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MORE EFFECTIVE UTILIZATION OF WOMEN IN THE ALL  
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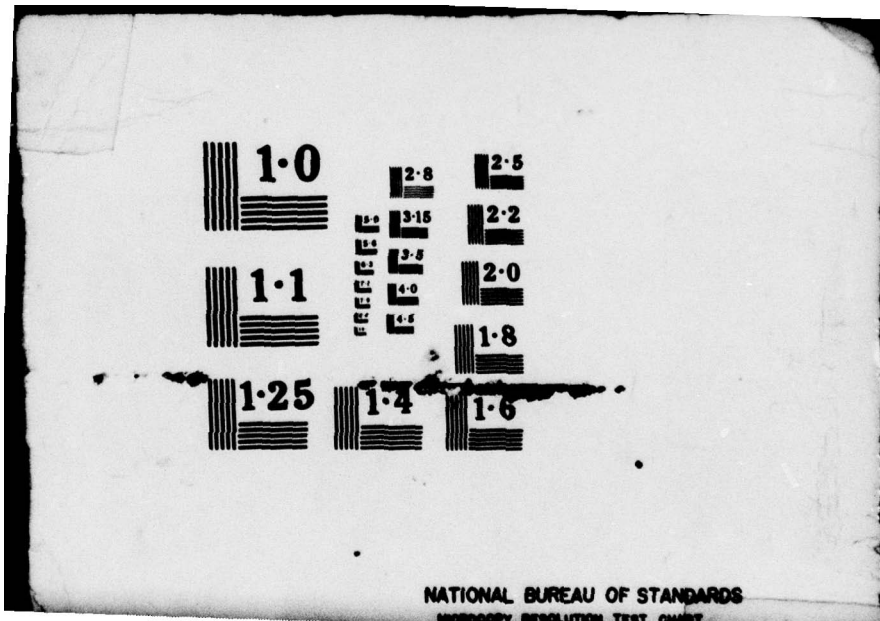
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Paris R./Kirkland, Jerene Good & Harry R./Day

→ University City Science Center  
X Social Science Research Group  
Philadelphia, Pennsylvania 19104

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  The report summarizes three years of research sponsored by Office of Naval Research investigating sex role relationships in hierarchical settings and the utilization of women in the Navy. General conclusions and abstracts of technical reports on specific topics are included. 4		

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## MORE EFFECTIVE UTILIZATION OF WOMEN IN THE ALL VOLUNTEER NAVY

A research program to investigate issues associated with more effective utilization of women in the all-volunteer Navy was conceived by Harry R. Day in April, 1974. Five goals were proposed:

- Develop a comprehensive multi-method set of research instruments to measure variables related to sex role relations and sex differences in a variety of settings and under varying social circumstances.
- Carry out situationally controlled experimental studies grounded in the relevant current theoretical and empirical literature aimed at better understanding of the processes involved in sex role relations in general.
- Focus the instrument development and experiments principally on hierarchical task settings of the type found in the Navy, where women and men are found in both supervisory and subordinate roles.
- Compare samples of both naval and civilian personnel to assess individual difference factors in the types of persons found in these different settings, and to assess similarities and differences in male-female role expectations in the military setting as contrasted with non-military settings.
- From an integration of the above efforts, provide information about potential bases for effective intervention techniques in this area of social relations that could either aid women in enhancing their leadership and improve men's skills in supervising women. Both of these could ultimately aid in more effective utilization of women within the Navy as a result of the impact of their increased career success.

A modified version of Dr. Day's proposal was funded on 15 February 1975 for two years under ONR contract N00014-75-C-0618. The project was funded for a third year on 15 August 1977 under ONR contract N00014-77-C-0656. Work on the contract is completed effective with receipt and approval of this report.

### Summary of Research Conducted

The research comprised four sets of activities: instrument design and testing, development of analytic methods, experimental study, and research on sex role relationships in a working population.



Instrument Design and Testing. An instrument package was developed and tested during 1975-76. It incorporated elements of the Bem Sex-Role Inventory (Bem, 1974), Triandis's subjective culture scale (Triandis, 1972), a job characteristics scale derived from work by Seboda, Morris & Ward (1974), and scales developed by the research team to measure sex role stereotyping, job history, career support from significant others, and demographic variables. Dr. Day pretested the instrument on a sample of 54 male and female ROTC cadets at the University of Pennsylvania. An expanded version was given a full-scale field test using 111 students from Bryn Mawr and Haverford Colleges in the spring of 1979. Data from the field test were subsequently used in cross-sample analyses. A condensed form of the instrument was derived for use in research on sex role relationships in a working population. (See Status Report No. 3, 20 July 1976, Appendix E for the Bryn Mawr/Haverford survey instrument; Status Report No. 4, 10 May 1977, Appendix C contains the Bell Telephone industrial survey instrument).

Development of Analytic Methods. Oliver Tzeng and Dan Landis evaluated the three most popular multidimensional scaling models and described the theoretical and methodological shortcomings of each. Tzeng and Landis created a new scaling model, 3M-POV, a synthesis combining the strengths of existing systems. The 3M-POV model is described in technical Report No. 2 and in Multivariate Behavioral Research, April 1978.

Experimental Study of Attributions of Success and Failure. Dorothy M. Kipnis and Louise Kidder conducted an experiment examining men's and women's performance in an experimental learning situation in which unfamiliar tasks were alternatively identified as tasks in which men excelled, or as tasks in which women excelled. Subjects were told that they were failing or excelling irrespective of their actual performance. Performance, time spent in

practice, and attribution of success/failure to ability, luck, effort and task difficulty were scored. The experiment and its results are reported in Technical Report No. 1.

Research on Sex Role Relationships in a Working Population. The instrument developed in the early stages of the project was administered in January and February 1977 to 55 Bell Telephone first-line supervisors and 225 of their subordinates. More than 80% of the questionnaires were completed and returned. Analyses were conducted throughout 1978. A preliminary report was prepared in June 1978. Four technical reports dealing with psychological androgyny in a working population (Technical Report No. 3), sex differences in family and career values (Technical Report No. 4), attitudes toward job characteristics (Technical Report No. 5) and working relationships between men and women (Technical Report No. 6) were prepared in the spring and summer of 1979. A summary for naval managers was also prepared.

#### Synopses of Technical Reports

The complete reports described herein can be obtained from the Defense Documentation Center.

Technical Report No. 1: Practice, Performance and Sex: Sex-Role Appropriateness, Success and Failure as Determinants of Men's and Women's Task Learning Behavior. D. M. Kipnis and L. H. Kidder. Men's and women's performance in two motor learning tasks was examined in an experimental learning situation in which unfamiliar tasks were identified as tasks in which men's performance was usually superior to women's, or alternatively, as tasks in which women's performance was usually superior to men's. Both tasks were so structured that learners could keep track of performance improvement over time; learners were also given feedback by the experimenter describing success and failure in terms of comparisons of their performance with that of other

individuals. Observations were made of learners' goal-setting, duration of voluntary practice, actual performance, and attributions of performance effectiveness to ability, luck, effort, task difficulty and sex. Subjects were 85 Psychology I students at Temple University.

Results were that: (1) Men and women learned best when they believed that most other members of their sex did well on the tasks they were learning and no evaluative comments were made on their progress in learning. Both men and women learned least well when they believed that even though most other members of their sex could do well at the task they were working on, their own learning progress was poor. However, men reacted to feedback describing their progress as poor by discounting the importance of the task as a measure of ability, and by emphasizing the importance of effort. Women accepted and believed in the negative evaluation of their performance capability. (2) Men performed better on a test trial than they had been performing during their practice just before the test. Women did less well on the test trial than they had been doing during their practice. (3) Women enjoyed the tasks more when they were described as activities which men did well than when they were described as activities women did well. When tasks were described as depending on masculine skills, both men and women saw them as demanding more effort for effective performance than when the same tasks had been described as dependent on feminine skills. When the tasks were described as jobs which women usually could do well both men and women saw them as more dependent on luck. (4) Black men and women described themselves as more masculine on the Bem Sex-Role Inventory than did white men and women.



Results are interpreted in relation to men's and women's perceptions of achievement, methods of self-evaluation and anxieties over performance evaluation by others. The race differences in self-perceptions relating to masculinity, unexpected in this study, are an outcome which should be investigated in further research.

Technical Report No. 2: Three Mode Multi-Dimensional Scaling With Points-of-View Solutions. O.C.S. Tzeng and D. Landis. In the area of multidimensional scaling research, the three most popular models are Tucker and Messick's (1963) Points-of-View, Carroll and Chang's (1970) INDSCAL, and Tucker's (1972) Three-Mode procedures. However, each of these models has some theoretical and/or methodological difficulties in application to the real world. Although the Three-Mode model has been considered more powerful, it does not automatically provide necessary and more comprehensible information on the similarities and differences in individual conceptual structures about objects or terms which are usually the targets of the POV procedures. In this report, a new quantitative model, called 3M-POV, has been developed by combining the Three-Mode and Points-of-View models into a single analytic procedure. While the strengths of all three models have been kept, their difficulties have been eliminated. The 3M-POV system provides complete quantitative measures of group common as well as individual unique conceptual structures at an easily understandable level. A computer program was developed to perform the entire analytic algorithm.

For illustration, Osgood's (1975) indigenous inter-concept distances among 22 kincepts from 28 language/culture communities were analyzed using 3M-POV and resulted in interesting solutions.

Technical Report No. 3: Psychological Androgyny in a Working Population  
With Comparison to a College Sample. G. R. Grissom, J. Good and F. R. Kirkland.

The research reported investigated sex role orientations in a working population with comparison to a college sample. The working sample of 124 women and 104 men included 44 first line supervisors and 184 of their subordinates in the Bell Telephone Company of Pennsylvania. The college sample included 56 women from Bryn Mawr College and 48 men from Haverford College. The Bem Sex-Role Inventory (BSRI), with additional work-related and personal interaction items, was administered to the two samples as a self-description scale, and to the working sample as a target attribution scale to describe male and female co-workers. When individuals' BSRI scores were classified according to median splits for the industrial sample, men tended to be classified as masculine and undifferentiated (low on both masculine and feminine dimensions) more frequently than women. Women were more frequently classified as feminine. Among members of the college sample, there was no statistically significant relationship between sex and sex role orientation, and no significant difference between men's and women's mean scores on the masculinity or femininity scales. The college and industrial samples differed with respect to both the level and distribution of BSRI scale scores and the factor structure of their self-ratings. This raises the question of the generalizability of conclusions based on sex role research using college students to non-college populations. The relationship of sex role orientation and several background variables was explored. The deletion of boundary cases, when using median splits to define the four sex role categories, is suggested as a means of clarifying relationships. An Androgynous sex role orientation was found to be associated with more education, environmental opportunity, and economic security.



Sex role orientation was weakly associated with favorable perceptions of opposite sex co-workers. Androgynous (high on both masculine and feminine dimensions) and masculine men, and androgynous and feminine women, assigned the most favorable ratings to both same and opposite sex co-workers.

Technical Report No. 4: Family and Career Values: Sex Differences in a Working Population. J. Good and F. R. Kirkland. Attitudes of 228 male and female workers in the Bell Telephone Company toward their families and careers were surveyed. Education, family history, job history, number of moves, economic status of the workers' parents and characteristics of environments in which workers grew up were recorded. Family issues investigated included plans for having children, who in a working family would care for small or sick children, and time spent in family activities. Career issues investigated included traditional and nontraditional jobs held by men and women, job stability, expectations about duration and type of future employment, sources of emotional support for career choice, and perceived importance of own job and spouse's job. Family and career interactions were also investigated. The willingness of the respondent to move under varying sets of impacts on the respondent's and the spouse's career was the subject of analysis involving perceived importance of own and spouse's career, childhood moving experiences, status, and job type. Sex role stereotypes with respect to family and career were analyzed against age, status, job type and mixed or single sex work group.

Four general conclusions were drawn from the analyses: 1) Women and young people had somewhat more egalitarian views than men and those over 30 regarding appropriate goals for men and women in balancing family and career concerns; 2) Women were perceived as having primary responsibility for child



rearing; 3) Men's careers were perceived as having higher priority than women's careers; 4) Women perceived stronger emotional support from their friends for their choice of careers, while men perceive stronger support from their spouses and parents. Implications of the findings for sexual integration of civilian and military work forces were discussed.

Technical Report No. 5: Attitudes Toward Selected Job Characteristics in a Working Population With Cross-Sample Analyses for a College Sample. J. Good and F. R. Kirkland. Attitudes held by 228 male and female Bell Telephone workers and first line supervisors toward the characteristics of ideal jobs and their own jobs were surveyed using a modified scale derived from work by Seboda, Morris & Ward (1974); 104 college students were surveyed using the same scale. Differences in ratings of desirability and importance of 26 characteristics of an ideal job were analyzed by sex, race, age, educational level and sample. Young people, those without work experience, people who had been to college and women were more interested in intrinsic characteristics such as worthwhile work, self-improvement, congenial co-workers and freedom to carry out assigned tasks. Older people, people with work experience, those who had not been to college, and men were more interested in pay, benefits, job security and career development. Women were more concerned than men with safety of the workplace and absence of danger. Women, especially younger women and black women, were more favorable than men toward affirmative action programs.

The industrial sample also rated the set of characteristics on the degree to which they were present in respondents' current jobs. These ratings were analyzed by sex, job type and tenure in the company. Workers reported higher levels of worthwhile work and freedom to carry out assigned tasks, and

lower levels of uninteresting tasks and restrictions, as their tenure with the company increased.

Job satisfaction was addressed by comparing the desirability rating of each characteristic against its rating for degree of presence in the current job. An index of job satisfaction was constructed by summing these difference scores across the entire set of characteristics for each respondent. Job satisfaction was found to be positively correlated with tenure, but uncorrelated with race, sex, or psychological sex role orientation.

Implications of findings for designing jobs, designing job situations and retention of populations defined by sex, age, race and education level were discussed.

Technical Report No. 6: Working Relationships Between Men and Women: Effects of Sex and Hierarchical Position on Perceptions of Self and Others in a Work Setting. J. Good, F. R. Kirkland and G. R. Grissom. The research investigated effects of sex and hierarchical position on workers' perceptions about themselves and the people with whom they worked in a sample of Bell Telephone Company of Pennsylvania employees. A modified version of the Bem Sex-Role Inventory, with additional work-related and personal interaction items, was administered to 44 first-line supervisors and 184 of their subordinates. Self-ratings, self versus same sex peer ratings, and ratings of four target persons - a male and a female supervisor and a male and a female subordinate - were compared for male and female respondents. Men and women rated themselves similarly on most self-descriptive items. Respondents described themselves as more nurturant than their same sex peers. Men ascribed higher ratings on masculine items to male targets and higher ratings

on feminine items to female targets. Women ascribed higher ratings on masculine as well as feminine items to female targets.

Ratings of supervisor versus subordinate targets were also examined. Supervisor targets were rated higher than subordinate targets of the same sex on most masculine items, and subordinate targets were rated higher than targets of the same sex on most feminine-typed items. Factor analyses of attributions to male and female supervisor targets defined two common dimensions of leadership, Directiveness and Nurturance, for both male and female supervisors as perceived by both male and female respondents. Correlations between factor scores for Directiveness and Nurturance and two individual variables, Has Leadership Abilities and Able to Get the Job Done, were consistently high and positive across groups of subordinates.

Effects of experience working with the opposite sex were explored by comparing ratings by respondents from mixed with those from single sex work groups. Men who worked with women rated them higher on a wide range of attributes than did men who did not work with women. Women who worked with men rated them higher on a small number of attributes than did women who did not work with men.

#### Management of Men and Women in the Navy - Application of Research

Findings, F. R. Kirkland. This report applied the findings described in the other six reports to fields of interest to officers responsible of managing expanded utilization of women in the Navy. The fields included:

- Leadership
  - Effective leadership of men and women
  - Problems men and women encounter in being leaders
- Management of Sexual Integration
  - Sources of resistance among men and among women



- Measures to mitigate resistance in the unit or vessel
- Effects of male-female collaboration
- Job characteristics and other satisfactions important to men and to women
- Training to prepare individuals and leaders for sexual integration
- Recruiting and Retaining Men and Women
  - Job characteristics important to recruits and to careerists
  - Family considerations
  - Career issues: assignments, transfers and terminations

## GENERAL CONCLUSIONS FROM THE RESEARCH

The most noteworthy findings from this research project concern the utility and stability of the concept of sex role orientations, perceptions and expectations of leaders, attitudes of men and women toward success, failure, and supervisory responsibility, and male-female differences in attitudes toward themselves and others in the work setting.

### Sex Role Orientations

The four-part set of sex role orientations - Masculine, Feminine, Androgynous and Undifferentiated - was a valid construct that offered a useful perspective on self-perceptions and perceptions of others. However, sex role orientations proved to be less effective than experience working with members of the opposite sex in predicting attitudes toward opposite sex co-workers.

Members of the college and industrial samples attributed different meanings to some of the attributes on the Bem Sex Role Inventory. Masculinity and Femininity appear to be defined in subtly different ways by different social groups.

Undifferentiated members of both sexes had less favorable attitudes toward members of either sex. But since their classification as undifferentiated was a result of assigning low scores to themselves, their low ratings of others may reflect generally conservative or negative perceptions. High self-rating on the Femininity or Masculinity scale or both was generally associated with higher ratings of others.

Sex role orientations were found to be independent of job satisfaction.

### Perceptions and Expectations of Leaders

Men and women perceived and wanted nurturance as well as directiveness in their leaders. Men and women showed their best task learning under the least evaluative, most reassuring conditions, and did worst when they had received a negative evaluation. These are potentially significant findings in that policies based on them could have direct influence on efficiency, retention, and in the long run, recruiting.

### Attitudes of Men and Women Toward Success, Failure and Supervisory Responsibility

Kipnis and Kidder found that male subjects ignored negative feedback about their performance and performed best when they were being scored. They more readily attributed success to natural ability and were unwilling to practice as much as women did. Women accepted the judgments of others, especially negative feedback, practiced much harder than men, then performed less well when being scored. Women tried hardest and got the most pleasure in succeeding at tasks described as being easier for men. In spite of their intense effort, if they were successful they were likely to attribute their success to luck.

Male supervisors, as compared with female supervisors, described themselves as more competitive and more willing to take risks. Female supervisors, tended to emphasize leadership and strength of personality in their roles.

These two sets of findings from different populations in different settings suggest that:

- Men, in their socially defined roles tend to operate in greater psychological isolation than women. They also tend to reject negative input, and are reluctant to ask for help.



In socially isolated roles such as supervisory roles they rely on internal psychological resources to guide them and to sustain their self-esteem when positive input is not forthcoming from others.

- Women pay closer attention to feedback from others. They are less likely to have confidence in their own ideas, and they are in closer touch with the feelings of others. Women place less emphasis on competitiveness and therefore can respond as supervisors pragmatically to situations without becoming involved in confrontations.

#### Male-Female Differences in Attitudes Toward Themselves and Others in the Work Setting

It was evident from the responses in this research that the working world is perceived as masculine, and that masculine attributes are preferred to feminine ones in the work place. Masculine attributes are used to distinguish supervisors from subordinates, though female supervisors were perceived to have both masculine and feminine attributes. Most of the respondents perceived themselves as more nurturant than their peers - a finding that suggests a craving for opportunities to express and receive nurturant feelings.

Stereotypes about masculinity and femininity were generally shared by men and women in a given social setting. However, women tended to see themselves and other women, especially women in supervisory roles, as having both masculine and feminine characteristics.

With respect to job characteristics, men and women found the same characteristics to be desirable, neutral, and undesirable. But there was variation between men and women in the strength of their preference for many of the job characteristics.

Among men, working association with members of the opposite sex were found to be strongly associated with favorable perception of women. Among women, working with members of the opposite sex had a slight favorable influence on perceptions of men.

### Issues for Further Research

Two issues not addressed in this research have implications for the results discussed:

- Women in nontraditional (previously all male) jobs. Since men who worked only with men gave the lowest scores to female targets, introducing women into all male groups might raise serious adjustment difficulties. However, men who worked with women rated male and female targets about equally favorably. Therefore, the long term effects of introducing women may be a shift in men's attitudes from regarding women negatively, based on no experience with women, to regarding women similarly to men or positively, based on experience.

Other questions about women in nontraditional jobs include the incidence and reasons for abandonment of nontraditional jobs, whether women in nontraditional jobs have attitudes similar to those of women in traditional jobs or to those of men in either traditional or nontraditional jobs; and whether the concept of a nontraditional job has the same operative content for men as for women, or for people with different types of jobs.

- Comparison of the ways and the relative efficiency with which men and women perform various types of jobs, and of the relative efficiency of mixed sex, all male, and all female work groups.



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