dependent measure 4 using specific and general lists of performance for the factors: congruence, skill level, and sex of the worker (UF= unskilled female; UM= unskilled male; PF= professional female; PM= professional male).



Note. LSD between means = .7968; n for each M = 10.



Table 6  
Mean ratings for Figure 13

	Congruent		Incongruent	
	Male	Female	Male	Female
Specific				
Unskilled	4.4	5.2	4.2	4.9
Professional	3.7	2.6	3.5	3.5
General				
Unskilled	3.9	3.65	3.8	4.0
Professional	3.5	3.8	3.6	3.6

Note. LSD between means = .7968; n for each M = 10.



orientation did not occur and the reverse was found. The male nurse was rated higher than the female nurse.

There was a significant difference for a female professional worker on the evaluation of her overall performance depending on whether she was working in a male or female oriented job. Her performance was rated higher in the male job of lobbyist than in the female job of nurse. The male professional's performance was not rated differently in either the masculine or feminine sex-typed jobs.

With congruent jobs, the female professional was rated lower than the male professional. But both the male and female in the incongruent professional jobs received the same performance ratings with either the general or specific lists.

Female workers in the congruent unskilled and professional jobs were rated the highest and lowest on performance (See Figure 13). The unskilled female worker described specifically was rated higher than all professional workers for either type of list. The professional female worker described specifically was rated lower than all workers described with either type of list.



### Discussion

The most interesting results were found with question 4 measuring overall job performance. Looking at the main effect of females being rated higher than male workers, and the interaction of congruence and sex which found that females in the incongruent jobs were rated higher than equally performing males, it seems the hypothesis for the out-of-role female was supported. However, the four-way interaction revealed somewhat different results. Females in the incongruent jobs of stock clerk or lobbyist were not rated higher than males in these jobs. The apparent inconsistency between the finding of females being overrated in the incongruent jobs with the two-way interaction and the absence of this finding with the four-way interaction was due to the female stock clerk having been rated high enough to have supported the two-way interaction, but not high enough to be different from the male stock clerk as witnessed with the four-way interaction.

The prediction that the out-of-role male would be underrated was found for the job of cashier, but not for the professional job of nurse-instructor. While it was detrimental for a man to be in a female



unskilled job, this was not the case for the man in the female professional job which found his work to be overrated. This unexpected finding may be due to the high level of the job of nurse-instructor canceling the negative effect of it being female oriented and thus allowing the stereotype of male competency to predominate.

Working in the unskilled job had negative consequences for the man whether it was a male or female oriented position. A male stock clerk was found to be rated lower than a female cashier, in addition to the male cashier being rated lower than the female cashier. The feeling of the raters seems to have been not so much as what is a man doing in a female job, but what is a man doing in a low-level unskilled job.

While it was more acceptable for a female to be in an unskilled job, the female in a professional job congruent with her sex was rated lower than a male in a professional job congruent with his sex. It appears that the female's proper place is in unskilled jobs rather than professional jobs.

The inconsistent finding of a bias not occurring in favor of the female stock clerk compared



to the male stock clerk may have been due to performance not being high enough to allow the contrast effect to operate. The literature (Bigoness, 1976; Hamner et al., 1974) reported no differences in performance ratings of male and female stock clerks for the low competency condition.

A bias did not directly occur for the female in the lobbyist job compared to the male in that job as predicted. But, it was noted that the female nurse-instructor was rated significantly lower than the female lobbyist. It may be that the status of the male professional job improved the competency of the woman compared to her working in the female professional job. However, the reverse did not occur for the man in the female professional job vs. the male professional jobs. A male worker was not rated significantly different whether he was performing in a female or male professional job. The stereotype of a competent male seems to have nullified the sex-typing of the professional jobs for the man.

The reason that the other questions on the rating scale didn't witness significant interactions between the factors of congruence, level of skill,



and sex of the worker, to allow interpretations similar to question four's, may have been due to the irrelevancy of the performance categories in relation to the kinds of behaviors listed. Subjects may have experienced some difficulty in translating the behavior lists into the specific dimensions of quality, productivity, and comparison of performance to similar individuals, which was not a problem in evaluating the overall job performance of the worker.

One finding which overlapped between questions one, three, and four was that females in masculine jobs were rated higher than either sex in feminine jobs. But since no significant interaction was found which included the factors congruence, skill level, and sex of the worker for questions one and three it can not be determined which jobs caused this effect.

The reason the second question on productivity did not find any significant results at the .05 level may be related to its anchors for the extreme points on the scale not running parallel with the low/high extreme anchors for the other questions. "Acceptable" as the low anchor for question two is actually more of an average rating than a low rating which may have



confused some of the raters.

Specific lists of performance surprisingly had more variance than the general lists. Possibly the general lists were too ambiguous for the naive rater who only felt comfortable in giving an average rating for the worker's performance. But the reverse may occur with a rater who is more familiar with the job in question such that greater bias would be witnessed using the general lists of performance.

Further testing of sex-typed jobs is necessary to determine whether the results found in this study run parallel using different jobs. If raters are not familiar with the jobs being evaluated the author suggests using fairly explicit lists of performance to observe any biases which may exist.

One needs to be aware of the possibility that the specific jobs used in this experiment may have created biases which would not be replicated with other jobs. For instance, it can not be said with confidence that a female's competency improves when her performance in a female professional job compared to a male professional job is evaluated. This result may be due to the combination of the two



professional jobs of nurse-instructor and lobbyist. Likewise, the finding that the man and the woman were rated the same in professional incongruent jobs, but differently in professional congruent jobs needs to be examined across other jobs.

The implications of this study are that managers or anyone in the position of appraising performance should be aware of the following potential areas of bias:

1. Male workers in the unskilled female job of cashier-checker tend to be underrated compared to equally performing women.
2. Male workers in the professional female job of nurse-instructor tend to be overrated compared to equally performing women.
3. Male workers in the unskilled congruent job tend to be underrated compared to female workers in the unskilled congruent job.
4. Female workers tend to be rated higher in the male professional job compared to the female professional job.
5. Female workers in the professional congruent job tend to be underrated compared to male workers in the professional congruent job.



APPENDIX A  
Job Descriptions



## Job Description for Lobbyist

Attempts to enlist legislative support for client's interests by supporting the introduction, passage, or defeat of laws affecting specific groups, individuals, or the general public.

Studies proposed legislation to determine possible effect on client's interests. Confers with legislators or other public officials emphasizing weaknesses or merits of specific bills and tries to influence the passage, defeat, amendment, or introduction of more favorable legislation.

Encourages individuals and groups having similar interests to contact legislators and present views.

Prepares articles, news releases, and similar materials for dissemination to press and public stating client's views on legislative matters. Conducts press conferences, delivers public speeches, and participates in radio and television discussions to inform public of desirable or undesirable features of proposed legislation.

May contact regulatory agencies and testify at public hearings to enlist support for client's interests.

## Specific Vocational Preparation

A bachelor's degree in business or liberal arts is the minimum requirement, but employer generally prefers those applicants with a law degree. The personal contacts of the individual and knowledge of the technicalities and intricacies of the particular field or environment are most important considerations.



## Job Description for Nurse-Instructor

Demonstrates and teaches patient care in classroom and clinical units typically to nursing students as well as assisting in the instruction of first-year medical students.

Instructs students in principles and application of physical, biological, and psychological subjects related to nursing.

Lectures to students, conducts and supervises laboratory work, makes assignments, and leads seminars and panels.

Evaluates student progress by preparing and administering examinations and maintaining records of student classroom and clinical experience.

Participates in planning curriculum, teaching schedule, and course outline.

Cooperates with other medical and nursing personnel in evaluating and improving teaching and nursing practices.

Specializes in a specific subject, as anatomy, chemistry, psychology, or nutrition, or in type of nursing activity, as nursing or medical or surgical patients.

## Specific Vocational Preparation

Usually requires over four years of education in a particular subject as minimum entry qualification in addition to an academic background and experience in supervisory and instructive work.



## Job Description for Stock Clerk

Receives, stores and issues supplies and compiles stock records.

Counts and sorts incoming articles to verify receipt of items.

Stores articles in bins, on floor or on shelves, according to identifying information, such as style, size or type of material.

Prepares periodic, special, or perpetual inventory of stock. Marks identifying codes, figures, or letters on articles.

Distributes stock and determines method of storage and location considering floor loading capacities, turnover, and required span of space.

## Worker Requirements

Physical demands require the person to be able to lift, carry, push, or pull up to a maximum of 100 lbs., frequently lifting or carrying objects weighing up to 50 lbs. Should have a significant combination of numerical skill and clerical aptitude to prepare inventory or inspection data and to keep accurate and legible records.

Also should have relative degree of form, spatial and color perception to make discriminations concerning shape, size, texture, and hue or shade of objects. Good eye-hand coordination and manual dexterity are necessary too.

## Specific Vocational Preparation

Typically on-the-job training which can be up to and including 30 days.



## Job Description for Cashier-Checker

Itemizes and totals customers' purchases in a grocery or department store using cash register.

Reviews price sheets to note price changes.

Records price on cash register.

Collects money from customer and makes change.

May weigh items, bag merchandise, and issue trading stamps.

## Worker Requirements

An occupationally significant combination of: ability to work with figures and to learn simple bookkeeping procedures, finger dexterity, tact and courtesy, speed and accuracy in making computations, good eye-hand coordination, neat appearance, pleasant disposition, and ability to operate a cash register.

Physical demands are at a medium level, requiring lifting a maximum of 50 lbs. and frequently lifting objects weighing up to 25 lbs.

## Specific Vocational Preparation

Typically on-the-job training which can be up to and including 30 days.



## APPENDIX B

## Performance Lists of Main Study

Specific Lists are titled: "List of Performance Behaviors for a \_\_\_\_\_."

General Lists are titled: "Performance of a \_\_\_\_."



List of Performance Behaviors for a Lobbyist:

Worker's Name: Susan T. Harrison

Susan appeared on television two times in the past month urging people to write to their Congressmen asking for the passage of a bill in which the government would loan money to small car manufacturers trying to increase gas mileage. This would ultimately help Susan's client.

During a recent press conference, Mrs. Harrison became unnerved by comments concerning client's negligence and ended up slandering the reliability of a competitor of the client's.

In comparison to lobbyists for the oil companies who were quite prepared at a Congressional meeting in arguing against a bill to put a ceiling price on oil, Mrs. Harrison came up with only two arguments in favor of the bill.

After writing five articles this week extolling the benefits of her client's economy cars to key magazines, four were accepted for publication.

Faced with losing the attention of the audience, Mrs. Harrison has on several occasions managed to come up with anecdotal incidents related to the advantages of the client's small cars.

Due to Mrs. Harrison's limited familiarity with legal terminology, some coaching has had to be provided by the client's attorneys before Susan testified at a public hearing.

Susan once lobbied for eight hours without a break and managed to persuade two thirds of the Congressmen to defeat a particular bill which would thwart her client's expansion into a foreign market.



## List of Performance Behaviors for a Lobbyist

Worker's Name: John T. Harrison

John appeared on television two times in the past month urging people to write to their Congressmen asking for the passage of a bill in which the government would loan money to small car manufacturers trying to increase gas mileage. This would ultimately help John's client.

During a recent press conference, Mr. Harrison became unnerved by comments concerning client's negligence and ended up slandering the reliability of a competitor of the client's.

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John once lobbied for eight hours without a break and managed to persuade two thirds of the Congressmen to defeat a particular bill which would thwart his client's expansion into a foreign market.



Performance of a Lobbyist:

Worker's Name: Susan T. Harrison

Susan writes several articles a week extolling the benefits of her client's economy cars to key magazines, in hope that one will get published.

She majored in education and minored in philosophy while in college.

Mrs. Harrison has the ability to talk continually on a topic, seldom requiring a break.

Susan seems to have some difficulty in interpreting contracts.

When at the podium, Mrs. Harrison seems to command attention from the audience.

Susan is taking a course one night a week dealing with the technical aspects of maintaining small four cylinder cars.

Mrs. Harrison was not very convincing at a press conference in getting across the advantages of her client's product over competitors'.

Susan worked on the Committee for Better Business Practices for a year.

Mrs. Harrison does not like to appear on television and she rather use the radio in getting the public to support particular bills.

In a recent meeting concerning the placement of a ceiling price on oil, she managed to gain the support of six Congressmen to vote against this.



Performance of a Lobbyist:

Worker's Name: John T. Harrison

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In a recent meeting concerning the placement of a ceiling price on oil, John managed to gain the support of six Congressmen to vote against this.



List of Performance Behaviors for a Nurse-Instructor

Worker's Name: Susan T. Harrison

She spends about one fifth of her time in planning curriculum for next years students.

Susan goes along with other medical and nursing personnel on recommendations to improve teaching of classes only if they appear practical.

Compared to other sections which were taught anatomy, Mrs. Harrison's class scored average in this subject on the comprehensive final.

Last week Mrs. Harrison was unable to give an answer to a question asked by a first year medical student.

During a lab Mrs. Harrison spends several hours explaining how to avoid committing errors made by students in the past.

On evaluations made by students, Mrs. Harrison was not rated highly in ability to project ideas.

Susan is fairly competent in lecturing, but rarely updates notes from previous sections taught.

Mrs. Harrison volunteered to be on a committee to improve validity of exams.

Susan is scheduled to spend ten hours a week in assisting with labs and often does not spend more than this with students.

Mrs. Harrison is known to require lengthy research papers from students and she reads them thoroughly.



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Mr. Harrison is known to require lengthy research papers from students and he reads them thoroughly.



Performance of a Nurse-Instructor

Worker's Name: Susan T. Harrison

Susan doesn't care to spend much time planning curriculum for next years students.

Mrs. Harrison's students seem to have an average comprehension of anatomy.

Susan tends to go along with other medical and nursing personnel on recommendations made to improve the teaching of classes.

Mrs. Harrison does a great deal of reading on her own time in the area of nutrition.

Recently in a lab, Mrs. Harrison was impatient with a student who seemed to be having difficulty on an experiment.

Mrs. Harrison is very active in nursing organizations throughout the state.

Students have commented on the difficulty in hearing Mrs. Harrison while she is lecturing.

Susan has been rated favorably by students in willingness to give extra time if asked.

Mrs. Harrison uses notes from previous sections taught for all current classes.

Susan was complimented on a thorough and clear response to a question posed by a first year medical student.



Performance of a Nurse-Instructor

Worker's Name: John T. Harrison

John doesn't care to spend much time planning curriculum for next years students.

Mr. Harrison's students seem to have an average comprehension of anatomy.

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John has been rated favorably by students in willingness to give extra time if asked.

Mr. Harrison uses notes from previous sections taught for all current classes.

John was complimented on a thorough and clear response to a question posed by a first year medical medical student.



List of Performance Behaviors for a Stock Clerk

Worker's Name: Susan T. Harrison

Susan has unloaded and shelved large packages of Purina Dog Chow, weighing up to 40 lbs. in a period of two and a half hours, while it normally takes two hours to do this.

In stamping prices on newly received stock, Susan has forgotten to restamp the old merchandise on two occasions out of a period of six months.

Susan does not have to be reminded to dust off the tops of cans when counting old stock out on the floor.

Recently Susan has been complimented on a floor display of cookies by several customers.

Susan is 80% accurate in compiling inventory sheets.

She caused several packages of potato chips to become slightly crushed from placing too many on the shelves.

Susan does not work at a particularly fast pace during inventory, but manages to finish before the deadline.

She unloaded a full shipment of Campbell's soups alone, while it normally requires two additional clerks.

Susan stamps price and vendor codes on products in a uniform and legible way.



List of Performance Behaviors for a Stock Clerk

Worker's Name: John T. Harrison

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He unloaded a full shipment of Campbell's soups alone, while it normally requires two additional clerks.

John stamps price and vendor codes on products in a uniform and legible way.



Performance of a Stock Clerk

Worker's Name: Susan T. Harrison

Susan works at a reasonable pace depending on the items being handled.

She talks to other clerks frequently.

Occasionally Susan has forgotten to restamp old merchandise with new prices.

Susan has been observed to wear the same shirt for two weeks at a time.

While Susan is not one of the first finished during inventory, she is not one of the last.

Susan works late frequently.

She is fairly accurate in compiling inventory sheets.

Last week she broke a broom by leaning on it.

Susan is basically a neat worker.

She helped a woman who had fainted in the aisle one day.



Performance of a Stock Clerk

Worker's Name: John T. Harrison

John works at a reasonable pace depending on the items being handled.

He talks to other clerks frequently.

Occasionally John has forgotten to restamp old merchandise with new prices.

John has been observed to wear the same shirt for two weeks at a time.

While John is not one of the first finished during inventory, he is not one of the last.

John works late frequently.

He is fairly accurate in compiling inventory sheets.

Last week he broke a broom by leaning on it.

John is basically a neat worker.

He helped a woman who had fainted in the aisle one day.



List of Performance Behaviors for a Cashier-Checker

Worker's Name: Susan T. Harrison

Susan was once observed to be abrupt to a customer who insisted she accept an outdated coupon.

She ran short of trading stamps two times in the past month.

Susan is usually off by about one or two dollars at the end of the week.

She was the first person to finish closing out her register twice in the past month.

Susan manages to talk to the customers, casually mentioning bargains of the day, while packaging groceries.

When all cashiers' posts are busy, Susan's line seems to taper off at a relatively average rate.

In weighing fruits on the scale, Susan was off by 80¢ last week.

She forgot to check price change sheet and undercharged for lettuce for three days.

There have never been customer complaints over Susan's improper packaging of groceries.

She has been observed to count the change twice before giving it to the customer.



List of Performance Behaviors for a Cashier-Checker

Worker's Name: John T. Harrison

John was once observed to be abrupt to a customer who insisted he accept an outdated coupon.

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There have never been customer complaints over John's improper packaging of groceries.

He has been observed to count the change twice before giving it to the customer.



Performance of a Cashier-Checker

Worker's Name: Susan T. Harrison

Susan basically has a pleasant disposition.

She usually manages to close out her register on time.

Susan sometimes looks harried under pressure.

Seldom is she short on cash at the end of the day.

Susan shows a preference for certain customers.

She is somewhat lazy in packing groceries.

She has been noticed to look somewhat unkempt for morning shifts.

Susan neatly cuts out ragged edges of coupons she receives.

She frequently asks other cashiers about prices.

Occasionally she has forgotten to look at the price sheet which lists price changes of fruits and vegetables.



Performance of a Cashier-Checker

Worker's Name: John T. Harrison

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John sometimes looks harried under pressure.

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Occasionally he has forgotten to look at the price sheet which lists price changes of fruits and vegetables.



APPENDIX C  
Rating Scale



## RATING SCALE

## Rater Information:

Age \_\_\_\_\_

Class \_\_\_\_\_

Sex \_\_\_\_\_

Worker's Name: \_\_\_\_\_

Please circle the appropriate number on the scale that best describes the worker based on the performance list.

## 1. Quality of work record:

/	/	/	/	/	/	/
1	2	3	4	5	6	7
Poor						Excellent

## 2. Productivity of worker:

/	/	/	/	/	/	/
1	2	3	4	5	6	7
Acceptable						Unacceptable

## 3. The performance of this worker in comparison to what one would expect from similar individuals in this position was:

/	/	/	/	/	/	/
1	2	3	4	5	6	7
Worse than would be expected						Better than would be expected

## 4. Overall, this worker did a(n) \_\_\_\_\_ job.

/	/	/	/	/	/	/
1	2	3	4	5	6	7
Below Average			Average			Exceptional



## APPENDIX D

## Analysis of Variance Summary Tables



Table A

## Analysis of variance for Question 1

Source of variation	<u>df</u>	<u>MS</u>	<u>F</u>
Main Effects	4	2.573	3.021*
Congruence (A)	1	.625	.732
Skill level (B)	1	8.556	10.025*
Sex of worker (C)	1	.506	.593
Specificity of list(D)	1	.625	.732
2-Way Interactions	6	1.873	2.194*
Congruence Skill	1	3.6	4.218*
Congruence Sex	1	6.4	7.499*
Congruence Specificity	1	.756	.886
Skill Sex	1	.056	.066
Skill Specificity	1	.400	.469
Sex Specificity	1	.025	.029
3-Way Interactions	4	3.422	4.009*
Congruence Skill Sex	1	2.500	2.929
Congruence Skill Specificity	1	3.306	3.874*
Congruence Sex Specificity	1	2.256	2.644
Skill Sex Specificity	1	5.625	6.591*
4-Way Interaction	1	.056	.066
A x B x C x D	1	.056	.066
Error <sub>w</sub>	144	.853	

\*p &lt; .05



Table B

## Analysis of Variance for Question 2

Source of Variation	<u>df</u>	<u>MS</u>	<u>F</u>
Main Effects	4	2.242	1.46
Congruence (A)	1	.077	.05
Skill level (B)	1	5.439	3.541
Sex of worker (C)	1	2.339	1.881
Specificity of list (D)	1	.564	.367
2-Way Interactions	6	1.064	.693
Congruence Skill	1	.452	.294
Congruence Sex	1	.827	.538
Congruence Specificity	1	.264	.172
Skill Sex	1	2.139	1.393
Skill Specificity	1	2.627	1.71
Sex Specificity	1	.077	.05
3-Way Interactions	4	1.311	.854
Congruence Skill Sex	1	1.702	1.108
Congruence Skill Specificity	1	.077	.05
Congruence Sex Specificity	1	3.452	2.247
Skill Sex Specificity	1	.014	.009
4-Way Interaction	1	.689	.449
A x B x C x D	1	.689	.449
Error <sub>w</sub>	144	1.536	

\*p < .05



Table C

## Analysis of Variance for Question 3

Source of Variation	<u>df</u>	<u>MS</u>	<u>F</u>
Main Effects	4	7.217	4.597*
Congruence (A)	1	2.889	1.840
Skill level (B)	1	17.227	10.973*
Sex of worker (C)	1	1.314	.837
Specificity of list (D)	1	7.439	4.738*
2-Way Interactions	6	4.739	3.019*
Congruence Skill	1	1.139	.726
Congruence Sex	1	8.327	5.304*
Congruence Specificity	1	3.164	2.015
Skill Sex	1	.564	.359
Skill Specificity	1	14.102	8.982*
Sex Specificity	1	1.139	.726
3-Way Interactions	4	4.886	3.112*
Congruence Skill Sex	1	3.752	2.390
Congruence Skill Specificity	1	8.327	5.304*
Congruence Sex Specificity	1	7.014	4.468*
Skill Sex Specificity	1	.452	.288
4-Way Interaction	1	.827	.526
A x B x C x D	1	.827	.526
Error <sub>w</sub>	144	1.57	

\*p < .05



Table D  
Analysis of Variance for Question 4

Source of Variation	<u>df</u>	<u>MS</u>	<u>F</u>
Main Effects	4	6.405	7.828*
Congruence (A)	1	2.627	3.210
Skill level (B)	1	12.939	15.314*
Sex of worker (C)	1	3.452	4.218*
Specificity of list (D)	1	6.602	8.068*
2-Way Interactions	6	3.095	3.783*
Congruence Skill	1	4.064	4.967*
Congruence Sex	1	5.077	6.204*
Congruence Specificity	1	.827	1.010
Skill Sex	1	.189	.231
Skill Specificity	1	7.439	9.092*
Sex Specificity	1	.977	1.194
3-Way Interactions	4	2.948	3.603*
Congruence Skill Sex	1	2.889	3.531
Congruence Skill Specificity	1	4.389	5.364*
Congruence Sex Specificity	1	2.377	2.905
Skill Sex Specificity	1	2.139	2.614
4-Way Interaction	1	5.814	7.106*
A x B x C x D	1	5.814	7.106*
Error <sub>w</sub>	144	.818	

\*  $p < .05$



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