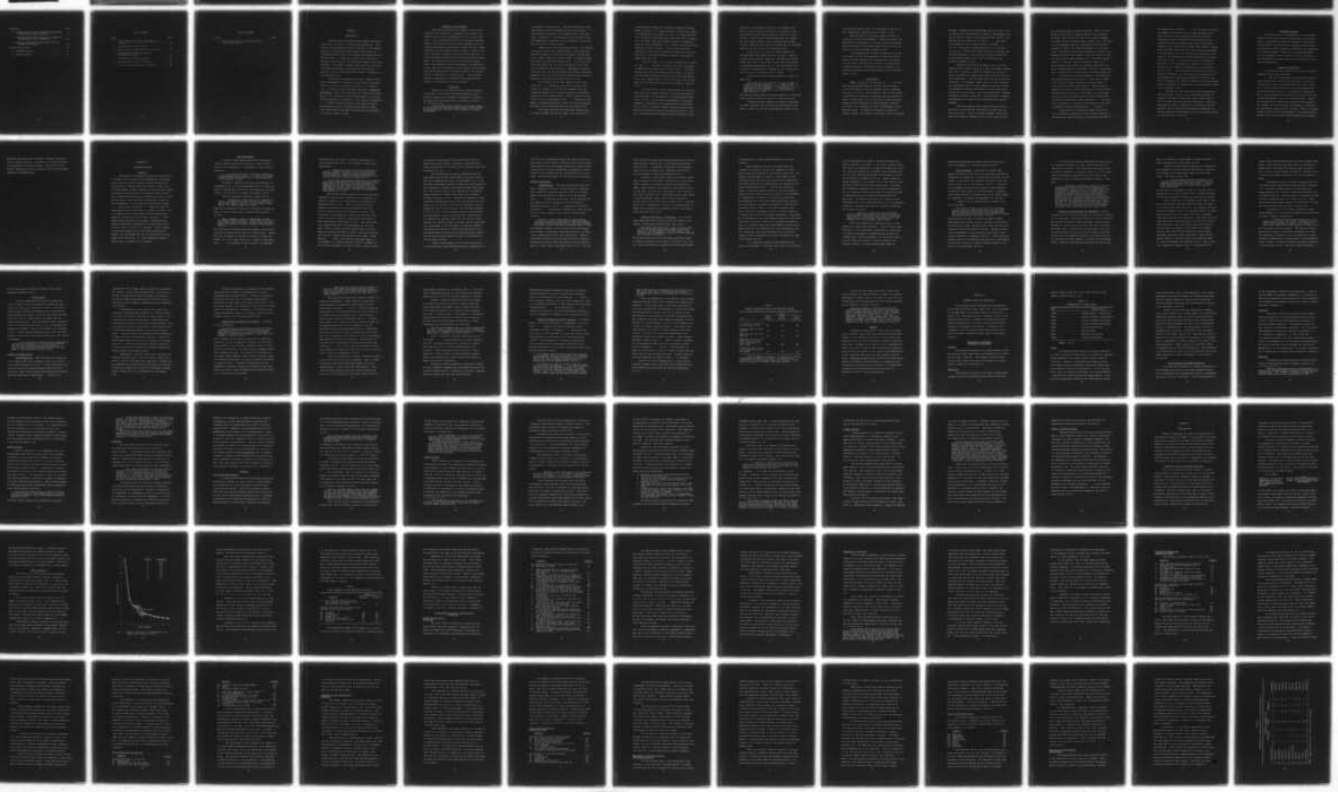
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BEHAVIORAL FACTORS AFFECTING THE INTEGRATION OF WOMEN INTO AIR FORCE CRAFT SKILLS

Gregory S. Caron, Captain, USAF
Larry W. Emmelhainz, Captain, USAF

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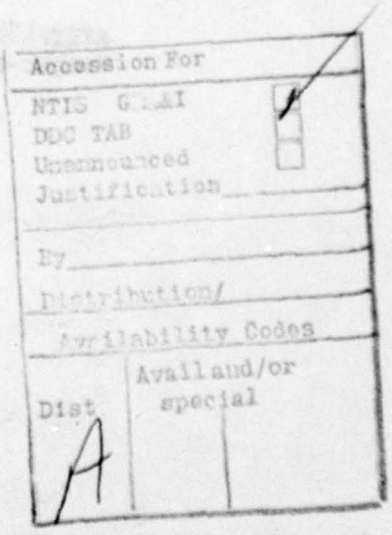
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This research analyzed data collected during February 1977 from 1730 Air Force women in traditionally all male AFSCs. The objective was to determine the behavioral factors which affected socialization into the job, and to define in detail the stereotypes and job socialization factors identified. The analysis showed that these women generally rejected role stereotypes, considered themselves capable of working effectively in the craft skill AFSCs, and strongly indicated they were treated fairly by their supervisors and were accepted by their male coworkers. They also rejected the historical male/female traits stereotype. Although satisfied with the USAF, the women were equally divided in their satisfaction/dissatisfaction with their AFSCs. The analysis also showed a relationship between role stereotypes and job socialization. Although the women appeared to perceive little difficulty working in the craft skills, their capability to maintain high surge rates under wartime conditions remains untested.

LSSR 14-79B

BEHAVIORAL FACTORS AFFECTING THE INTEGRATION OF WOMEN INTO AIR FORCE CRAFT SKILLS

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Logistics Management

By

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September 1979

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DATE: 7 September 1979

John R. Adams Lt. Col.
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CHAPTER I

INTRODUCTION

The Air Force continually faces budget constraints which limit its ability to meet mission objectives. Personnel costs represent more than 50 percent of this budget. One way of living within these budget restrictions and reducing personnel costs is to improve the productivity of the work force. In addition to this dollar constraint, changes are occurring in the traditional makeup of Air Force personnel. The number of women entering the Air Force has increased significantly, and women are also entering a variety of career fields which were closed to them only a few years ago (9:3).

This trend is expected to continue. Women constituted approximately 8.6 percent of Air Force enlisted personnel in 1978; the projection for 1984 is 17.4 percent (52). In addition, Binkin and Bach concluded in Women and the Military (1977) that potentially the number of enlisted women in the Air Force could reach 94 percent of Air Force enlisted personnel (10:108-109). This could be accomplished ". . . without radically departing from current policies and practices [51:32]" or resolving the women in combat issue which legally restricts the number of military positions open to women (10:109).

Statement of the Problem

This growing proportion of women in the Air Force represents new challenges to managers concerned with the effective and efficient management of the Air Force work force. It is a particularly difficult challenge to manage women in the craft skills (blue collar careers) such as aircraft maintenance, electronics or metal working. These women must not only adapt to the Air Force in general, but also to new work situations from which women were previously excluded in both the military and civilian environments. Yet relatively little is known about how women adapt to male-dominated work environments, the behavioral factors that may be involved in this process, and the effect these factors may have on the female worker's job socialization[1] (a determinant of productivity). This research effort was designed to investigate this problem and contribute to reducing this lack of knowledge.

Background

During the past quarter century numerous changes in attitudes, life styles, and family patterns within American society have resulted in the percent of women in the work force increasing from 33.9 percent in 1950 to

---

[1]Job socialization, as used in this study, refers to the process by which the worker adapts to the required behavior patterns, norms and value systems of the work environment.

47.3 percent in 1976 (9:3-4). The characteristics of the women making up that percentage are also significant. Sixty percent of women in their twenties are in the labor force. From 1950 to 1976 the proportion of mothers within the female part of the work force increased by 113 percent from 21.6 to 46.1 percent (9:6).

Women are not only participating more in the general work force, but are also participating in the trades and "skilled occupations" previously considered the male work arena. Women, especially younger women, no longer consider many jobs to be reserved for men (14:2). Title VII of the 1964 Civil Rights Act, as well as Executive Order 11246 (which prohibited discrimination in employment practices based upon sex) and the well-publicized "Women's Liberation Movement," have all accelerated the growing association of women with nontraditional career fields (14; 21).

The military has not been immune to this social transition. In a democracy, the military reflects the society it protects, and is heavily dependent upon the decreasing number of 17-21 year old males as the primary source for new enlistees (51:31). These factors have combined to bring the Pentagon to the ". . . forefront of the Women's Liberation Movement to stave off a major [manpower shortage] crisis confronting the U.S. Military [51:31]."

With fewer qualified men available, defense planners have expanded the role of women in the military by

increasing their numbers, the physical locations in which women can serve (i.e., ships, aircraft), and by using women in nontraditional job areas (11:viii). By January 1978 all but 7 of the 240 enlisted career fields were open to women, and 4 of these 7 were being either tested or reviewed for potential female employment (37). Similar actions have been taken by the other services. The only real remaining limitation to the total integration of women into the military lies in the legal restriction against using women in combat positions (51).

The real issue is not a woman's capability to fight in a war, ". . . but how to reconcile our moral perception of women with the immoralities of war [16:12]." Military planners worry that the American public might not realize how much women are being integrated into the armed forces until actual combat begins. Then if the order came to pull women off the battlefield many key jobs would be unfilled (51:35).

It should also be noted that although the services could meet their target strength by enlisting thousands of women, the heart of the problem is military effectiveness in war (10; 51). This effectiveness depends on how fast hundreds of thousands of reinforcements can be mobilized. Prior to the all volunteer system, the mobilization force came from the National Guard and from Reserve units. However, the strength of the National Guard and Reserve units

has fallen to extremely low levels. For example, the Reserve is only a fifth as large as it was prior to the all volunteer system--falling from 1.5 million to under 300,000. A war in Europe would probably be over before the first combat soldier could be drafted and trained (51:92). Thus the active duty force must bear an increased proportion of the total force responsibilities.

Under Title 10 of the U.S. Code, Congress has excluded women from combat duty and the draft. However, the distinction between combat and noncombat service has become less clear as the nature of war itself has become increasingly technological (24:7). This decreasing distinction is evidenced by the changes in the various service's policies concerning women in combat:

Army Chief of Staff General Bernard W. Rogers has stated that

> The intention is to prohibit the use of women in combat forces as combatants. . . . They will be trained to defend themselves individually as well as participate in unit defense . . . and should be employed by unit commanders in the same manner as male soldiers [51:32].

Thus female soldiers may be assigned anywhere in the battlefield so long as they are not put in front line units.

Congress has been asked by the Defense Department to repeal laws that bar the Navy from using women on warships. On May 24, 1978 the House passed a change in the

law that would permit women to be assigned to service, at least temporarily, aboard any Naval vessel (51:31).

The Air Force has redefined combat aircraft to include only fighters and bombers. Nineteen aircraft are designated as noncombatants, including tankers and transport planes which could become targets in war but are not directly involved in combat missions (1:84).

As the possibility of combat becomes more and more of a reality for Air Force females, enlisted and officer alike, Air Force managers must examine their own perceptions of women. The question is whether the possibility of female presence on the battlefield is acceptable, or whether it threatens the self-perception of male soldiers as men (16:12).

Justification

Women are seen by the Pentagon as ". . . the only hope for maintaining adequate military forces without reviving the draft or raising manpower costs to unacceptable levels [51:35]." The argument is that if the military is restricted to recruiting volunteers from the dwindling number of males aged 17-21 in the face of ever-stiffening competition from industry and other employers, salaries will have to be increased to a level unacceptable to the American public. If women are included as recruiting targets, however, the supply of potential recruits increases

markedly. Defense officials estimate that the current cost of recruiting a highly qualified female is approximately the same as that to recruit a less qualified male (51:35). Yet the military was recruiting (in 1976) " . . . only about seven percent of this 'quality group' [of women] . . . [10:7]." This group is characterized as 18 or 19 years old, single, a high school graduate but not in college, who could be expected to score above the thirtieth percentile on the standard mental tests, and who could meet the physical standards (10:70).

Recruiting and assigning women to more Air Force Specialty Codes (AFSCs) may help to meet the numbers requirement, but it creates a problem in managing the myriad of social and behavioral aspects associated with this new work force composition. Men and women weigh certain job factors differently. For example, women tend to be more concerned with supervision and the social aspects of the job (46:19). The management problems associated with these differences pervades daily work output, first line supervision, employee evaluation, promotion potential, job satisfaction, coworker relationships, and other factors associated with job performance.

Air Force managers must recognize these factors if they are to facilitate the integration of women into the USAF craft skills. This is no small problem. One-half of the 90,000 females projected to be on active duty by 1984

will have less than six years of service. Much of the Air Force's routine work is accomplished by junior enlisted personnel, and by 1984 this work force could be composed of between 30 and 50 percent female airmen (1:8). The work to be accomplished must be reevaluated by the Air Force manager in light of the changing complexion of the work force. The ability of Air Force managers to adjust to the changing behavioral environment of the work force will significantly impact worker productivity. Obtaining optimum production from each assigned airman is a task of Air Force managers which takes on increased importance in an era of reduced manpower and budgets, and with a continuing drive to reduce the life cycle costs of weapon systems (2).

The importance of these behavioral considerations was recognized by Cook and Wilkey in their thesis (LSSR 6-77A) entitled "Social Problems of Enlisted Women in United States Air Force Craft Skills." Their research examined the extent to which stereotypes of female workers were perceived to exist, and the impact such stereotypes may have on the job socialization of USAF enlisted women in selected craft skills. They concluded ". . . that the role stereotypes as a group are associated with the level of adaptation and job socialization . . . [14:95]."

Socialization is defined by Ireson (28:178) as "the interactional process by which a person's behavior and personality characteristics are modified according to

the expectations of others. . . ." It includes acquainting new members of the group with the required behavior patterns, norms and value systems of that group (14:20). Stereotypic factors influencing job socialization are important because they impact upon worker productivity, especially the productivity of women craft workers. These women are more likely than their white-collar counterparts to be motivated by the job satisfaction received from the nature of the supervision and from affiliations with their coworkers (8:364). "In addition to being influenced by motivation, [job] performance is affected by a worker's ability and by a number of situational and environmental factors [30:1]." Cook and Wilkey found that the most significant stereotypic and job socialization factors for Air Force women craft workers were associated with their perceived overprotection, negative feedback from male coworkers, negative assessment of competency, and unfair/unequal supervisory treatment (14:97).

Although the Cook and Wilkey research generated a large data base, it has not been thoroughly analyzed to determine the specific behavioral factors which tend to limit or affect the job socialization process. Additional important and useful information can be gleaned from the available data to help Air Force managers understand the factors affecting the productivity of Air Force women entering the USAF craft skills (2).

Research Objective

The objectives of this research are to thoroughly analyze the data base associated with women in the craft skills to determine the specific behavioral factors which tend to affect job socialization; expand this information into detailed, usable knowledge; and provide this knowledge to Air Force managers. Making this knowledge available will give managers better insight into how to facilitate the socialization of women into the work force and to thus improve productivity.

Research Propositions

To accomplish the research objectives two research propositions have been developed.

1. The Cook and Wilkey stereotype and job socialization factors were created from items used in previous instruments as well as logical evaluations of the literature. A more complete definition of the stereotypes and job socialization factors can be developed in three ways. First, factor analysis can be applied to validate the questionnaire developed a priori by Cook and Wilkey. Second, the factors can be restructured (altering which questions are grouped with each variable) as necessary, according to the information content of each question. Third, a complete content analysis can be accomplished of these quantitative answers as well as the open ended responses which compose

the available data from women in male-dominated Air Force craft skills.

2. The restructuring of the stereotypes and job socialization variables in proposition (1) will not invalidate the findings of the Cook and Wilkey thesis, but will aid in interpreting and applying the information contained in the data base.

Scope

The objectives of this research were met by analyzing the data associated with the 1730 responses to the Cook and Wilkey questionnaire. The data included quantitative and open-ended responses to 96 structured questions and 13 variables which allowed potential demographic groupings. No new data were collected. The major thrust was to use a factor analytic technique to reconstruct major variables based upon the content of the questions. A detailed content analysis of the data was then accomplished to define the specific factors within the work environment to which the women seemed to respond.

Organization of the Study

This thesis has four additional chapters. The second chapter reviews literature which reports on contemporary efforts to expand the knowledge of the variables effecting the entry of women into the work force, with special emphasis on the craft skills. The third chapter

describes the methods and statistical concepts which were used to analyze the data. The results of the data analysis are presented in the fourth chapter. The fifth and final chapter summarizes the study, presents conclusions and makes appropriate recommendations.

CHAPTER II

LITERATURE REVIEW

Overview

The review of available literature was divided into two areas: the first analyzes the problems of role stereotypes, while the second addresses factors affecting job socialization of women in the craft skills. First, the increased number of women entering the nontraditional career fields pose several problems for managers, and the available literature overwhelmingly indicates that most of these problems result from behavioral considerations caused by role stereotypes. N. T. Feather has written that people ". . . acquire sets of beliefs . . . about what jobs are more appropriate for males than for females [19:536]," and that these beliefs or stereotypes include expectations regarding appropriate male and female behavior. If the female worker believes her treatment is discriminatory based on stereotypic perceptions, her socialization into the work force is likely to be impaired. Second, several studies have implied that a close relationship exists between role stereotypes and the job socialization of the female craft worker (3; 14). The literature in both of these areas is reviewed in this chapter.

Role Stereotypes

A thread linking many of the perceived problems faced by women entering the craft skill career fields is that of role stereotyping. A stereotype in this study is defined as

> . . . a picture one has in mind when visualizing a hypothetical type of person. It exists in the "eye of the beholder," and may not be an accurate perception of reality [14:54].

Rhinelander considers the three key elements of a stereotype to be: "(1) an overgeneralization; (2) which is false in some degree [particularly when applied to an individual]; and (3) which is immune to correction [40:2]."

The male stereotype describes a person who is

> . . . independent, objective, active, competitive, logical, skilled in business, worldly, adventurous, able to make decisions easily, self confident, always acting as a leader, ambitious [12:66].

Women are stereotyped in terms of the absence of these concepts, as well as being warm, nurturant and altruistic (38:182).

> These standards, rooted in physiology, evolved over ages of human existence. Reinforced by religious and secular dogma of infinite variety, they have cast women in the role of nurturer and man as the protector [16:12].

Man traditionally provides financial support; society pressures him to succeed and do well as a bread winner. Indeed, more than 90 percent of the men in the 24 to 55 year age bracket are in the labor force (9:4). Women, on the other hand, ". . . are rewarded for being passive and dependent,

characteristics not likely to lead to job success in a male-oriented field [4:6]." As a result of these social expectations,

> . . . women are neither pressured to succeed nor socially rewarded for doing so in a nontraditional work environment. Women may actually fear success in male dominated fields, for which they achieve success at the risk of social ostracism [4:6-7].
>
> To the extent that working women adopt the behavior specified as appropriate for successful workers, they risk censure for their failure to be appropriately feminine; but if they adopt the behaviors that are perceived as feminine, they are necessarily deficient with respect to the general standards for successful worker behavior [14:19].

Thus, women entering formerly all male occupations experience role conflicts created by social pressures to conform to expected role standards for job success while remaining feminine (4:5). This role conflict places exceptional pressure on women entering military craft skills, pressures which are trifaceted in nature. The first facet is the pressure of being the "new kid on the block" and also of having to challenge the attitudes of male coworkers and supervisors (27; 41). The second pressure extends beyond the work environment and into the home. Family, friends, and new acquaintances, all with negative stereotypic images of women in the military and/or craft skills, compound the pressure on the woman. Third, because ". . . women view femininity and achievement as two desirable but opposing motives [49:120]," perhaps the most difficult pressure for women to face is that of their

own beliefs. Self-conflict exists over their roles as women and as craft workers. Therefore, women must also handle the pressure of recognizing and overcoming their own prejudices (27; 41).

Role stereotypes may impact either favorably or unfavorably upon how well women adapt to the work environment and ultimately upon their job performance (4; 14; 48). When role stereotypes negatively impact upon such factors as job satisfaction, coworker relations and supervisory treatment, they become costly to the organization in terms of reduced production, reduced efficiency, and increased employee turnover (13; 19). "Because the supervisor influences both the administration of pay and promotion and the design of jobs [30:172]," he or she is typically the most influential link in the success of the new woman employee (14:99; 30:172). It is the supervisor who, while meeting the organization's goals, has the primary responsibility for managing the problems created by the conflict (both external and internal) between the woman and the associated role stereotypes in the previously all male environment. The supervisor's ability to reduce the magnitude of role stereotyped behavior perceived by subordinates may improve the job socialization process of women in nontraditional career fields (14:100).

Greater understanding of the factors influencing job socialization can be obtained through an examination of

the five role stereotypes perceived by women entering Air Force craft career fields as identified by Cook and Wilkey. These specific role stereotypes perceived by women include overprotection, negative assessment of competency, fear of success, male oriented physical and operational job standards, and the male-female role definition or prescription.

Specific Stereotypes

Overprotection. Role stereotypes associated with women (dependent, follower) and men (provider, supporter) have created the image that men must protect the weaker female from the unpleasant aspects of her environment. Thus, ". . . a woman may believe that she is perceived by male supervisors and coworkers as weak and helpless, requiring protection [14:97]." Overprotection has been defined as ". . . preferential treatment for women involved in dirty, heavy, physical labor and/or dangerous work [14:15]."

> [The] U.S. Navy's experience has demonstrated, [that] males who have never before supervised females performing traditionally masculine tasks waver between attitudes of sexual equality and protectiveness [27:40].

The Inspector General of the Air Force found that management of women in physically demanding fields was not effectively accomplished by base level supervisors. Women in maintenance and security police were routinely assigned to administrative tasks, given duty requiring light physical effort, or given other indoor/desk jobs (47:17). Cook and

Wilkey found that women were restricted from dirty jobs and were typically assigned only to well supervised daytime shifts (14:97). In addition, supervisors also protected women who did not perform well, apparently attributing poor performance to sex-role limitations (47:5).

Although a dissatisfied woman may encourage stereotypic expectations and accept overprotection, such preferential treatment is typically resented by both men and women. Women recognize that physical labor may be a problem for them; they see it as one aspect of their new job with which they must deal. Supervisors should expect women to perform physical labor, but be alert for physical fatigue which might cause safety problems (41:4). Failure on the part of management to curtail the overprotection of women invites problems with upgrade training, scheduling, morale and work flow (14:98).

Negative Assessment of Competency. Role stereotypes cause both men and women to perceive women as less capable of performing nontraditional jobs (32:15).

> The female enlisted worker in the Air Force craft skills may consider herself prejudged, even before arrival at an assignment, to be less capable, less reliable, and less competent relative to newly assigned male coworkers [14:98-99].

This stereotyped role of low competency manifests itself in mounting pressures on the woman in the craft job. She may think her mistakes are magnified and that her mistakes

are generalized to other women performing similar work (14:98).

This tendency on the part of supervisors and coworkers to negatively assess the competency of women poses significant problems for the woman's supervisor. For example, the assignment of women to light physical jobs discussed earlier was partially caused by the supervisor's attitudes causing him to underestimate the capabilities of female subordinates (47:17). The resulting failure of women to obtain the needed training in the more physical aspects of the job may further contribute to the assessment of incompetency, in effect a self-fulfilling prophesy. The supervisor may find female subordinates more intelligent than males as a result of Department of Defense policies which require women to have higher entrance test scores than male counterparts (15:12), but this seems not to affect their view of the woman's competence. Those women who do successfully face the pressures associated with their role conflict are more likely to be strong-willed people; that is, to exhibit some traits considered to be masculine. Supervisors may find themselves not only challenged by the more questioning attitudes associated with intelligent people, but also confused by the woman stereotyped as needing protection (41:4).

It is especially important that supervisors be aware of and attempt to overcome sexual bias in the critical

area of performance evaluation. Biased evaluations are seen as taking on two forms. In the first instance, managers who are inexperienced in supervising women tend to protect them from working in all phases of the nontraditional job, but then evaluate these women on the basis of skills cutting across all phases of the job. These evaluations showed competency in all aspects of the job; however, some portions of the job were never accomplished. The women were nonetheless upgraded with their male contemporaries (24:17) leading to women being placed into positions later for which they had not received the needed training/ experience. The second sexual bias will appear as word differentiation in the narrative portion of the performance evaluation. Although the numerical scores for women may be the same as for men,

> . . . raters will tend to use sex-appropriate terms when describing personnel; that is, "decisive," "self-reliant," "willing to take risks" for men and "sensitive to other's needs," "conscientious," and "liked by all" in describing women [23:16].

The first tendency may ultimately result in the promotion of unqualified personnel. Women of lower competence will be at higher skill levels and will perpetuate the negative assessment of competency and may serve as a nonmotivator for male coworkers. In the second type of bias all terms used project a positive image of the employee; however, the male related terms appeal to

established stereotypical concepts and are more likely to foster advancement in a military setting (23:16).

Fear of Success. Acceptance of success often depends on factors of sex and on the particular occupation. "Success at an occupation is viewed more positively if this success is consistent with societal conceptions about the sex role than if it is inconsistent [19:537]." Success is more acceptable for males than females in male-dominated occupations, particularly in the craft skills. Society often pressures males to succeed and do well, while females are expected to be passive and dependent (19; 28; 38).

A woman's fear of success does not begin in the work environment.

> The conflict between femininity and achievement affects girls long before they enter the work force. Both the academic achievement and the occupational aspirations of many girls seem to be adversely affected by socialization for femininity [28:176].

The educational process, by channeling females toward humanitarian and clerical services and away from technical and scientific fields, generates fewer women than men with technical skills and interests (49:118). American society values achievement in these technical areas highly, but usually considers it unfeminine (28:176). "This culturally induced conflict, buttressed by various social institutions, may partially account for women's limited success in the world of paid employment [28:176]."

In the task environment women may perceive they are not rewarded for success; in fact, job success may cost them social acceptance. This perception reinforces itself. If women are expected to do poorly, they will do so in the view of coworkers and supervisors as envisioned in the psychosocial model of defeat developed by Hinsdale. This model

> . . . describes in behavioral terms how sex role stereotyping within the work group interacts with psychological constructs (e.g., low self-esteem, fear of success) to produce a "cycle of defeat" which reinforces precisely those fears and attitudes which prevent most women from deviating from feminine behavioral norms. The model posits that many women are not able to overcome the fears and attitudes which prevent them from displaying those behaviors which are adaptive for women working with men and in organizations. It is these same fears and attitudes that are reinforced by supervisors and peers when women do deviate from traditional behavior norms [27:8].

Physical and Operational Job Standards. Working conditions have a significant impact on the adaptive efforts of the individual. Detrimental effects of the work environment can be minimized by providing proper clothing, tools, instruction, and facilities for the work force (14:25-26). Many women face a stereotype of not being able to do the job when the fault may lie not with the woman or even the job but with the equipment available. Very few Air Force job standards have been changed to reflect the new average height, strength and mechanical aptitude of the total work

force, to include the large number of women projected to enter nontraditional career fields (13:14).

Evidence of male oriented physical and operational job standards in the Air Force was provided in a report to the Congress by the Comptroller General of the United States. The report stated that

> . . . enlisted women have been assigned to previously all male craft skills with requirements that keep them from working effectively and . . . operational requirements have not been established for most jobs [13:14].

The increase in the numbers of women in the craft skills, especially at the lower "worker level," suggests the need for Air Force managers to reevaluate the work environment.

Most of the tools and equipment used today in the more task oriented jobs were designed to meet the needs of an almost total male work force. For example, the standards for equipment, tools, and required tasks in the maintenance career field were based on the size, strength, reach and height of the average male. When women came into the career field many were forced to work to the limits of their endurance. Like some smaller men, when forced to perform tasks not related to their AFSCs (for example, pitching tents and handling camouflage netting during deployment exercises) women experienced a significantly greater degree of difficulty than the average size male for whom the equipment was designed (51:10). Many of the tools needed were awkward, bulky, or inappropriate for

women. Many clothing items such as uniforms, safety shoes, parkas, gloves and rain gear were still not available in proper sizes. The safety and survival gear is particularly critical in this respect (14:106-12), and much of it is still not available operationally to fit the smaller women.

The physical test or "X" Factor Strength Test, was initiated at Air Force basic military training in January 1976. The test includes factors of reach, body size, finger dexterity and a doctor's subjective estimate of an individual's ability. The key element in the test involves lifting a 70-pound weight to a height of 6 feet. Many women cannot manage this; however, for those who do, almost any job in the Air Force is open to them (51:32).

A problem still exists with uniforms for women. Eleanor McManus, Air Force Systems Command military advisor for women, recently announced that

> . . . problems involve uniform combinations. As women move into newly open career fields more specialized uniform equipment is needed. For example, we didn't have combat boots that properly fit women [6:46].

This situation is being corrected. The Defense Advisory Committee for Women in the Service (DACOWITS) has asked the Department of Defense to set up a committee to study and make recommendations on deficiencies in field/organizational clothing as well as the special equipment important to unit missions (24:12). The use of human engineering

techniques will allow jobs to be more effectively accomplished by smaller, weaker persons and particularly by the increasing proportion of female workers (5). Nevertheless, the problem of male-oriented physical and operational job standards still exists and has significant negative effects on women entering predominately male oriented fields.

Female Role Definitions/Prescriptions. This area summarizes to a large extent the previous stereotypes. A study by Broverman et al. indicates that women incorporate the aspects of femininity into their own self image. Often the negative aspects of this stereotype (relative incompetence, irrationality, passivity) are also accepted (12:67).

A study of New England College students

> . . . indicate that the concepts of the ideal man and the ideal woman in both men and women subjects closely parallel the male and female sex-role stereotypes. The ideal woman is perceived as significantly less aggressive, less independent, less dominant, less active, more emotional, having greater difficulty in making decisions, etc., than the ideal man; . . . Both greater competence in men than in women, and greater warmth and expressiveness in women than in men, then, are apparently desirable in our contemporary society. Furthermore, . . . results suggest that the college population, a group which tends to be critical of traditional social norms and conventions, nonetheless believes that the existing sex-role stereotypes are desirable [12:69].

This sex role stereotype may interfere with a woman's socialization into the task environment. Even if a woman has little difficulty conceptualizing herself in a nontraditional job, she may still be ill-prepared to work

with her male peers effectively because of her interpersonal orientation (45:11).

Socialization

The role stereotypes previously discussed were found to impact on the socialization of women into previously all male work environments (14:95). The socialization process acquaints new members of a group with the required behavior patterns, norms and value system of that group (20; 39; 43). Many factors can impact upon the socialization process. Cook and Wilkey's study considered three of the most critical factors to be job satisfaction, supervisory treatment, and the relationship with coworkers (14:20). Though treated separately below, they are intertwined in their effect upon women entering the craft skills. For example,

> . . . the woman doing a "man's job" is experiencing considerable resentment. She reports more dissatisfaction with her supervisor and her progress . . . , but gets greater self-esteem from the work than the woman in the traditional rating [45:18].

Factors of Socialization

Job Satisfaction. Women may experience great disparity between what they anticipate from the job and the actual working conditions (3:10). A woman enthusiastically entering a previously male dominated career field has optimistic views of her expected job satisfaction; however, she could experience disappointment. A lack of job

satisfaction will increase employee turnover and absenteeism (30:86). A Navy study concluded that in the nontraditional fields such as electrical repair, maintenance, and crafts, women experienced greater attrition than in traditional jobs in medical, administration and communication (48:36).

Disappointment in the job may also result from women being inappropriately assigned to a job which does not require the talents they have to offer (39:287). Air Force recruiting goals are designed to distribute women proportionately among all open career fields; however, this goal does not take into consideration the different rates at which men and women qualify in the various aptitude areas. A recent study by the Inspector General showed that 58 percent of male enlistees were working in the area of their highest aptitude while only 10 percent of the women were (47:3). Recruiting objectives should be responsive to the relative rates at which men and women comprise the available qualified resources (47:6).

Improvement in the work environment itself may be possible, but many jobs in the craft skills require personnel to work in less than ideal conditions. Workers who are supported by the supervisor and coworkers in adapting to this new situation may complete the adjustment process rapidly; others who are not supported may never adapt (3:6).

"Because satisfaction is manageable and influences absenteeism and turnovers, organizations can control absenteeism and turnover [30:87]." Control is important because of the high costs of schedule interruptions, overstaffing, recruitment and training costs (30:87). Of particular concern to the manager of craft workers is "that women's job satisfaction, like men's, is related to their occupational status: those in low status blue-collar and services jobs are the least satisfied [8:364]."

Unequal/Unfair Supervisory Treatment. According to Cook and Wilkey,

> The statistical correlations indicate that when a supervisor is perceived to actively integrate role stereotyped behavior into his actions with female workers, his supervisory treatment is perceived to be unequal or unfair [14:100].

Fair treatment by the immediate supervisor is important because he or she is generally considered the most influential person to the new female employee (14:99; 30:172). Through the supervisor, the woman receives rewards, punishment, feedback and help. The supervisor's treatment of the female worker becomes a major factor in how she learns the cultures and values of the new job setting and adapts to them (14:20,25). Although "job adaptation can be enhanced by a skilled supervisor or hindered by one less skilled [14:100]," equal treatment may be extremely difficult in the military environment.

> . . . sexual equality tears at the very fabric of military life, where the ultimate decision making power still resides in male hands and where most wives have accepted secondary status to the male and his career [48:35].

That supervisors treat women unequally seems to be generally acknowledged. "Many coworkers, supervisors, first sergeants and commanders believe women receive preferential treatment. . . [47:5]." "Even well-meaning supervisors may hold preconceptions about what women can and ought to do and may assign jobs or make training opportunities available accordingly [48:35]." Although women expect to be treated as ladies, they also expect to be treated equally and to do all aspects of the job required of their male counterparts (41:4). Supervisors must face the difficult task of establishing equal treatment for all employees while dealing with role stereotypes. Many women are skilled and ambitious. Supervisors must overcome their stereotyped attitudes and help women subordinates ". . . out of their natural reluctance to position themselves as superior to men [41:5]," and to do their best to train for advancement (41:4,5).

Several consequences of unequal treatment by supervisors exist within the work environment. First, a woman may perceive that there are higher demands on her for rewards equal to those of her male counterparts. This perceived discrimination and work related pressure may result in job dissatisfaction and lower productivity for

women unable to achieve at the higher level. Or the supervisor's expectation may be too low, causing the female to respond with less than her maximum productivity (14:100).

Second, a woman may experience sexual harassment. One survey found that 45 percent of working women had experienced sexual harassment, which included overtures (both verbal and physical) and repeated verbal comments and jokes of a sexual nature. This problem is particularly compounded by the difficulty of effectively maintaining delicate supervisor/subordinate relationships. Sexual harassment also extends beyond the supervisor.

> The lack of satisfying work is a problem women share with men. Women, however, also face their coworkers' hostility and undesired sexual advances by male workers, supervisors, customers, or clients [8:366].

Third, a source of qualified supervisors may be overlooked. ". . . married women may be denied opportunities [for increased responsibility] because the company fears they will leave if their husbands change jobs [23:618]." Firms displaying this attitude will likely experience a high turnover in female personnel because there is no incentive for career minded married women to remain with such an organization.

Although our society generally subscribes to equal and fair treatment, managers may find themselves faced with situations where equality is difficult to achieve. Because women are tasked with home life and child care

responsibilities more frequently than men, "all working mothers suffer from the lack of child care [services], [and] the inflexibility of work schedules . . . [8:368]." But of greater concern to the craft skill supervisor, such as in aircraft maintenance, is that swing shifts and forced overtime require ". . . the working mother . . . [to] readjust her home and child care arrangements week after week to accommodate the demands of the workplace [8:368]."

Negative Feedback from Male Coworkers. The social aspect of the work environment is fundamental to job success. ". . . turnover is directly related to group acceptance [30:195]." Coworkers ". . . can provide the focal point for the individual to learn the values, norms, and expectations of the group and of the organization [14:25]." More importantly, coworkers provide praise, social acceptance and interpersonal rewards which can influence motivation and are often valued more highly than pay and promotion (30:172).

> If a female worker perceives that male coworkers stereotypically view her as protected, less competent and as less than an equal working partner, this perception will have detrimental impact on the job socialization of the female worker [14:101].
>
> As O'Farrell's research on women entering nontraditional craft jobs observes . . . as much as 80 percent of the job was learned informally from other workers on the job. Because of strong group norms, cliques, status, job satisfaction and generally negative attitudes, women are excluded from the informal

peer group training. Consequently, they did not learn the job as well as men, thus reinforcing negative attitudes about women not being able to do craft work [8:366].

Given the importance of the coworker's relationship, modifying the attitudes of male coworkers is assumed to be important. A Navy study which is also very applicable to Air Force reported that "The strength of job relevant sexual stereotypes held by recruits are also of concern to the Navy because of the potential for behavior manifestations that interfere with good human resource management [45:12]." Reversal of the stereotypic roles is not anticipated to be a rapid, but rather a gradual process. Given these long-term expectations, results of Naval studies are not conclusive. One early U.S. Navy study hypothesized that stereotypic bias would gradually diminish. Later research concluded, however, that ". . . there is reason to believe that preconceptions based solely on knowledge of gender are not disappearing. . . [45:13]." This conclusion is based on a questionnaire given to a sample of male recruits during June of three consecutive years. Selected questions and their responses are shown in Table 1. In contrast, ". . . men who have had the opportunity to judge the performance of women in Navy jobs have less reservation about their capabilities than those who lack this experience [45:13]."

TABLE 1

SEXUAL STEREOTYPING AMONG NAVY RECRUITS (MALES)

Item	Agree		
	1975 (N=849)	1976 (N=1163)	1977 (N=1000)
It is unfair to promote on the basis of sex	82%	71%	70%
Training women is often wasteful	8%	14%	15%
Women are out sick more than men	15%	22%	24%
Women have a time of the month when their emotions interfere with their jobs	42%	56%	56%
I would not want to fly in an airplane piloted by a woman	11%	16%	18%

Source: Sorenson, Richard C. and Patricia J. Thomas. "Utilization of Women in the Navy." 16 February 1978. Presentation to: Training and Personnel Technology Conference on Utilization of Women in Military Service.

As more and more women enter craft skills which were previously all male and women no longer are minimally represented in these careers, the amount of perceived role stereotyping and the associated job socialization problems may be expected to diminish (14:103).

> Integration studies at Yale and Princeton Universities found generally that, while the ideal mix was not surprisingly half and half, social problems were less likely to develop when the ratio of men to women was lower than three to one. Above that threshold, according to the researchers, some women tended to assume a "superwoman" role and to make more male friends than they normally would, while the men tended to socially reject them as inferior [10:92].

Summary

Literature associated with women entering nontraditional career fields shows many problems which may arise because of role stereotypic behavior and the effect that behavior has on the job socialization process in the craft skill area. Although the influence of role stereotypes is strong, the need for caution when evaluating the questionnaire results also exists and is probably best demonstrated in the literature associated with the coworker relationships. Respondee perceptions may reflect views from either limited or extensive work experience, or perceptions may be affected by varying work environments. The methodology chapter which follows demonstrates how the data was reviewed in light of these considerations.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

This research effort continues the data analysis of the Cook and Wilkey thesis, LSSR 6-77A, "Social Problems of Enlisted Women in the United States Air Force Craft Skills" (14). The data used were collected as part of the Cook and Wilkey effort. A number of methodological conventions established in this previous work were therefore necessarily continued in this study. In addition, the techniques of factor analysis and content analysis were used to validate, extend and further define the original analysis.

Description of Universe, Population, and Sample

Universe

The universe consisted of all women working in what has previously been identified as predominantly an all-male skilled trade (14:28-29). This universe includes those military skill areas which were first opened to enlisted women in January 1973 (see Table 2).

Population

The population consists of all USAF enlisted women assigned within the continental United States during the

period January to May 1977 in the USAF specialty codes (AFSCs) listed in Table 2 (14).

TABLE 2

NONTRADITIONAL CAREER FIELDS

AFSC	Career Field
30XXX	Communications - Electronics
31XXX	Missile Electronic Maintenance
32XXX	Avionics Systems Specialties
42XXX	Aircraft Systems Maintenance
43XXX	Aircraft Maintenance
53XXX	Metal Working
54XXX	Mechanical/Electrical
55XXX	Structural/Pavements

Source: (14:5).

Census

The Cook and Wilkey study was originally designed to study a stratified random sample of seventy-five enlisted women from each of the career fields listed in Table 2 (14:29-30). However, in generating the sample, the Air Force Human Resources Laboratory, Brooks AFS, Texas erred and provided a census of the population. It was not possible, with the information available, for Cook and Wilkey to generate the required stratified random samples. After receiving appropriate approvals, the instrument was mailed

to the 3620-person census of the population. This change dramatically increased the number of cases being analyzed, and also greatly reduced any concerns which might have existed in making inferences from the contents of the data to the population (14:57-58).

However, because the data represents a response from a census rather than a random sample of the population, readers are cautioned that the results obtained from analyzing the Cook and Wilkey data base may be biased by the omission of some systematic variance in the nonresponding portion of the population. The perceptions of the nonrespondents are not known, as detailed in the instrument section of this study, pages 41-42. Nevertheless, with 51 percent of the entire population responding, it is assumed that the respondents in general represent the views of the target population. Their opinions are therefore treated as characteristic of the entire population.. This assumption is reinforced by the large size of the data base and by the views expressed by similar respondents in other studies (27; 45; 48).

Data Collection Instrument/Variables

The data were collected via a mailed questionnaire. The instrument was mailed to the widely dispersed population to obtain the most representative data at a reasonable cost within the time constraints. Strict confidentiality

of the respondents' identities was maintained. A copy of the instrument is included as Appendix A. In addition to identifying demographic characteristics of the respondents, the instrument was designed to measure the eight variables described in Chapter II.

Variables

The eight variables were grouped into two major factors (categories)--role stereotypes and socialization factors.[1] Each variable was measured by from eight to fourteen separate questions. The question grouping for each variable is presented as Appendix B. The role stereotypes measured included the individual's perception of (1) assessment of competency, (2) fear of success, (3) overprotectiveness, (4) lack of physical and operational job standards, and (5) role definition/prescription. The job socialization factors included the individual's perception of (1) job satisfaction, (2) coworker relations, and (3) supervisory treatment and/or acceptance (14:49-50).

Questions

The questions on stereotypes were developed from a detailed interview guide used to conduct a previous Air

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[1]Factoral experiments permit the experimentor to evaluate the combined effect of several variables when used simultaneously. The information obtained is often more complete than single variable experiments (50:309).

Force study (Leonard 1976). The socialization factor questions were adopted from a previously used Air Force questionnaire (Jordan 1975).

> Role Stereotypes. The competency questions were designed to measure the respondents' perceptions of such attributes as being independent, objective, logical, competitive, and skilled in business. The overprotectiveness questions measured the degree to which women perceived they received preferential treatment for dirty, heavy, physical labor and/or dangerous work. The physical and operational job standards questions measured the perceived degree to which female capacities and limitations affected the woman's ability to perform the required work tasks [3:14].

The role definition/prescription questions were designed to measure ". . . the perceived degree to which concepts of the ideal coworker parallels the male and female sex-role stereotypes [14:55]." Fear of success questions were designed to measure the extent to which success was perceived to be appropriate based on factors of occupation and sex (14:56).

> Socialization Factors. The supervisory treatment questions were designed to measure the perceptions of the equitable distribution of rewards, punishments, feedback and help with problems by individual supervisors to each respondent. The coworker relations questions measured the perceived degree of male worker resistance to female socialization indicated by the use of negative and/or biased feedback or other dysfunctional group activities. The job satisfaction questions were designed to measure the degree of dissonance between worker expectations and organizational reality in the work environment [3:14].

The prior studies from which the instrument questions were developed analyzed the original questions for

reliability and validity; however, the necessary minor wording changes and the compilation into a new instrument may have changed these prior results. The completed instrument was subjected to a limited pretest, while face validity was concurred in by a panel of experts. Overall, however, Cook and Wilkey assumed instrument validity based upon the content of their instrument and its relationship to the earlier studies (3:8).

Response Scales

With the exception of the demographic data, the questionnaire used the Likert-type scale which measures information on an ordinal level; however, the scales solicited data which were interval in nature. The zero point in such a scale is arbitrary which restricts the use of the ratio concepts (18:117). Cardinality in scaling was assumed on the basis that "equally-appearing intervals are equal [29:439]." The acceptance of data from a Likert-type scaled instrument as interval in nature is supported in studies referenced by McNichols. These studies compared the same responses using two different coding schemes and found similar results (35:18-19).

> If the multivariate analysis is based on the correlation structure of the variables [as in the Cook and Wilkey analysis], very little difference will be observed [35:19].

Kerlinger further supports this assumption by stating:

> . . . though most psychological scales are basically ordinal, we can with considerable assurance often assume equality of interval. The argument is evidential. If we have, say, two or three measures of the same variable [Cook and Wilkey used 8-14], and these measures are all substantially and linearly related [as shown by Cook and Wilkey], then equal intervals can be assumed. . . .
>
> The best procedure would seem to be to treat ordinal measurements as though they were interval measurements, but to be constantly alert to the possibility of GROSS inequality of intervals [29:440-41].

Instrument

The instrument was mailed to all 3620 Air Force enlisted women then serving in the career fields shown in Table 2. Two hundred surveys were returned, indicating that the enlisted women had been transferred or discharged. Responses were obtained from 1736 women for a response rate of 50.76 percent (14:56). Cook and Wilkey stated that these 200 returned questionnaires represented

> . . . only those individuals for whom the researchers received written notification of discharge or transfer. It is unknown how many others have been transferred or discharged, therefore, no additional corrections for this factor were made to the data base. In addition, leaves and/or temporary duty assignments may have reduced the response rate [14:60].

The questionnaire was designed to measure personal attitudes and opinions that might easily be considered "sensitive" by the respondents. Therefore, anonymity of the respondents was guaranteed (14:30) to avoid any fear of retribution on the part of the respondents, to avoid a possible reduction in response rate caused by that fear, and to obtain the most accurate responses possible (2).

Because of the anonymity, no second mailing was possible. Consequently, no test could be made to correlate the responses from the primary data source with a follow-up response group. Therefore, the respondents could not be demonstrated to be similar to the nonrespondents. (Even if a second response group were present, it could still be argued that the total respondees might not reflect the view of the remaining nonrespondees.) However, since the survey was mailed to a census, the response rate of 50.76 percent represents over half of the total population. This is a much higher percentage of the population than is normally included in studies drawing samples from a population and can be expected to reasonably represent the population (2). Thus, this study assumes that these responses consistently and accurately represent the opinions of the population.

Analysis

Cook and Wilkey Analysis

In analyzing the data, Cook and Wilkey grouped the questions by variable and then studied the relationships of one variable set (role stereotypes) with the other (socialization factors). Thus their methodology had to deal with both multiple measures within each variable set as well as the relationships between the sets. Canonical correlation was an appropriate methodology for Cook and Wilkey because it allowed them to work with overlapping

multivariate constructs while correcting for multicollinearity (linear dependency among variables) within the variable sets. It also provided the opportunity to investigate the contribution of each variable to the overall relationship (35:81).

> This technique assumes that the researchers have independently established a theoretical meaning for both the predictor and criterion sets of variables as sets [14:69].

In addition to developing this theoretical justification, Cook and Wilkey also used Pearson product-moment correlation matrices for the sets of variables to confirm a numerical association among the variables in the sets (14:69).

The Pearson product-moment correlation represents an index of the degree of linear relationships between variables (44:195). Cook and Wilkey not only found highly significant Pearson product-moment correlations among the ". . . role stereotypes, among the factors of job socialization, and between these two sets of variables considered individually or as groups [14:98]," but also found that the direction of the correlations paralleled the findings of the civilian literature (14:94).

> That is, as women perceive that they are overprotected, that they are viewed as being less competent, and that the physical and operational job standards are heavily male oriented, they experience negative perceptions of the effects of job socialization similar to those reported in the civilian literature [14:95].

Thus, the theoretical constructs of stereotype and socialization factors assumed initially in the Cook and

Wilkey thesis were statistically supported, providing the necessary justification for using canonical correlation. Using the canonical correlation technique, Cook and Wilkey were able to conclude that

> . . . role stereotypes as a group are associated with the level of adaptation and job socialization experienced by female enlisted workers in the Air Force craft career field environment.
>
> The research proposition is clearly supported by two separate statistical analysis techniques [Pearson product-moment and canonical correlation]. As Air Force enlisted women employed in the surveyed craft skills perceive the existence of role stereotypes, these stereotypes impact the perceived level of job socialization [14:95-96].

Factor Analysis

Factor analysis is a collection of techniques and procedures which enable the researcher to examine the underlying patterns or relationships that may exist in a set of data, and to group the data by these patterns or factors (36:469). This data reduction technique flows from the law of parsimony which states that if phenomena can be described with fewer factors it should be done (42:381). Factor analysis was used to determine if the underlying pattern of questions and variables in the data, as assumed by Cook and Wilkey, was identical to the pattern generated independently by the factor analytic technique.[2]

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[2]The computational portions of this procedure were performed using the Statistical Package for the Social Sciences (SPSS) Chapter 24 (36).

The first step in factor analysis is to construct a complete Pearson product-moment correlation matrix. The correlation matrix defines the appropriate measure of association among the factors (36:470,474).

The second step involves an analysis of the initial factorization to ascertain the optimum number of major variables on the basis of the interrelationships exhibited in the data (3:9). Using eigenvalues, the newly created variables can be interpreted as the exact mathematical transformation of the original variables (36:470).

The eigenvalue, which is the sum of the squared loadings for each factor, is a measure of the fractional portion of the variance of the original variables that the factor explains. Any factor with an eigenvalue of one or greater

> . . . explains at least the fraction 1/K [k=the manifestation variables, i.e., the number of questions], so the rule of thumb is to retain all components associated with eigenvalues of one or greater [35:6-24].

A more sophisticated procedure which may refine the results of the eigenvalue test is the Cattell-scree test (35:6-25). The test is designed to eliminate factors which have low factor contributions (42:361). The scree test is a graphical approach that plots the percentage of variance explained by each factor against that factor number for all factors with eigenvalues greater than one. The plots should have a decreasingly negative slope until

trivial factors (or scree) are reached. This point is represented by a relatively sharp "knee-down" of the line connecting the plotted points. The graphed curve generally levels off to the right of this knee-down. The number of factors to the left of and including the scree point is the number of factors that should be considered significant (35:6-24). The data were then refactored against this specific number of significant factors.

Thurstone's test for simple structure was then accomplished to ensure the rotated solutions evidence simple structure (26:112). Thurstone argued that it was necessary to rotate factor matrices to interpret them in a way which provides a relatively pure interpretation of each factor (35:6-42). Thurstone devised five properties of a factor structure which are desirable and necessary to meet the simple structured requirement:

1. Each row of the factor structure matrix should include at least one zero.
2. Each column of the factor structure matrix should contain at least as many zeros as there are retained factors.
3. Every pair of columns should contain several loadings which are zero in one column but not in the other.
4. If more than four factors are retained, every pair of columns should contain zero loadings on a large number of variables in common.
5. For every pair of columns, only a few manifestation variables should have nonzero loadings in both columns [35:6-42].

The SPSS Principle Factoring with interaction (PA2) procedure and the maximum variance orthogonal rotation

(VARIMAX) options were used. In these procedures the above criteria are quantified as an objective function which attempts to simplify the columns in the factor structure by maximizing the variances of each column. The orthogonally rotated matrix optimizes this objective function, producing the maximum number of low (near zero) and or high (near 1) variable loadings (35; 36).

The third step is to examine the rotated factor matrix for the variable loadings[3] of each question on each factor. Questions are assigned to factors based on the strength of these factor loadings. Next, each factor loading is reviewed to determine whether it is

> . . . either very large [which would indicate the question is important in defining the factor] or very small [which would indicate the question does not contribute to that factor] [35:6-42].

All loadings of .10 or less can be considered as zero (25:509). Loadings of 0.3 or greater were considered adequately high and were compared to the other loadings and subjectively evaluated prior to assigning the question to a factor (33). Questions which did not have high loadings on a particular factor, but had small loadings on the other factors or which loaded equally on two or more factors, were examined through content analysis and logically assigned to

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[3]The initial factoring output from SPSS (a matrix) consists of original variables in the left column versus the new factors across the top of the matrix. The intersection of each variable and each factor gives the factor loading or correlation of variable j on factor i (36:513).

or deleted from the factor to ensure appropriate placement of the question to a factor.

Content Analysis

"Content analysis is a method of studying and analyzing communications in a systematic, objective, and quantitative manner to measure variables [29:525]." It was used both to validate those questions which loaded highly on a factor as a result of the factor analysis and to ensure appropriate placement of those questions which loaded approximately the same on two or more factors, or which failed to load significantly on any of the factors. It also facilitated the interpretation of the factors.

The written responses (more than 800) to the open-ended questions used in the questionnaire were the focus of this analysis. The information drawn from the open-ended responses frequently related to specific questions in the instrument. When content analysis was applied to a combination of these open-ended responses and the responses the population communication in the questionnaire relative to the question structure, it helped determine the emphasis each question should receive in explaining the concept communicated by each factor.

The basic unit of analysis was themes. "The theme, a useful though difficult unit to analyze, is often a sentence or a proposition about something. Themes are combined

into sets of themes [29:528]." Through an analysis of the question its theme can be determined and compared to similar themes within the questionnaire. Kerlinger provides an example of the application of content analysis that parallels closely the application used in this thesis. His example refers to measuring anti-semitic feelings.

> Content analysis can be used to validate other methods of observation and measurement. A scale to measure, say attitudes toward Jews [women] is hard to validate because, there are few external criteria against which to check it. Most people moreover, know they should not be anti-semitic. They thus give responses that may not be indices of their true attitudes [which could cause the poor factor loadings]. But projective-type questions can be asked of subjects, and the responses content-analyzed for their attitudes toward Jews. It is not easy to conceal anti-semitism if one has to write a short essay on Jews [29:533].

Themes were tabulated according to their relationship to one or more of the role stereotypes and job socialization factors discussed earlier. In addition to these factors, comments relating to a theme prescribing individual assessment or a rejection of role stereotypes were reviewed. As previously established, a statement, situation, perception or problem may not be associated with only one role stereotype or job socialization factor. However, the analysis of these themes provided insight into how respondees interpreted given questions and their perceptions of the role stereotypes and job socialization factors. Content analysis thus helped ensure the proper placement of

questions to factors and provided a broader basis for developing accurate definitions of the factors.

Retest of Cook and Wilkey

Through content analysis the final assignments were made of those questions whose prior, logical, theoretical assignment and factor analytic assignment differed. The new factor analytic construction of the variables was then retested using the canonical correlation package of SPSS and the procedures adopted by Cook and Wilkey. The results of the new canonical correlation were compared to those of the Cook and Wilkey thesis (7:187-192). See Appendix C. The hypothesis of no important difference was tested using direct inspection of the results as demonstrated by Adams and Lawrence (3). This was necessary because there was no statistical technique other than direct inspection for testing the significance of the difference between two canonical correlation coefficients generated from different question assignments from the same data base (31; 34). Therefore, one "performs inferences . . . to the questions defined in step 1 [the hypothesis of interest] as well as possible, given the limitations imposed by the type of investigation [22:4]."

CHAPTER IV

DATA ANALYSIS

Chapter IV describes the results achieved when the methodology described in Chapter III was applied to the data. The analysis includes the treatment of the fear of success questions, the factor analysis process which produced five factors, the definition of each of these factors, an interpretation of the information content represented by the responses to the questions loaded on each factor, and relationships among the five factors as supported by the information content of each factor and by canonical correlation.

Treatment of Fear of Success Questions

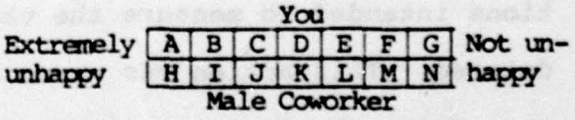
Prior to accomplishing factor analysis, the questions intended to measure the variable fear of success were deleted. This action was necessary because of problems concerning the question structure and any interpretation of that structure. The questions were developed from a previously used instrument designed to be administered by the researcher. Had this technique been used, it would have provided an opportunity for the researcher to answer interpretative questions prior to the respondees completing the questionnaire. The written instructions used in this questionnaire were inadequate by themselves to ensure the

respondees understood what was desired. The question-answer-scan answer sheet match-up was also inaccurate, making it impossible to obtain the desired data. As a result, a great deal of doubt exists over the validity of the questions and the accuracy of the answers to them.

The fear of success questions (15-18 and 115-118 [see Appendix A]) asked whether the woman or a male coworker would be (1) unhappier about a hypothetical failure or (2) happier about a hypothetical success relevant to the work environment. Each question was matched with two response scales, one for the woman and one for the male coworker. The woman was to indicate which of the two would be happier/unhappier, and to indicate the degree of happiness/unhappiness for that person. Both pieces of data were to be produced by a single response.

For example,

Question 15. You and a male coworker did not get promoted. Which of you will be most unhappy about not being selected?



In this format the questions and their instructions generated answers inconsistent with the original intent, which was to obtain the degree of happiness/unhappiness for both males and females (2). By forcing the selection of either male or female, the response may have only shown which of the two was more happy/unhappy. Marking the woman's

response scale may have indicated that the women considered themselves more emotional, consistent with the stereotyped trait of emotion.

Although the scan answer sheet was used, with only one answer for each question required, it was suspected that the respondents entered two answers rather than one to these eight questions. The open-ended responses available were usually written on the same page of the questionnaire as questions 115-118. For 153 of these questionnaires the women entered their answers on the questionnaire prior to entering them on the scan answer sheet. Of the 153, 68 had marked one answer for each question and 85 had marked two answers, one each for the male coworkers and for the woman. Although not conclusive, this indicated confusion on the part of the women reading the questions.

It was also uncertain as to what decision rule was used by Cook and Wilkey to reduce multiple answers to a single answer for computer scanning of the answer sheets. It is possible that any decision rule used would introduce bias into the answers for these questions. This possible bias precluded any attempt to overcome the basic problem by using a dichotomous coding; i.e., of the woman's perception of either the male or female showing greater concern with success or failure.

Many of the women who did mark two answers for each question marked the same degree of happiness/unhappiness for

both the male coworker and herself. In addition, most of the women providing written comments relative to these questions stated that they could not really speak for their male counterparts and that both male and female airmen would be equally disappointed at not being promoted. Evidence of this theory of equality is discussed later in this chapter.

Factor Analysis

The initial run of the factor analysis program, allocating an unlimited number of factors, produced 11 factors with an eigenvalue greater than 1.0. These values were graphed to identify the "knee-down" to the scree, as discussed in Chapter III. This test indicated that five factors should be considered for further analysis as shown in Figure 1.

The factor analysis was then repeated with the number of factors limited to five. Once completed, the analysis of the question loadings was initiated, the objective being to identify those questions which clearly loaded only to one factor, and which would facilitate defining that factor. The results of the program run (the VARIMAX rotated factor matrix) are shown in Appendix D.

The VARIMAX orthogonal rotation was selected rather than the oblique rotation because of the assumed independence of the question responses. VARIMAX simplified the columns (factors) of the factor matrix by making as many

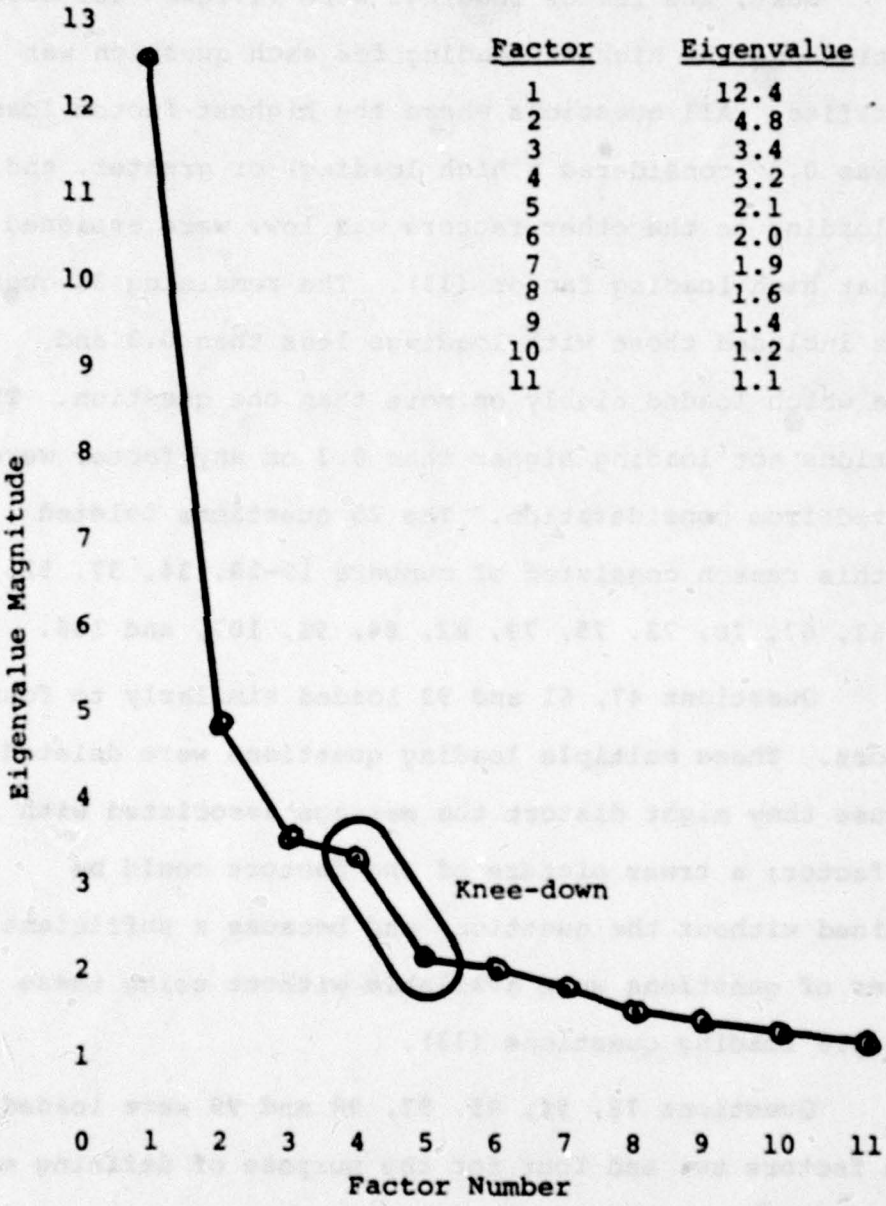


Fig. 1. Cattell Scree Test for Identification of Significant Factors (35:6-24)

values as possible close to zero or one, which helped separate the questions into significant factors.

Next, the factor loadings were reviewed for each question and the highest loading for each question was identified. All questions where the highest factor loading was 0.3 (considered a high loading) or greater, and the loading to the other factors was low, were assigned to that high loading factor (33). The remaining 38 questions included those with loadings less than 0.3 and those which loaded highly on more than one question. Those questions not loading higher than 0.3 on any factor were deleted from consideration. The 25 questions deleted for this reason consisted of numbers 19-28, 34, 37, 52, 56, 63, 67, 70, 73, 75, 79, 82, 84, 96, 107, and 108.

Questions 47, 61 and 93 loaded similarly to four factors. These multiple loading questions were deleted because they might distort the message associated with the factor; a truer picture of the factors could be obtained without the question; and because a sufficient number of questions were available without using these multiple loading questions (33).

Questions 78, 94, 95, 97, 98 and 99 were loaded to both factors two and four for the purpose of defining each factor. These questions loaded high to both factors, with

all but question 74 loading higher to factor four. All were asking opinions about male coworkers, as were other questions loading highly to factor four. Other questions loading on factor two were asking about supervisory treatment. These questions were retained with both factors because of the high loadings and because these high loadings were likely to indicate female perceptions of the men they worked with. An elaboration follows in the definition development of the factors. The loadings for these questions are shown below in Table 3.

TABLE 3

HIGH LOADINGS TO BOTH FACTORS TWO AND FOUR

	Question	Loading to Factor 2	Loading to Factor 4
78	In trying to offer assistance, male coworkers frequently interfere with my work effort.	.31	.37
	Indicate how often each of these traits applies to your male coworkers:		
94	Friendly	.38	.33
95	Uncooperative	.34	.42
97	Accept me	.42	.49
98	Bother me while I work	.27	.32
99	Are hostile to women in the same job	.32	.50

The questions in Table 3 were loaded only to factor four for verifying the canonical correlation. The key point in

this loading was that both factors two and four were on the same side of the equation for the canonical correlation.

Questions 64, 68 and 89 loaded highly to factors one and three, all higher on factor three. These three questions were all intended to measure job satisfaction, as were the other questions which loaded highly to factor three. These questions were, therefore, retained with factor three for defining the factor. However, these three questions were not included in the canonical correlation because they loaded heavily on both sides of the canonical equation (33).

Question 36 loaded highly on both factor two and factor three. This question was kept with factor three for defining the factor because it was intended to measure job satisfaction. It was loaded to factor three for canonical correlation because factors two and three were on the same side of the canonical equation. A summary of all questions and their loadings are shown in Appendix E.

Variable Definition and Interpretation of Results

Factor One--Ability to do the Job

The first factor included the 20 questions identified below, which were generally intended by Cook and Wilkey to measure the three stereotypes of physical and operational job standards, overprotection, and competency.

In addition, some questions loaded highly to this factor which were intended to measure job satisfaction and supervisory treatment.

	Question	Loading
How often does this factor apply to your job?		
40	Workload too heavy	.35
43	Women, because they are generally shorter than most men, are at a disadvantage in this AFSC.	.46
45	As a woman, my technical work is judged less harshly than the work of my male coworkers	.32
49	I am restricted from doing certain tasks that are normally part of my career field.	.43
50	I am strong enough to accomplish the tasks in my AFSC.	.70
51	I do the same work as my male coworkers.	.54
54	I can perform all assigned tasks in my AFSC.	.65
55	My supervisor tries to keep me from experiencing the "unpleasant" portions of the job.	.33
57	My skills are equal to those of male coworkers in my AFSC.	.54
58	The workload in my AFSC is heavier than I expected.	.48
62	The equipment I am expected to work with is too bulky for me.	.65
69	I need help to do tasks that typically would take only one man to accomplish.	.69
71	Male coworkers help me lift heavy objects more than they help men.	.34
72	I find that my supervisor makes allowances for me that he does not make for males under his supervision.	.46
76	I get preferential treatment in the assignment of hazardous, heavy, dirty, work.	.35
81	The tools I am expected to use are too bulky and heavy for me.	.60
83	I believe there are tasks in this AFSC that should be performed by men, not women.	.68
87	My AFSC is more physically demanding for me than for a man.	.52
90	Men are more capable than women in my AFSC.	.66
92	I have the stamina needed to accomplish the tasks in my AFSC.	.63

The general theme of these questions was a statement about a woman's ability to work in a craft skill. Nine questions asking about physical and operational job standards loaded to this factor. By their answers to these questions the women expressed perceptions about how job standards and the woman's stature interacted to influence a woman's perception of her ability to do the job. These questions captured female perceptions of height disadvantages and the adequacy of a woman's strength and stamina to function in her AFSC. The factor also measured perceptions of whether the equipment and tools provided were appropriate for the women to use.

The physical and operational job standard questions included comparisons of the actual workload intensity with both the woman's prior expectations and whether she perceived the workload as being too heavy. Comparisons between the woman's perceptions of women and men working in the AFSC were also solicited to ascertain whether there were tasks which women (but not men) needed help to accomplish, whether there were some tasks which should be performed by men and not by women, and whether the job was more physically demanding for men.

The four questions loading on this factor, which had been intended to measure a negative assessment of competency, also dealt with a comparison of the woman's perceptions of each sex's ability to do the job. These questions asked

whether the woman did the same work as her male coworkers, whether her skills were equal to those of her male coworkers, and whether men were more capable than women in her AFSC. The fourth question intended to measure the assessment of competency was concerned with whether the woman thought she could perform all assigned tasks in her AFSC.

Overprotection questions also grouped with this factor. They sought opinions concerning whether the supervisor restricted, made allowances for, or gave preferential treatment to women in the assignment of certain tasks in the AFSC involving hazardous, heavy, dirty, or unpleasant parts of the job. One question also sought a comparison between the help male coworkers gave men as opposed to women in lifting heavy objects.

In general, these questions asked about the woman's perceptions of her ability to measure up against her male coworkers in meeting the requirements of the AFSC, and her ability to measure up to the absolute standards associated with the job (which are implicitly male oriented because the equipment and job standards were developed for men in these AFSCs). The answers to these questions indicated the women's perceptions of their ability to do their jobs, and their perceptions of the effect of the three stereotypes of physical and operational job standards, overprotection, and a negative assessment of competency.

Responses to Factor One

The 1730 women responding to these questions clearly showed in this first variable that they perceived themselves as measuring up to their male coworkers in fulfilling the requirements of the craft skill AFSC. (See Appendix F for response distributions for each question.) In so doing, these women rejected the stereotype that the physical and operational job standards prevented them from functioning effectively in the traditionally male career field. The tools and equipment were not too heavy or bulky, and the women did not consider themselves too short, weak, or lacking in stamina to accomplish the physical aspects of the job.

These women also rejected the stereotype of a negative assessment of competency. They strongly assessed themselves as being competent in their jobs. Sixty-eight percent[1] agreed that their skills were equal to those of their male coworkers, and 77 percent stated they did the same work as their male coworkers.

While they indicated perceived competency to do the job, women also acknowledged that they considered the AFSC more physically demanding for them than for men, and

[1]The evaluations of the five factors were based on an interpretation of the Likert scale in which the answers to the first three blocks were grouped as one response (agreed), the answers to the last three blocks were considered as the opposite answer (disagreed), and the center block considered either that both answers could apply equally or neither answer applied.

that male coworkers helped women lift heavy objects more frequently than they helped men. Thus the women stated that while they were physically able to do these jobs, they were not as strong or otherwise as physically capable as men in the AFSC. This was similar to the distinction made between a person being fully qualified and best qualified to do a job. The women considered themselves equal to their male counterparts so far as work output was concerned, but perceived that the job required a greater input from them physically to achieve that equal output. This was possible because the women were not asked to perform at maximum capacity, as indicated by their not considering the overall workload to be too heavy or too demanding.

The women rejected very strongly the stereotype that they were overprotected by their supervisor on the job. Eighty-one percent disagreed that their supervisor kept them from experiencing the unpleasant portions of the job. Only 14 percent agreed that their technical work was judged less hasshly than that of their male coworkers and only 15 percent agreed they received preferential treatment in the assignment of hazardous, heavy, or dirty work.

It was not clear, however, whether or not male coworkers overprotected female workers in the craft skills. Sixty-two percent of the women agreed that male coworkers helped them lift heavy objects more than they helped other men. This perception may show (1) a recognition of

differences in the physical strength of men and women; (2) the presence of male coworkers who protected the women; and/or (3) some combination of the two.

To the question "Men are more [emphasis added] capable than women in my AFSC," 40 percent agreed and 46 percent disagreed. Yet seventy-seven percent of the women perceived that they did the same work as their male coworkers. Although there was not a clear response as to whether the men were or were not more capable overall, the theme of equality (that men and women did the same work and were equally capable of working in the craft skills) seemed to exist. This theme will be analyzed in greater detail later in this chapter.

In summary, the women strongly rejected the stereotype of supervisor overprotection, of a negative assessment of competency, and of negative physical and operational job standards. They expressed strong agreement on a woman's ability to function effectively in the craft skill environment. Women perceived themselves as physically strong and tall enough to use the tools available and to do the job required of them, while recognizing that the job was more physically demanding on them than on their male counterpart.

Factor Two--Supervisory Treatment of Women

The following questions loaded to factor two:

	Question	Loading
14	Which statement describes your immediate supervisor in giving recognition for a job well done?	.38
44	My immediate supervisor accepts me very well now.	.63
65	My supervisor judged my work more harshly because I am a woman.	.55
78	In trying to offer assistance, male coworkers frequently interfere with my work effort.	.31
86	My supervisor has confidence in my ability to perform the tasks in my AFSC.	.57
	Indicate how often each of these traits applies to your male coworkers:	
94	Friendly	.38
95	Uncooperative	.34
97	Accept me	.42
98	Bother me while I work	.27
99	Are hostile to women in the same job	.32
	Use the responses below to indicate how each description applies to your supervisor:	
100	Listens to my suggestions	.69
101	Thinks of people as machines rather than human beings	.63
102	Patient	.66
103	Treats women less fairly than men on the job	.75
104	Hinders rather than helps	.72

With the exception of the coworker related questions, these questions reflected an opinion of the woman's supervisor, how fairly he did his job, and how well he accepted the woman working for him in the craft skill AFSCs. (The supervisors to which these questions applied were 99.1 percent male).

The remaining questions (78, 94, 95, 97-99) were concerned with the woman's perception of traits or characteristics which might apply to her male coworkers. The questions asking about male coworker traits apparently loaded highly on the factor supervisory treatment of the females because of the similarity between the male coworkers and the supervisor. This similarity made it difficult for the women to separate the two groups.

Given the probable work environment of these women, the similarity was to be expected. The women were E-3s and E-4s (95 percent) with a "5" skill level (91 percent), three years of service or less (98 percent) and less than 24 months on their current job (77 percent). For workers at this experience level, the supervisors were probably working supervisors, E-4s and E-5s. These supervisors, functioning as lead technicians with not much more experience or skill than the women, would have perhaps seemed more like coworkers than supervisors (33).

It is highly conceivable that the women perceived their coworkers and supervisors as having similar traits and characteristics. The questions which reflect perceptions of both supervisors and coworkers were generally traits not unique to one or the other. Attitudes of friendliness, acceptance, or uncooperativeness toward a woman in a traditionally male AFSC could be present in both coworkers and supervisors. Supervisors might be more

likely to exhibit positive actions because of the accountability/responsibility associated with their positions. Supervisors displaying overt stereotypic treatment would probably experience reprisals, both formal and informal, through existing complaint mechanisms and through social pressures.

Responses to Supervisory Treatment of Women

Consistent with the rejection of overprotection by supervisors found in factor one, the responses in factor two strongly suggested the supervisors were fair in their treatment of women entering the craft skills. The women's perceptions relative to each question in the variable were positive in nature. In giving recognition for a job well done, 87 percent of the women indicated their immediate supervisor treated men and women about the same. The woman perceived that her supervisor had confidence in her ability to perform the tasks associated with the AFSC (72 percent agreed), that he did not judge her work more harshly because she was a woman (68 percent agreed) and that he accepted her very well now (71 percent agreed).

The supervisors were also perceived as people oriented. The women perceived them as thinking of these people as human beings rather than machines (77 percent), as listening to the women's suggestions (61 percent), as being patient (64 percent), as not treating women less

fairly than men on the job (75 percent) and as being helpful rather than a hindrance (71 percent). The traits which were intended to describe male coworkers indicated the supervisors were friendly (85 percent) and cooperative (70 percent), that they accepted the woman (74 percent), did not bother her while she worked (62 percent) and were not hostile to women doing the same work as men (61 percent).

These responses showed that the women generally perceived a positive relationship with their male supervisors, a relationship which should greatly aid in the job socialization process. Supervisors who treat their employees fairly and equally and who come across to their workers as friendly and cooperative should greatly facilitate the adaptation of women into careers traditionally reserved for men.

A minority of the women (15-20 percent) perceived that their supervisors failed to respond to them in the positive way the majority of the women indicated their supervisors did. Although representing a small number of supervisors, the potential hindrance to job socialization existed and should be recognized as a possible problem.

Factor two has continued the theme of equality. The women perceived that their supervisors generally treated them and their male coworkers equally. Given the strong statement in factor one of how women considered themselves to

be equal to their male coworkers, any supervisory treatment which was not perceived as fair and equal would have been likely to produce a strong negative reaction to supervisory treatment questions. The positive response was exactly the opposite and was thus consistent with the theme of equality.

The perception of overprotection by coworkers but not by supervisors, indicated in factor one, was reinforced by the responses to the supervisory treatment factor. To the question "my supervisor hinders rather than helps," 17 percent agreed and 71 percent disagreed (with 45 percent strongly disagreeing). However, in response to the statement "in trying to help, male coworkers frequently interfere with my work effort," 36 percent agreed, 45 percent disagreed and 19 percent marked the middle response, indicating that sometimes the statement was true and sometimes false. The difference in the responses to these questions, which asked for similar perceptions, was a large one. It supported the belief that overprotection was not a problem with supervisors, but sometimes was with male coworkers.

Factor Three--Job Satisfaction

	Question	Loading
Factors which apply to your job:		
35	Challenging	.70
36	Recognized for work well done	.42
38	Chance to fully use my abilities	.69

	Question	Loading
39	Gives me a sense of accomplishment	.80
41	Boring	.64
42	Gives me a sense of pride	.77
48	Given the opportunity, I would leave the Air Force immediately	.47
60	I enjoy being in the U.S. Air Force	.53
64	My assigned AFSC is similar to my preferred AFSC	.38
68	Given the chance, I would change career fields	.50
77	I would advise other women to join the Air Force	.41
89	I am satisfied with my AFSC	.62

All of the questions which loaded to this factor were intended to measure job satisfaction. If certain traits existed or did not exist in the craft skill job, the woman was expected to show an overall satisfaction or dissatisfaction with her job. This factor described job satisfaction in two ways. The first included perceptions of specific factors associated with the job. The second included opinions relative to the job in its entirely and any actions the woman would take or not take as a result of her experiences in the craft skill AFSC.

The seriousness of the problems or the degree of intrinsic reward perceived by the woman to be associated with any given aspect of the job should have corresponded to the woman's perception of her entire job and of the Air Force. The questions loading to this factor identified a complete spectrum of job satisfaction. This spectrum ranged from opinions of detailed factors associated with the job (such as challenging and boring), to the job in

its entirety, to the Air Force as an organization. Factor three provided the opportunity to translate satisfaction with job characteristics into satisfaction with both the AFSC and the employer (USAF).

Responses to Job Satisfaction Questions

The women's perceptions of factors relating to the job fell into two groups. On the one hand, the women agreed (although not overwhelmingly) that the job was challenging (60 percent positive, 20 percent negative), that it gave a sense of accomplishment (51 percent positive, 28 percent negative) and that it also gave them a sense of pride (53 percent positive, 24 percent negative). (Response details and their percentages are shown in Appendix H.) The women seemed to be stating that because the job was challenging, it gave them internal satisfaction; they could take pride in their accomplishments.

The second group of these factors, however, did not portray so positive a response. The women stated that they were marginally recognized for work well done (43 percent positive, 33 percent negative) and were nearly evenly split on whether the job was boring (40 percent never boring, 35 percent always boring). The women also perceived that their jobs did not offer them the opportunity to fully use their capabilities (48 percent agreed, 31 percent disagreed). These women perceived that at times

their jobs were boring, that sometimes they were not recognized for work well done, and that many times their jobs failed to fully use their abilities.

The responses to questions related to opinions on the total craft skill AFSC showed the women equally divided as to whether they were satisfied with their AFSCs (43 percent agreed, 43 percent disagreed) or whether their assigned AFSCs were similar to their preferred AFSC (41 percent agreed, 43 percent disagreed). A more surprising response was that if given the chance most of these women would change career fields (58 percent agreed, 28 percent disagreed). These responses indicated a large portion of the women were both unhappy with their AFSC and dissatisfied with their jobs.

The responses to two other questions on job characteristics (not loading to this factor, although intended to measure job satisfaction) indicated that the large number of dissatisfied women might be caused by the large number of women who perceived their jobs as frustrating (53 percent always, 21 percent never) and the workload as not being too heavy (55 percent positive, 19 percent negative). These characteristics, in addition to the boring nature of the work and its failure to fully use the women's abilities, may have contributed to the dissatisfaciton with the craft skills AFSCs.

The absence of perceived satisfaction with the craft skill AFSCs did not fully carry over into the responses which related to the women's perception of the Air Force. Most of the women enjoyed being in the Air Force (67 percent agreed, 16 percent disagreed) and would have advised other women to join the Air Force (55 percent agreed, 22 percent disagreed). As a bottom-line measure of satisfaction with the Air Force, the women would not leave the Air Force immediately if given the opportunity (60 percent positive, 23 percent negative). Approximately half of the number dissatisfied with their jobs were dissatisfied with the Air Force also. However, the minority of women who would leave immediately if possible could represent a substantial problem to Air Force managers.

Factor Four--Perceptions of Male Coworkers

	Question	Loading
How would male coworkers classify women:		
29	As a professional working woman	.52
30	As an equal working partner	.62
31	As one of those pushy WAFs	.60
32	As a woman who is working until she can find a husband	.54
33	As a "women's libber"	.50
78	In trying to help, male coworkers frequently interfere with my work effort	.37
Traits apply to your male coworker:		
94	Friendly	.33
95	Uncooperative	.42
97	Accept me	.49
98	Bothers me while I work	.32
99	Are hostile to women in the same job	.51

The questions which loaded highly to this factor encompassed two types of perceptions. The first included the questions which also loaded highly to the supervisory treatment factor and described traits which applied to the woman's male coworkers. These questions helped assess the woman's socialization process with regards to her male coworkers.

The second type of question which loaded highly to this factor dealt with the woman's perception of how male coworkers classify women. These questions attempted to go beyond the woman's interpretation of her own perceptions to an interpretation of how her male coworkers perceived women in the Air Force. They sought to ascertain whether the woman perceived that her male coworkers would stereotype the women with whom they worked.

The two groups of questions loading to this factor offered an opportunity to compare whether the women perceived negative or positive traits in their coworkers, with whether the women perceived that their male coworkers would classify women in a negative sense or positive manner. The responses to these questions are shown in Appendix I.

Responses to the Perceptions of Male Coworker Factor

As detailed previously in the description of the responses to the supervisory treatment factor, the women characterized their male coworkers as always being friendly,

seldom uncooperative and usually accepting of the woman in the craft skill AFSC. These male coworkers were also normally perceived as neither hostile nor bothersome to the woman while she worked. When trying to help, however, they did sometimes interfere with the woman's work effort.

Despite the women's perception that their coworkers showed positive, good traits, they felt these male coworkers would generally classify women in a stereotypic manner. Although narrowly rejecting that male coworkers would classify women as "one of those pushy WAFs" (43 percent never, 34 percent always), they acknowledged (narrowly) that their male coworkers classified women as working only until they found a husband (46 percent always, 35 percent never). These women perceived much more strongly that their male coworkers did not consider a woman to be an equal working partner (57 percent never, 24 percent always) or to be a professional working woman (50 percent never, 22 percent always). They also believed that male coworkers considered a woman to be a "women's libber" (55 percent always, 23 percent never).

These two groups of questions loading to the same variable created a somewhat confusing picture of the male coworker. Although the male was friendly, cooperative, and accepting of the woman answering the questionnaire, the woman perceived that her male coworkers would in general

classify women in a negative manner, not as a professional or as an equal.

There were at least three possible reasons for the dichotomy represented in the responses to this factor. The first possibility was that the male coworkers demonstrated their bias towards stereotyping women coworkers in general (perhaps vocally or through the overprotection discussed previously), yet suppressed that attitude in their interaction with the specific women answering the questionnaire. The perception of a somewhat uncomplimentary attitude did not result in perceived nonacceptance, unfriendliness, or a lack of cooperation.

The second possibility was that the women may have perceived that although they considered themselves equal to their male coworkers, they doubted that they had been able to convince the men to the extent necessary to cause a rejection of expected stereotypic attitudes. The women may have believed that they had not demonstrated sufficiently that they were professional working women, equal working partners, etc. The women may have considered that they had shown themselves not to be pushy WAFs. The third possibility is that the coworkers may believe that a stereotype applying to a group (women) might not apply to the individual woman. This was especially possible given the wording of the questions. The answers showing a stereotypic attitude asked how male coworkers would classify women, whereas

the answers showing acceptance and friendliness asked how these traits applied to the male coworkers. The questions were general (women) in the first instance and specific (your) in the second. Women perceived that men subscribed to a stereotypic view of women in the craft skills, but did not apply those views toward the woman in their daily work environment. The single exception to this situation was the perception of coworkers protecting the women from some of the more strenuous parts of the job.

Factor 5--Desirable Traits

The following questions loaded to factor five. All questions were in response to the stem "Indicate the desirability of the following characteristics which you might observe in a coworker."

	Question	Loading
105	Ambitious	.67
106	Independent	.50
109	Competitive	.30
110	Self-confident	.67
111	Tactful	.70
112	Gentle	.50
113	Logical	.74
114	Conceited	.55

The questions were all used to describe what the women considered to be the ideal coworker. The presence of any of these characteristics was considered either most desirable or least desirable. The coworker to which these characteristics were applied was not necessarily male or famale, but would be interpreted as being a desirable

coworker for a woman in the craft skill AFSCs. The traits loading to this factor included some traits traditionally considered male and others normally associated with females.

Also of interest were the two characteristics included in the initial questions which did not load to this factor (or any of the other four). These two were "emotional" and "submissive." Both are stereotyped as female traits in the literature.

An additional set of questions, which attempted to have the women evaluate these same ten characteristics as either masculine or feminine, also failed to load to this or any other of the five factors. The original intent was to identify whether traits considered desirable or undesirable in a coworker were considered masculine or feminine. Their failure to load to any factor indicated the overall responses differed from any of the five statistical distributions associated with the five factors. Nevertheless, the responses to these questions provide insight into the women's perceptions of these characteristics.

Responses to the Desirable Traits Factor

The women expressed very strong opinions relative to the desirability of the traits in a coworker. They considered coworkers who were self-confident (88 percent versus 3 percent), logical (86 percent versus 4 percent),

tactful (82 percent versus 6 percent), ambitious (81 percent versus 5 percent), and independent (76 percent versus 7 percent) to be the most desirable. They strongly considered conceited (83 percent versus 6 percent) to be a least desirable coworker characteristic. The characteristics of being competitive (63 percent versus 14 percent) and gentle (61 percent versus 12 percent) were considered desirable, but not so strongly as other characteristics. There appeared to be greater uncertainty as to the value of these two characteristics. The traits of emotionalism and submissiveness (which failed to load to this factor) were considered least desirable by 58 percent and 56 percent of the women respectively. Details of the responses are shown in Appendix J.

An evaluation of the women's perceptions of the masculinity/feminity of these traits showed a strong tendency to consider several of the traits as neutral. (See Table 4.) The neutrality interpretation was based upon the large number of mid-scale responses to the questions. The trait ambition was considered the most equally masculine/feminine. Being logical was considered a neutral trait, with a slight edge toward considering it feminine. The traits of self-confidence, competitiveness, and independence were also considered neutral, but with a slightly higher loading to masculine than feminine. These were all considered traditionally male traits in the literature.

TABLE 4

PERCEPTIONS OF CHARACTERISTICS AS MASCULINE/FEMININE

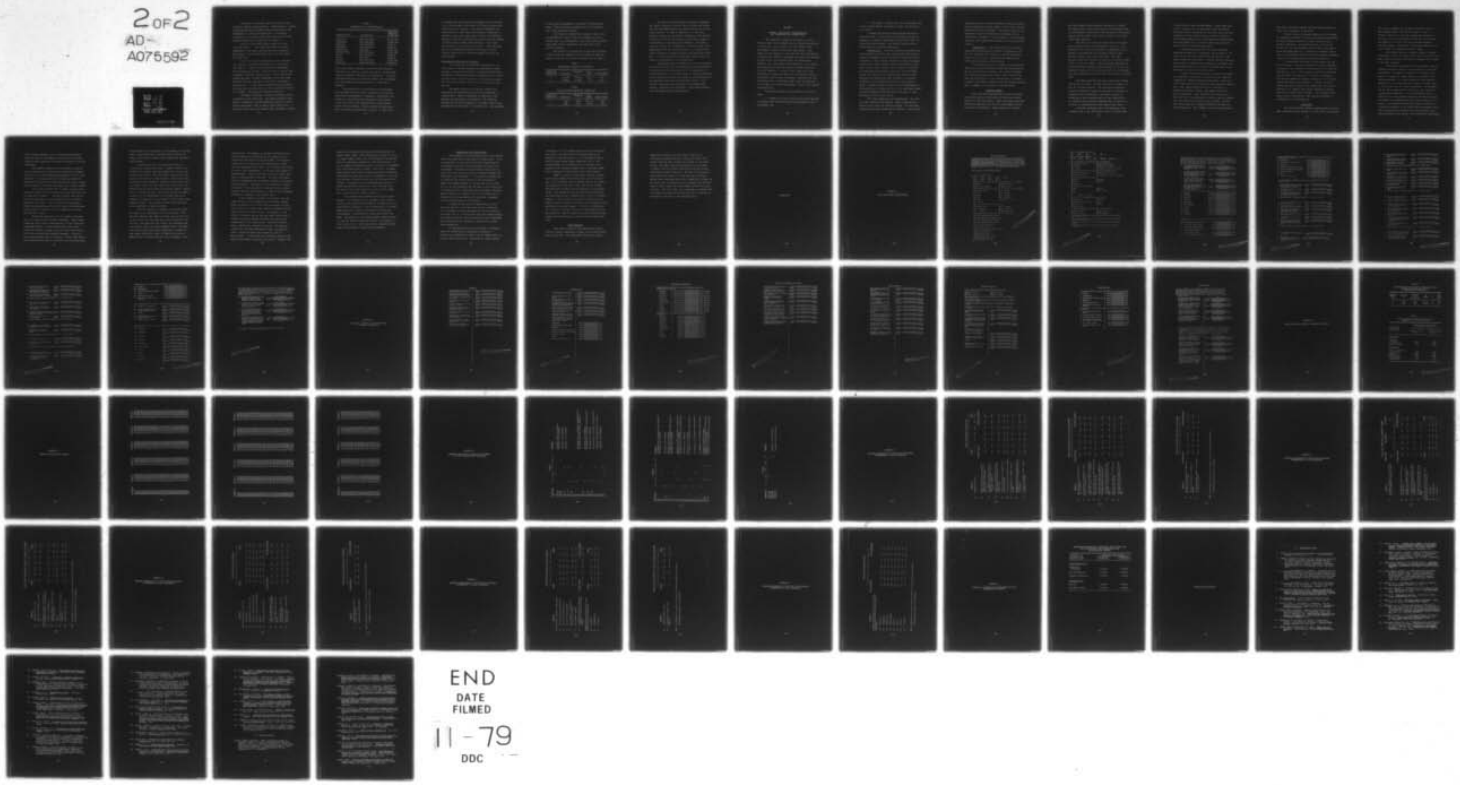
		Frequency Response (%)							
		Masculine			Middle		Feminine		
	Characteristic	1	2	3	4	5	6	7	Assignment
19	Ambitious	3	3	9	67	6	4	8	Neutral
20	Independent	5	6	15	55	5	5	9	Neutral
21	Emotional	1	1	2	28	26	22	19	Feminine
22	Submissive	2	2	5	44	25	13	9	Feminine
23	Competitive	6	6	14	55	6	5	7	Neutral
24	Self-confident	5	7	15	58	5	4	5	Neutral
25	Tactful	2	2	5	37	22	17	15	Feminine
26	Gentle	1	1	1	31	23	21	23	Feminine
27	Logical	2	3	7	60	11	7	9	Neutral
28	Conceited	16	13	16	48	3	2	2	Masculine

NOTE: Numbers may not add to 100 because of rounding.

AD-A075 592 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL--ETC F/G 5/9
BEHAVIORAL FACTORS AFFECTING THE INTEGRATION OF WOMEN INTO AIR --ETC(U)
SEP 79 G S CARON , L W EMMELHAINZ

UNCLASSIFIED AFIT-LSSR-14-79B NL

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The traits of emotional, gentle and tactful were considered feminine characteristics. Submissiveness, although loading nearly equally between feminine and equality, was interpreted as a perceived female trait. The women's evaluations of these four traits were consistent with the societal classification identified in Chapter II.

The only trait which clearly loaded as a male trait was conceit. This trait was considered highly undesirable by the women, and may have been considered male because of the women's desire not to be associated with that trait.

Of the five traits considered the most desirable in a coworker, the women considered four to be neutral. (See Table 5.) These four were ambitious, independent, self-confident, and logical. The fifth trait, tactful, was considered a feminine characteristic. The two traits considered desirable included independence, which the women considered neutral, and gentle, which they considered a feminine trait. Of the traits considered least desirable, two, emotional and submissiveness, were considered feminine by the women. Conceited was considered masculine.

The women's responses indicated a rejection of the stereotype of role definition. The women considered independent, competitive, self-confident, and logical as traits equally assignable to men or women, rather than as the masculine traits they have normally been considered. Traits

TABLE 5

DESIRABILITY OF CHARACTERISTICS

Characteristic	Desirability	Masculine/ Feminine/ Either Sex
Ambitious	Most desirable	Either sex
Independent	Most desirable	Either sex
Emotional	Less desirable	Feminine
Submissive	Less desirable	Feminine
Competitive	Desirable	Either sex
Self-confident	Most desirable	Either sex
Tactful	Most desirable	Feminine
Gentle	Desirable	Feminine
Logical	Most desirable	Either sex
Conceited	Least desirable	Masculine

which these women classified as feminine were sometimes desirable in a coworker (tactful and gentle) and were sometimes not desirable (emotional and submissive). No traits considered masculine by either the women or the literature were considered less than desirable in a craft skill coworker.

The rejection of the role definition stereotype was consistent with the earlier rejection of the stereotypes negative assessment of competency, supervisory overprotection, and physical and operational job standards. It was also logical that women working in these career fields would not support a position where the most desirable traits would be masculine in nature. It could also

be assumed that women setting the example in the traditionally all-male career fields would not likely evaluate themselves as typical females. This analysis suggested that women working in these AFSCs would perceive themselves as possessing some traits which would normally be considered masculine, and their coworkers would be perceived as possessing some typically female characteristics. This would facilitate the job socialization process. A more detailed test of this hypothesis should be developed in future studies, particularly to ascertain whether men share the same opinions.

Relationships Among the Five Factors

As a result of the definitions developed for the five factors, a logical grouping was developed for accomplishing a canonical correlation to determine whether Cook and Wilkey's relationship between stereotypes and job socialization factors would hold with the restructured variables. The five factors readily divided into two groups for this analysis.

The woman's ability to do the job (factor one) represented her perceptions of the three stereotypes of overprotection, negative assessment of competency, and physical and operational job standards. The questions representing the traits desired in a coworker (factor five) represented the stereotype of role definition. The responses

to both factors represented a rejection of those stereotypes. These two factors represent the role stereotype side of the canonical equation.

The factors of supervisory treatment (factor two), job satisfaction (factor three) and coworker relations (factor four) all corresponded to job socialization factors. These three factors represented the other side of the canonical equation.

The results of the canonical correlation are shown in Table 6 and are compared with the results of Cook and Wilkey's originally structured variables shown in Table 7.

TABLE 6

RESTRUCTURED CANONICAL CORRELATION

Canonical Variate Set	Eigenvalue	Canonical R	Chi Square	Significance
1	0.15308	0.39125	282.9	0.00
2	0.00560	0.07486	9.3	0.01

TABLE 7

COOK AND WILKEY CANONICAL CORRELATION

Canonical Variate Set	Eigenvalue	Canonical R	Chi Square	Significance
1	.3875	.6225	833.961	.000
2	.0519	.2277	82.331	.000

The results of the canonical correlation supported the logical grouping of the two sets of factors and showed that the stereotype factors were related to the job socialization factors. As shown in Appendix K, in the first canonical variate set the woman's perception of her ability to perform in the task environment was strongly related to job satisfaction and supervisory treatment. The second canonical variate set, although not as strong as the first, demonstrated that the traits desirable in a coworker were clearly related to coworker relations and supervisory treatment. It also showed that the desirable traits factor had almost no relationship to job satisfaction.

These results were consistent with Cook and Wilkey's conclusion that the level of stereotypic attitudes perceived to exist was related statistically to the perceptions of job socialization. The reduced amount of variance explained by the restructured factors was caused by the elimination of the redundancy among the Cook and Wilkey factors. Statistical significance was retained by the restructured factors, confirming Cook and Wilkey's relationship between role stereotypes and job socialization.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDY

The increasing integration of women in the Air Force, in terms of both numbers and the variety of positions in which they serve, creates a new and changing work environment in many Air Force work specialties. This change is most apparent in previously all male job specialties where job standards, equipment, and tools were designed for use by men, and therefore match the average male strength, size, and stamina characteristics. It is within these specialties that the greatest challenge exists for Air Force managers. A review of the literature on the integration of women into these work specialties, both in the military and civilian environment, indicated that role stereotypes have a significant impact upon the socialization of women in the work environment. This in turn affects job productivity.

A previous study by Cook and Wilkey (14) investigated:

1. Whether or not Air Force enlisted women employed in selected craft skills perceived the existence of role stereotypes, and

2. The degree of impact these role stereotypes have on the enlisted womens' perception of their job socialization (14:92).

Although the Cook and Wilkey research generated a large data base, the data were not thoroughly analyzed to determine the specific behavioral factors which affect the job socialization process. The present research effort investigated two research propositions.

Proposition 1. The Cook and Wilkey stereotype and job socialization factors were created from items used in previous instruments as well as logical evaluations of the literature. A more complete definition of the stereotypes and job socialization factors could be developed in three ways. First, factor analysis can be applied to validate the questionnaire developed a priori by Cook and Wilkey. Second, the factors can be restructured (altering which questions are grouped with each variable) as necessary, according to the information content of each question. Third, a complete content analysis can be accomplished of these quantitative answers as well as the open-ended responses which compose the available data from women in male-dominated Air Force craft skills.

The first proposition was accomplished. Five factors were identified and defined. These variables were derived using factor and content analysis. The data were analyzed objectively through factor analysis. Factors were

formed based on their strong loadings to factors and their content consistency without regard to the a priori factors constructed by Cook and Wilkey. The factors "ability" and "desirable traits" were defined as stereotype factors. "Supervisory treatment," "job satisfaction," and "coworker relations" were independently defined as job socialization factors.

Proposition 2. The restructuring of the stereotypes and job socialization variables in proposition (1) will not invalidate the findings of the Cook and Wilkey thesis, but will aid in interpreting and applying the information contained in the data base.

This research did not invalidate the relationship identified by Cook and Wilkey between the stereotypes and the job socialization variables. The research expanded the relationship beyond that found in the literature to show that the rejection of role stereotypes is related to a positive environment created by the job socialization process. A summary of the research findings follows.

Research Summary

The large data base generated by Cook and Wilkey was analyzed using the techniques of factor and content analysis to form new factors. These new factors were then defined and separated into the role stereotypes and job socialization categories. These categories of factors

were then compared using canonical correlation to determine whether the relationship between role stereotypes and job socialization identified by Cook and Wilkey for enlisted women in the Air Force craft skills existed for the newly constructed variables.

The analysis of the data showed that the enlisted women strongly reject the stereotype of supervisor overprotection, of a negative assessment of competency, and of physical and operational job standards limiting their ability to work in the craft skill AFSC. The women strongly agreed that they had the ability to function effectively in this environment. Women perceived themselves as having sufficient strength, size, and stamina to do the job required of them, but also recognized that the job required more from them physically than it did for their male counterparts.

The women perceived that their supervisors treated them fairly and equally, further creating a favorable climate for job socialization. The supervisors apparently generally accepted the women and provided an atmosphere of cooperation and friendliness. The women rejected the stereotype of being overprotected by their supervisors, but indicated that coworkers sometimes were protective to the point of interfering with the woman's work effort.

The women considered their job challenging, and indicated that it was satisfying in that it allowed them

to take pride in their accomplishments. These women also believe, however, that at times their jobs were boring, that they were not recognized for work well done, and that frequently the job failed to fully use their abilities. Although approximately half of the women were dissatisfied with their AFSCs, only a fourth of them would have left the Air Force if given the opportunity.

The women perceived that their male coworkers generally subscribe to a stereotypic view of women in the craft skills, but that this bias was not applied to the women as specific individuals. Although the male coworkers were friendly, cooperative, and accepting of the women, the men were perceived as not likely to consider women as professionals or equals in the craft skills.

Traits considered desirable in a coworker included self confidence, high levels of logic and tact, ambition, independence, competitiveness, and gentleness. Being conceited, emotional, and/or submissive were considered undesirable. When applying these traits to a masculine or feminine orientation, however, the women rejected the typical stereotype. They considered the traits for an ideal coworker to be applicable to either a male or female. The traits they deleted from an ideal coworker included some traits which were considered feminine and some considered masculine. This suggests that the women perceived

that either sex should possess the same general characteristics to be successful in the field.

The five factors logically combined into two groups for determining whether the canonical correlation identified by Cook and Wilkey continued to exist between the two groups of variables. The woman's ability to do the job (factor one) and the desirable traits (factor five) represented the stereotypes set. Supervisory treatment (factor two), job satisfaction (factor three) and coworker relations (factor four) represented the job socialization set.

A relationship was found to exist between the two sets of factors. The first canonical variate set explained 15 percent of the variance of the data base with a level of confidence of .999+. The strongest relationship indicated that the woman's perception of her ability to perform in the task environment was strongly related to her job satisfaction and supervisory treatment. A weaker, but still significant second canonical set demonstrated that traits desirable in a coworker were clearly related to coworker relations and supervisory treatment. This second set also showed that the desirability trait factor had almost no relationship to job satisfaction.

Conclusions

The Cook and Wilkey research suggested that the problems perceived by women working in the Air Force craft skills

are "varied, complex, and not easily resolved [14:102]." This research effort adds further support to that finding. While it is true that a woman when working in the craft skills may experience problems which are varied and complex, it is also true that a man may encounter similar problems. The question investigated appears to be one of degree, not something unique to women.

The research supports a woman's image of the work environment in which the female perceives that she can do her tasks, does not receive preferential treatment, and is equal to her male coworkers.

Particularly noteworthy is the outstanding role the immediate supervisor appears to be performing in the work environment. The immediate supervisor (99 percent male) seems to be typically viewed simply as a coworker by the female respondents. It seems probable that the working supervisor in this study had only a year or two more time in the military than the female respondents. He therefore had not had an opportunity to build up a long history of all male work experience. It is also possible that he came from a civilian populace where his age group was more accustomed to or experienced with a greater female role in society. He basically had not had a chance to develop a historical perception of the "male" work environment, since this integrated work force was his first exposure to any work environment after school. More experienced supervisors

with a greater exposure to an all male work environment should be aware of the apparent ease with which the lower ranking working supervisor can accept the female in the work environment.

The immediate supervisor thus presents a positive force or buffer level assisting the integration of females into what was for more experienced supervisors an "all male specialty." As time passes and the immediate supervisor advances in rank and more females become supervisors, acceptance of females in the work environment will improve further.

This research showed that the women rejected traits which were traditionally considered sex-typed characteristics as being male or female. This may indicate that the Air Force enlisted woman is not representative of the female population as a whole. This rejection of traditionally female stereotypes may be due to the type of individual who would accept or volunteer to enter a previously all male military skill field.

Supervisors should be, and this research indicates they are, aware of this possible difference. Their female airmen may not be totally representative of the classically stereotyped female. As more females enter these craft fields the "oddity" of women in the Air Force craft skills will tend to diminish and possibly disappear. Certainly as the women become less of a minority in these craft skills, their abilities will have to be relied on by the supervisors.

This process will be expedited by the redesign of job standards, clothing, and tools to be more easily used by the women, and by females taking on more supervisory and managerial duties.

This evolution will be reflected in both the civilian and military work forces. However, there is one difference of extreme importance between the civilian and military work forces. The distinction lies with the very nature of the Air Force, Navy and Army. The civilian work force does not participate in combat or perform their jobs on a battle field. By 1984, many of the units within our armed forces could be as much as 20 percent female. Because this is a recent evolution, the majority of the new female recruits will be concentrated in the lower ranks which accomplish the majority of the "hands on" work within their respective AFSCs. This situation poses some potentially serious problems to defense planners.

The first question is whether this new work force can surge to the requirements of a war situation. This research indicated that women felt they could do their job as well as men, but that they had to put more effort into the work. The women felt the job was less demanding than they thought, and in fact were sometimes bored. The question which arises occurs when a female who is working to some degree harder than a male is required to work at a maximum pace for several days with few, infrequent, or no

rest periods. For example, an aircraft maintenance unit might be manned with ten males and ten females in the junior rank structure for a specific AFSC. The research showed that at a normal pace the female members report they can accomplish their tasks, but it requires more effort than their male counterparts. If the unit must support a maximum surge, it may not be valid to plan on twenty "man days" of maximum effort available. The total work which could be accomplished may be somewhat reduced from previous planning factors. The answers to this question is beyond the bounds of this research, but defense planners should consider the unit surge capacity in light of the increasing proportion of females in the working ranks.

A more important question is the effect upon the combat forces if this subpopulation of females, approximately 20 percent of our total force and possibly 50 percent of the junior ranks, were suddenly withdrawn from the combat units in a time of crisis. For example, in the event of a tactical war the American public might view on national television numbers of female casualties being shipped back to the United States. Would the American public tolerate the situation continuing? The American culture has, over many thousands of years, developed at least a limited tolerance for viewing the loss of male soldiers. In some cases the literature and arts have depicted this death as patriotic and heroic. However, the

American culture does not contain any such acceptance of female combat losses. While Europe has a history of civilian female combat losses, with rare exceptions the American public is completely unexposed to such eventualities. No one can predict the American public's reaction to a daughter, wife, and mother dieing in combat. The effect of female combat losses would likely be magnified through television interviews with those who have lost a daughter or wife, and with pictures of three and four year old children who lost a mother. Congress and or the President might well be forced through public pressure to bring the women home. The loss of this large proportion of the military combat force could cripple its combat capability.

This research has concluded that with only minor changes in job standard, tools, equipment, and clothing the total and unrestricted integration of females into our armed forces is possible. Such an integration, to include combat positions, cannot be rejected for any physical, environmental, or psychological reason found within the study. The question is not whether female soldiers can do the job, but rather the American public's willingness to allow them to do so. This issue must be addressed either prior to or because of unrestricted integration.

Suggestions for Further Study

The findings of Cook and Wilkey and of this research effort are based upon the perception of women alone. It is also important to note that this group of women were the ice breakers--the first in the previously all male work environment. Today both male and female airmen arrive at their first duty section to find an already reasonably well integrated work environment. It is logical to assume that an evolution has occurred where (1) the stereotype of female has changed somewhat to include work in the craft skills, (2) male coworkers who now come on active duty find an already partially integrated work environment, accepting female coworkers as "normal," and (3) the elimination of problem areas through improved job standards, equipment, tool, and uniform design is progressing.

A second survey should be administered to both males and females in the craft specialties to ascertain (1) the effects of role stereotypes and job socialization over time, and (2) if difficulties which the females report with these specialties are also reported by male respondees. This survey would also establish a baseline for a male/female comparison.

As mentioned earlier in this chapter, an analysis should be accomplished to determine the effects of unrestricted integration of women into the armed forces, to include combat specialties. Specifically, studies should

investigate (1) if the female portion of the armed forces can surge to the same level of continuous work as is expected of the male portion; (2) if the American public would tolerate female combat casualties; and (3) the probable effect on the armed forces if the female subpopulation was withdrawn suddenly from a committed combat force. Appropriate tests should follow these studies.

There is a physical difference in height, weight, and strength between the average female and the average male. It is apparent that, as females take on an increasing proportion of the work in the craft skills, system designers must consider this new composite of the average worker. The systems must be designed for serviceability and maintainability by a working force of up to 50 percent females. A future study could define the need for this change in design concept by evaluating the maintenance being performed on existing systems. If a need is established for a revision in design criteria for maintainability and serviceability, specific physical criteria should be established which would apply to a mixed, male and female work force.

Final Thoughts

This study revealed no real problem which would restrict further integration of women into the craft skills and into any AFSC. The researchers believe the growing

importance of women in the Air Force is part of an evolutionary process which must eventually lead to the unrestricted and total integration of women in the armed forces. The legal restriction against the use of women in combat roles will almost certainly be removed as this evolutionary process continues. The test of this nation's armed forces will come, as it does with any new weapon system, when these women must prove themselves in combat for the first time. With better tools, equipment and clothing, there is little doubt that these female soldiers will perform well. The true issue, still undecided, is whether this evolutionary process will be paralleled by an evolution of attitudes in the minds of the American public.

APPENDICES

APPENDIX A

COOK AND WILKEY QUESTIONNAIRE

JOB SURVEY QUESTIONNAIRE

This instrument is designed to collect information on your views of Air Force life and your relationships with the people you work with. Please read each question carefully and respond in the manner indicated by the instructions above each group of questions. Then transfer your responses to the enclosed scan answer sheet using a soft lead #1 or #2 pencil. Please do not use ballpoint or felt-tipped pens. When you have completely transferred and checked your responses, please include both the questionnaire and the scan answer sheet in the stamped, pre-addressed envelope and put it in the mail. Please have your response in the mail within one week of receiving this questionnaire. Your cooperation is greatly appreciated.

Please provide the following background information.

1. What is your present rank?

   [A] E-1 [B] E-2 [C] E-3 [D] E-4 [E] E-5

   [F] E-6 [G] E-7 [H] E-8 [I] E-9

2. After basic training, what type of training/assignment did you receive?

   [A] By-Pass [C] Technical School

   [B] Direct Duty Assignment [D] Special Project

3. How many years total active federal military service have you completed?

   [A] Less than 1 year [G] 9 - 12 years

   [B] 1 year [H] 13 - 16 years

   [C] 2 years [I] 17 - 20 years

   [D] 3 years [J] 21 - 24 years

   [E] 4 years [K] More than 24 years

   [F] 5 - 8 years

4. How long have you been on your current job?

   [A] Less than 1 month [D] 13 - 18 months

   [B] 1 - 6 months [E] 19 - 24 months

   [C] 7 - 12 months [F] More than 2 years

5. Indicate your current career field from the following list:

   [A] Communications-Electronics 30XXX

   [B] Missile Electronics Maintenance 31XXX

   [C] Avionics Systems Specialties 32XXX

   [D] Aircraft Systems Maintenance 42XXX

   [E] Aircraft Maintenance 43XXX

   [F] Missile Maintenance 44XXX

   [G] Munitions and Weapons Maintenance 46XXX

   [H] Vehicle Maintenance 47XXX

   [I] Metal Working 53XXX

   [J] Mechanical/Electrical 54XXX

   [K] Structural/Pavement 55XXX

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USAF SCN 77-46 (Expires 31 July 1977)

6. What is your present skill level?

[A] 1 [B] 3 [C] 5 [D] 7 [E] 9

7. What is your present command?

[A] MAC [B] TAC [C] SAC [D] ATC [E] AFSC [F] Other

8. What was the last level of education that you completed?

[A] 9th grade or less
[B] 10th grade
[C] 11th grade
[D] 12th grade, high school graduate
[E] GED high school graduate
[F] One year of college
[G] Two years of college
[H] Three years of college
[I] No degree, four years of college
[J] Bachelor's degree (BA, BS)
[K] Master's degree (MA, MS)
[L] Doctorate (M.D., Ph.D. or equivalent)

9. What is your current marital status?

[A] Married
[B] Divorced
[C] Separated
[D] Widowed
[E] Single

10. How many children do you have?

[A] None
[B] One
[C] Two
[D] Three
[E] Four or more

11. Sex: [A] Female [B] Male

12. Which one of the following do you consider yourself?

[A] Black/Negro
[B] Spanish or Mexican American
[C] Puerto Rican
[D] American Indian
[E] Oriental
[F] White
[G] Other

13. Is your immediate supervisor male/female, military/civilian?

[A] Female, Civilian
[B] Female, Military
[C] Male, Civilian
[D] Male, Military

14. Which statement describes your immediate supervisor in giving recognition for a job well done?

[A] Gives about the same recognition to both males and females for same level of performance.

[B] Gives more recognition for same level of performance to females than males

[C] Gives more recognition for same level of performance to males than females

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For each situation you will be asked to indicate which of the two people would feel unhappier about the failure. In doing this try to think about the consequences of the failure for each person and remember that the consequences of failure are not always entirely negative. In some cases, a person might feel unhappy but also secretly a bit relieved about failure. For each situation, rate how unhappy you think <u>that</u> person would be, using the scales provided.

15. You and a male coworker did not get promoted. Which of you will be most unhappy about not being selected?

		You						
Extremely unhappy	A	B	C	D	E	F	G	Not unhappy
	H	I	J	K	L	M	N	
	Male Coworker							

16. You and a male coworker have been competing for a position of higher responsibility. Which of you will be most unhappy about not being selected?

		You						
Not unhappy	A	B	C	D	E	F	G	Extremely unhappy
	H	I	J	K	L	M	N	
	Male Coworker							

17. You and a male coworker both failed a quality control evaluation. Who would feel most unhappy about the failure?

		You						
Extremely unhappy	A	B	C	D	E	F	G	Not unhappy
	H	I	J	K	L	M	N	
	Male Coworker							

18. You and a male coworker were in the final competition for Airman/NCO of the Quarter. Who will feel more unhappy about not being selected?

		You						
Not unhappy	A	B	C	D	E	F	G	Extremely unhappy
	H	I	J	K	L	M	N	
	Male Coworker							

Evaluate each of the following characteristics as being more masculine or feminine.

19.	Ambitious	Masculine	A	B	C	D	E	F	G	Feminine
20.	Independent	Masculine	A	B	C	D	E	F	G	Feminine
21.	Emotional	Masculine	A	B	C	D	E	F	G	Feminine
22.	Submissive	Masculine	A	B	C	D	E	F	G	Feminine
23.	Competitive	Masculine	A	B	C	D	E	F	G	Feminine
24.	Self-confident	Masculine	A	B	C	D	E	F	G	Feminine
25.	Tactful.	Masculine	A	B	C	D	E	F	G	Feminine
26.	Gentle.	Masculine	A	B	C	D	E	F	G	Feminine
27.	Logical.	Masculine	A	B	C	D	E	F	G	Feminine
28.	Conceited.	Masculine	A	B	C	D	E	F	G	Feminine

In your opinion, how would male coworkers classify women in the following categories.

29.	As a professional working woman.	Never	A	B	C	D	E	F	G	Always
30.	As an equal working partner.	Never	A	B	C	D	E	F	G	Always
31.	As "one of those pushy WAFs."	Never	A	B	C	D	E	F	G	Always
32.	As a woman who is working until she can find a husband.	Never	A	B	C	D	E	F	G	Always
33.	As a "Women's Libber."	Never	A	B	C	D	E	F	G	Always
34.	As a morale booster to the unit.	Never	A	B	C	D	E	F	G	Always

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Use the responses listed below to describe how often each of these factors applies to your job in the Air Force.

35.	Challenging.	Always	A B C D E F G	Never
36.	Recognized for work well done.	Always	A B C D E F G	Never
37.	Frustrating.	Always	A B C D E F G	Never
38.	Chance to fully use my abilities.	Always	A B C D E F G	Never
39.	Gives me a sense of accomplishment.	Always	A B C D E F G	Never
40.	Workload too heavy.	Always	A B C D E F G	Never
41.	Boring.	Always	A B C D E F G	Never
42.	Gives me a sense of pride.	Always	A B C D E F G	Never

Use the responses below to indicate how strongly you agree or disagree with each of the statements listed.

43.	Women, because they are generally shorter than most men, are at a disadvantage in this AFSC.	Strongly agree	A B C D E F G	Strongly disagree
44.	My immediate supervisor accepts me very well now.	Strongly agree	A B C D E F G	Strongly disagree
45.	As a women, my technical work is judged less harshly than the work of my male coworkers.	Strongly agree	A B C D E F G	Strongly disagree
46.	QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.			
47.	My male coworkers accept my work as equal to theirs.	Strongly agree	A B C D E F G	Strongly disagree
48.	Given the opportunity I would leave the Air Force immediately.	Strongly agree	A B C D E F G	Strongly disagree
49.	I am restricted from doing certain tasks that are normally part of my career field.	Strongly agree	A B C D E F G	Strongly disagree
50.	I am strong enough to accomplish the tasks in my AFSC.	Strongly agree	A B C D E F G	Strongly disagree
51.	I do the same work as my male coworkers.	Strongly agree	A B C D E F G	Strongly disagree
52.	My supervisor is more reluctant to take disciplinary action against a women than against a man.	Strongly agree	A B C D E F G	Strongly disagree
53.	QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.			
54.	I can perform all assigned tasks in my AFSC.	Strongly agree	A B C D E F G	Strongly disagree
55.	My supervisor tries to keep me from experiencing the "unpleasant" portions of the job.	Strongly agree	A B C D E F G	Strongly disagree

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56.	Male coworkers who offer help feel "put down" if I don't accept.	Strongly agree	A B C D E F G Strongly disagree
57.	My skills are equal to those of male coworkers in my AFSC.	Strongly agree	A B C D E F G Strongly disagree
58.	The workload in my AFSC is heavier than I expected.	Strongly agree	A B C D E F G Strongly disagree
59.	QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.		
60.	I enjoy being in the U.S. Air Force.	Strongly agree	A B C D E F G Strongly disagree
61.	My male coworkers have trust and confidence in my technical abilities.	Strongly agree	A B C D E F G Strongly disagree
62.	The equipment I am expected to work with is too bulky for me.	Strongly agree	A B C D E F G Strongly disagree
63.	I am offered assistance on the job when I don't need help.	Strongly agree	A B C D E F G Strongly disagree
64.	My assigned AFSC is similar to my preferred AFSC.	Strongly agree	A B C D E F G Strongly disagree
65.	My supervisor judges my work more harshly because I am a woman.	Strongly agree	A B C D E F G Strongly disagree
66.	QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.		
67.	My work is more reliable than that of my male coworkers.	Strongly agree	A B C D E F G Strongly disagree
68.	Given the opportunity, I would change to another career field.	Strongly agree	A B C D E F G Strongly disagree
69.	I need help to do tasks that typically would take only one man to accomplish.	Strongly agree	A B C D E F G Strongly disagree
70.	When technical problems occur in my AFSC, my opinions are sought by my coworkers.	Strongly agree	A B C D E F G Strongly disagree
71.	Male coworkers help me lift heavy objects more than they help men.	Strongly agree	A B C D E F G Strongly disagree
72.	I find that my supervisor makes allowances for me that he does not make for males under his supervision.	Strongly agree	A B C D E F G Strongly disagree
73.	I can avoid unwelcome attention on the job by dressing unattractively.	Strongly agree	A B C D E F G Strongly disagree
74.	QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.		
75.	The safety equipment/clothing provided for my job is inappropriate or unavailable for me.	Strongly agree	A B C D E F G Strongly disagree
76.	I get preferential treatment in the assignment of hazardous, heavy, dirty, work	Strongly agree	A B C D E F G Strongly disagree

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77. I would advise other women to join the Air Force. Strongly agree [A B C D E F G] Strongly disagree

78. In trying to offer assistance, male coworkers frequently interfere with my work effort. Strongly agree [A B C D E F G] Strongly disagree

79. I am given more responsibility than male coworkers in my AFSC. Strongly agree [A B C D E F G] Strongly disagree

80. QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.

81. The tools I am expected to use are too bulky and heavy for me. Strongly agree [A B C D E F G] Strongly disagree

82. I am required to perform the full range of tasks associated with my AFSC. Strongly agree [A B C D E F G] Strongly disagree

83. I believe that there are tasks in this AFSC that should be performed by men, not women. Strongly agree [A B C D E F G] Strongly disagree

84. I share equally in the shift work assignments. Strongly agree [A B C D E F G] Strongly disagree

85. QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.

86. My supervisor has confidence in my ability to perform the tasks in my AFSC. Strongly agree [A B C D E F G] Strongly disagree

87. My AFSC is more physically demanding for me than for a man. Strongly agree [A B C D E F G] Strongly disagree

88. QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.

89. I am satisfied with my AFSC. Strongly agree [A B C D E F G] Strongly disagree

90. Men are more capable than women in my AFSC. Strongly agree [A B C D E F G] Strongly disagree

91. QUESTION DELETED. PLEASE MARK RESPONSE "A" ON THE ANSWER SHEET.

92. I have the stamina needed to accomplish the tasks in my AFSC. Strongly agree [A B C D E F G] Strongly disagree

93. My section's overall output has decreased as a result of males helping female coworkers. Strongly agree [A B C D E F G] Strongly disagree

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Indicate how often each of these traits applies to your male coworkers.

94.	Friendly	Always	A B C D E F G	Never
95.	Uncooperative.	Always	A B C D E F G	Never
96.	Have attitudes similar to mine.	Always	A B C D E F G	Never
97.	Accept me.	Always	A B C D E F G	Never
98.	Bother me while I work.	Always	A B C D E F G	Never
99.	Are hostile to women in the same job.	Always	A B C D E F G	Never

Use the responses below to indicate how each description applies to your supervisor.

100.	Listens to my suggestions.	Strongly agree	A B C D E F G	Strongly disagree
101.	Thinks of people as machines rather than human beings.	Strongly agree	A B C D E F G	Strongly disagree
102.	Patient.	Strongly agree	A B C D E F G	Strongly disagree
103.	Treats women less fairly than men on the job.	Strongly agree	A B C D E F G	Strongly disagree
104.	Hinders rather than helps.	Strongly agree	A B C D E F G	Strongly disagree

Indicate the desirability of the following characteristics which you might observe in a coworker:

105.	Ambitious	Most desirable	A B C D E F G	Least desirable
106.	Independent	Most desirable	A B C D E F G	Least desirable
107.	Emotional	Most desirable	A B C D E F G	Least desirable
108.	Submissive	Most desirable	A B C D E F G	Least desirable
109.	Competitive	Most desirable	A B C D E F G	Least desirable
110.	Self-Confident	Most desirable	A B C D E F G	Least desirable
111.	Tactful	Most desirable	A B C D E F G	Least desirable
112.	Gentle	Most desirable	A B C D E F G	Least desirable
113.	Logical	Most desirable	A B C D E F G	Least desirable
114.	Conceited	Most desirable	A B C D E F G	Least desirable

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For each situation you will be asked to indicate which of the two people would feel happier about the success. In doing this, try to think about the consequences of success for each person and remember that the consequences of success are not always entirely positive; there can be negative side-effects as well. In some cases, a person might feel happy but also secretly a bit apprehensive about succeeding. For each situation rate how happy you think that person would be, using the scales provided.

115. You and a male coworker have been selected for below-the-zone promotion. Which of you will be happier with this promotion?

Not happy at all — Male Coworker: A B C D E F G — Extremely happy
You: H I J K L M N

116. You and a male coworker have been nominated for Airman/NCO of the Quarter. Who will be happier about being selected?

Not happy at all — Male Coworker: A B C D E F G — Extremely happy
You: H I J K L M N

117. You and a male coworker are being considered for a position of increased responsibility. Which of you will be happier with being selected for this position?

Not happy at all — Male Coworker: A B C D E F G — Extremely happy
You: H I J K L M N

118. You and a male coworker have had suggestions accepted which may lead to a monitary award. Which of you will be happier about the increased identification coming from your suggestion's acceptance?

Extremely happy — Male Coworker: A B C D E F G — Not happy at all
You: H I J K L M N

Please identify any other concerns which may affect your views of Air Force life.

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APPENDIX B

ORIGINAL "A PRIORI" COOK AND WILKEY VARIABLE CONSTRUCTS

COMPETENCY

My skills are equal to those of male coworkers in my AFSC.	Strongly agree	A B C D E F G Strongly disagree
I am given more responsibility than male coworkers in my AFSC.	Strongly agree	A B C D E F G Strongly disagree
I can perform all assigned tasks in my AFSC.	Strongly agree	A B C D E F G Strongly disagree
I do the same work as my male coworkers.	Strongly agree	A B C D E F G Strongly disagree
My male coworkers accept my work as equal to theirs.	Strongly agree	A B C D E F G Strongly disagree
My supervisor has confidence in my ability to perform the tasks in my AFSC.	Strongly agree	A B C D E F G Strongly disagree
Men are more capable than women in my AFSC.	Strongly agree	A B C D E F G Strongly disagree
When technical problems occur in my AFSC, my opinions are sought by my coworkers.	Strongly agree	A B C D E F G Strongly disagree
My male coworkers have trust and confidence in my technical abilities.	Strongly agree	A B C D E F G Strongly disagree
My work is more reliable than that of my male coworkers.	Strongly agree	A B C D E F G Strongly disagree

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JOB SATISFACTION

I am satisfied with my AFSC.	Strongly agree	A B C D E F G	Strongly disagree
I enjoy being in the U.S. Air Force.	Strongly agree	A B C D E F G	Strongly disagree
My assigned AFSC is similar to my preferred AFSC.	Strongly agree	A B C D E F G	Strongly disagree
The information I received about my career field before entering the Air Force was accurate.	Strongly agree	A B C D E F G	Strongly disagree
Given the opportunity, I would change to another career field.	Strongly agree	A B C D E F G	Strongly disagree
I would advise other women to join the Air Force.	Strongly agree	A B C D E F G	Strongly disagree
Given the opportunity I would leave the Air Force immediately.	Strongly agree	A B C D E F G	Strongly disagree

Use the responses listed below to describe how often each of these factors applies to your job in the Air Force.

Challenging	Always	A B C D E F G	Never
Recognized for work well done	Always	A B C D E F G	Never
Frustrating	Always	A B C D E F G	Never
Chance to fully use my abilities	Always	A B C D E F G	Never
Gives me a sense of accomplishment	Always	A B C D E F G	Never
Workload too heavy	Always	A B C D E F G	Never
Boring	Always	A B C D E F G	Never
Gives me a sense of pride	Always	A B C D E F G	Never

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ROLE DEFINITION/PRESCRIPTION

Indicate the desirability of the following characterisitcs which you might observe in a coworker:

Ambitious	Most desirable	A	B	C	D	E	F	G	Least desirable
Independent	Most desirable	A	B	C	D	E	F	G	Least desirable
Emotional	Most desirable	A	B	C	D	E	F	G	Least desirable
Submissive	Most desirable	A	B	C	D	E	F	G	Least desirable
Competitive	Most desirable	A	B	C	D	E	F	G	Least desirable
Self-confident	Most desirable	A	B	C	D	E	F	G	Least desirable
Tactful	Most desirable	A	B	C	D	E	F	G	Least desirable
Gentle	Most desirable	A	B	C	D	E	F	G	Least desirable
Logical	Most desirable	A	B	C	D	E	F	G	Least desirable
Conceited	Most desirable	A	B	C	D	E	F	G	Least desirable

Evaluate each of the following characteristics as being more masculine or feminine.

Ambitious	Masculine	A	B	C	D	E	F	G	Feminine
Independent	Masculine	A	B	C	D	E	F	G	Feminine
Emotional	Masculine	A	B	C	D	E	F	G	Feminine
Submissive	Masculine	A	B	C	D	E	F	G	Feminine
Competitive	Masculine	A	B	C	D	E	F	G	Feminine
Self-confidenc	Masculine	A	B	C	D	E	F	G	Feminine
Tactful	Masculine	A	B	C	D	E	F	G	Feminine
Gentle	Masculine	A	B	C	D	E	F	G	Feminine
Logical	Masculine	A	B	C	D	E	F	G	Feminine
Conceited	Masculine	A	B	C	D	E	F	G	Feminine

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PHYSICAL AND OPERATIONAL JOB STANDARDS

I am strong enough to accomplish the tasks in my AFSC.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
I have the stamina needed to accomplish the tasks in my AFSC.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
The workload in my AFSC is heavier than I expected.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
My AFSC is more physically demanding for me than for a man.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
I need help to do tasks that typically would take only one man to accomplish.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
The equipment I am expected to work with is too bulky for me.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
The tools I am expected to use are too bulky and heavy for me.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
The safety equipment/clothing provided for my job is inappropriate or unavailable for me.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
I believe that there are tasks in this AFSC that should be performed by men, not women.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree
Women, because they are generally shorter than most men, are at a disadvantage in this AFSC.	Strongly agree	A	B	C	D	E	F	G	Strongly disagree

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OVERPROTECTIVENESS

Male coworkers help me lift heavy objects more than they help men.	Strongly agree	A B C D E F G Strongly disagree
My supervisor tries to keep me from experiencing the "unpleasant" portions of the job.	Strongly agree	A B C D E F G Strongly disagree
I share equally in the shift work assignments.	Strongly agree	A B C D E F G Strongly disagree
I get preferential treatment in the assignment of hazardous, heavy, dirty work.	Strongly agree	A B C D E F G Strongly disagree
I am offered assistance on the job when I don't need help.	Strongly agree	A B C D E F G Strongly disagree
Male coworkers who offer help feel "put down" if I don't accept.	Strongly agree	A B C D E F G Strongly disagree
As a women, my technical work is judged less harshly than the work of my male coworkers.	Strongly agree	A B C D E F G Strongly disagree
I am restricted from doing certain tasks that are normally part of my career field.	Strongly agree	A B C D E F G Strongly disagree
In trying to offer assistance, male coworkers frequently interfere with my work effort.	Strongly agree	A B C D E F G Strongly disagree
I am required to perform the full range of tasks associated with my AFSC.	Strongly agree	A B C D E F G Strongly disagree
My section's overall output has decreased as a result of males helping female coworkers.	Strongly agree	A B C D E F G Strongly disagree

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SUPERVISORY TREATMENT

Is your immediate supervisor male/female, military/civilian?

[A] Female, civilian

[B] Female, military

[C] Male, civilian

[D] Male, military

Which statement describes your immediate supervisor in giving recognition for a job well done?

[A] Gives about the same recognition to both males and females for same level of performance.

[B] Gives more recognition for same level of performance to females than males.

[C] Gives more recognition for same level of performance to males than females.

My supervisor judges my work more harshly because I am a woman.	Strongly agree	A B C D E F G	Strongly disagree
My immediate supervisor accepts me very well now.	Strongly agree	A B C D E F G	Strongly disagree
I find that my supervisor makes allowances for me that he does not make for males under his supervision.	Strongly agree	A B C D E F G	Strongly disagree
My supervisor is more reluctant to take disciplinary action against a women than against a man.	Strongly agree	A B C D E F G	Strongly disagree

Use the responses below to indicate how each description applies to your supervisor.

Listens to my suggestions.	Strongly agree	A B C D E F G	Strongly disagree
Thinks of people as machines rather than human beings.	Strongly agree	A B C D E F G	Strongly disagree
Patient.	Strongly agree	A B C D E F G	Strongly disagree
Treats women less fairly than men on the job.	Strongly agree	A B C D E F G	Strongly disagree
Hinders rather than helps.	Strongly agree	A B C D E F G	Strongly disagree

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COWORKER RELATIONS

Indicate how often each of these traits applies to your male coworkers.

a.	Friendly	Always	1 2 3 4 5 6 Never
b.	Uncooperative	Always	1 2 3 4 5 6 Never
c.	Have attitudes similar to mine	Always	1 2 3 4 5 6 Never
d.	Accept me	Always	1 2 3 4 5 6 Never
e.	Bother me while I work	Always	1 2 3 4 5 6 Never
f.	Are hostile to women in the same job.	Always	1 2 3 4 5 6 Never

In your opinion, how would male coworkers classify women in the following categories:

a.	As a professional working woman.	Never	1 2 3 4 5 6 Always
b.	As an equal working partner.	Never	1 2 3 4 5 6 Always
c.	As "one of those pushy WAFs."	Never	1 2 3 4 5 6 Always
d.	As a woman who is working until she can find a husband.	Never	1 2 3 4 5 6 Always
e.	As a "Women's Libber."	Never	1 2 3 4 5 6 Always
f.	As a morale booster to the unit.	Never	1 2 3 4 5 6 Always

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FEAR OF SUCCESS

For each situation you will be asked to indicate which of the two people would feel unhappier about the failure. In doing this try to think about the consequences of the failure for each person and remember that the consequences of failure are not always entirely negative. In some cases, a person might feel unhappy but also secretly a bit relieved about failure. For each situation rate how unhappy you think each person would be, using the the scales provided.

You and a male coworker did not get promoted. Which of you will be most unhappy about not being selected?

Extremely unhappy — You: A B C D E F G — Male Coworker: A B C D E F G — Not unhappy

You and a male coworker have been competing for a position of higher responsibility. Which of you will be most unhappy about not being selected?

Not unhappy — You: A B C D E F G — Male Coworker: A B C D E F G — Extremely happy

You and a male coworker both failed a quality control evaluation. Who would feel most unhappy about the failure?

Extremely unhappy — You: A B C D E F G — Male Coworker: A B C D E F G — Not unhappy

You and a male coworker were in the final competition for Airman/NCO of the Quarter. Who will feel more unhappy about not being selected?

Not unhappy — You: A B C D E F G — Male Coworker: A B C D E F G — Extremely unhappy

For each situation you will be asked to indicate which of the two people would feel happier about the success. In doing this, try to think about the consequences of the success for each person and remember that the consequences of success are not always entirely positive; there can be negative side-effects as well. In some cases, a person might feel happy but also secretly a bit apprehensive about succeeding. For each situation rate how happy you think each person would be using the scales provided.

You and a male coworker have been selected for below-the-zone promotion. Which of you will be happier with this promotion?

Not happy at all — Male Coworker: A B C D E F G — You: A B C D E F G — Extremely happy

You and a male coworker have been nominated for Airman/NCO of the Quarter. Who will be happier about being selected?

Not happy at all — Male Coworker: A B C D E F G — You: A B C D E F G — Extremely happy

You and a male coworker are being considered for a position of increased responsibility. Which of you will be happier with being selected for this position?

Not happy at all — Male Coworker: A B C D E F G — You: A B C D E F G — Extremely happy

You and a male coworker have had suggestions accepted which may lead to a monitary award. Which of you will be happier about the increased identification coming from your suggestion's acceptance?

Extremely happy — Male Coworker: A B C D E F G — You: A B C D E F G — Not happy at all

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APPENDIX C

COOK AND WILKEY CANONICAL CORRELATION MATRIX

TABLE 10

SIGNIFICANCE DATA FOR THE CANONICAL CORRELATION VARIATES: RELATIONSHIPS BETWEEN ROLE STEREOTYPES AND FACTORS OF SOCIALIZATION

Canonical Variate Set	Canonical R	Canonical R^2 (Eigenvalue)	Chi Square	DF	Significance
1	.6225	.3875	833.961	15	.000
2	.2277	.0519	82.331	8	.000

TABLE 11

CANONICAL CORRELATION COEFFICIENTS FOR THE ROLE STEREOTYPES AND SOCIALIZATION FACTORS

Variables of Criterion and Predictor Sets	Standardized Canonical Weights, or Canonical Coefficients	
	Canonical Variate Set 1	Canonical Variate Set 2
Predictor Set		
Supervisory Treatment	.4176	.7935
Job Satisfaction	-.6087	.9150
Coworker Relations	.2446	.2560
Criterion Set		
Physical & Operational Job Standards	.2784	-.6923
Competency	.5863	-.1327
Overprotection	.3065	.3957
Fear of Success	-.0990	.2408
Role Definition/ Prescription	-.1727	-.1585

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APPENDIX D

VARIMAX ROTATED FACTOR MATRIX

Question	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q019	0.07595	0.02909	-0.06635	-0.07089	0.04073
Q020	0.08626	-0.00150	0.00553	-0.07050	0.12141
Q021	-0.22659	0.11126	-0.03763	-0.06507	-0.00898
Q022	-0.16346	0.02753	0.04611	-0.02688	-0.12759
Q023	0.14307	0.00287	-0.01172	-0.06448	0.11804
Q024	0.08512	0.04860	0.03459	-0.03940	0.14242
Q025	-0.04003	0.01056	0.00914	-0.21028	-0.08430
Q026	-0.15702	0.03519	-0.02782	-0.16500	0.02856
Q027	0.06189	-0.00118	-0.01368	-0.19398	0.07934
Q028	-0.06517	0.01686	-0.01132	0.15862	-0.00695
Q029	0.09199	0.07329	-0.15487	0.52470	-0.04434
Q030	0.13852	0.08190	-0.13090	0.62488	-0.03657
Q031	0.08147	0.08122	-0.04832	0.59859	-0.01362
Q032	0.07253	0.02990	-0.06108	0.54227	0.06680
Q033	0.04397	-0.00184	-0.05337	0.50461	0.07443
Q034	-0.00455	0.08991	-0.11006	0.15211	-0.00146
Q035	-0.02826	-0.04601	0.70296	0.02216	0.02637
Q036	-0.01004	-0.35576	0.42009	-0.17965	0.06827
Q037	-0.15420	-0.07456	0.25819	-0.17793	-0.00641
Q038	-0.07205	-0.08583	0.68582	-0.08304	-0.01749
Q039	-0.11193	-0.12137	0.79841	-0.07751	0.03277
Q040	-0.34734	-0.06705	0.01165	-0.14137	0.11884
Q041	-0.08593	-0.06435	0.63908	-0.02657	0.02220
Q042	-0.14014	-0.13718	0.76729	-0.05601	0.01987
Q043	0.45994	0.04229	-0.03905	0.12396	-0.04756
Q044	0.10200	0.63292	-0.20925	0.20781	-0.04307
Q045	0.32327	0.04856	-0.01486	-0.02125	0.01592
Q047	0.24805	0.27682	-0.21994	0.43602	-0.07084
Q048	-0.10766	-0.11371	0.46745	-0.04249	0.08430
Q049	0.42637	0.17204	-0.13656	0.09927	0.00972
Q050	0.70085	0.01011	-0.20754	0.00765	-0.02195
Q051	0.54260	0.21072	-0.24228	-0.00921	-0.03443

Question	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q052	0.25238	0.17761	-0.01425	0.09721	0.02801
Q054	0.65363	0.08705	-0.24050	-0.00896	-0.06668
Q055	0.32981	0.15279	-0.02224	-0.01402	-0.03352
Q056	0.12886	0.17809	0.00390	0.24470	0.02335
Q057	0.53670	0.09789	-0.21641	-0.07056	-0.04977
Q058	0.48274	0.06555	-0.01634	0.07763	-0.08432
Q060	-0.05089	-0.10987	0.53342	0.00032	0.08338
Q061	0.27243	0.36864	-0.33558	0.29388	-0.02932
Q062	0.65055	0.03677	-0.13639	0.06475	-0.00706
Q063	0.06341	0.14848	0.07569	0.22646	0.06206
Q064	-0.35740	-0.06257	0.38375	0.00209	0.01140
Q065	0.09569	0.55034	-0.03509	0.34281	-0.07326
Q067	0.06495	-0.14372	-0.06898	-0.28579	0.00509
Q068	-0.39594	-0.08917	0.49598	-0.04124	-0.01689
Q069	0.69472	0.03722	-0.09316	0.05752	-0.02533
Q070	0.22260	0.25073	-0.28348	0.13227	0.01873
Q071	0.34272	-0.07904	-0.00667	-0.00130	0.08774
Q072	0.45221	0.12482	0.02437	0.04306	-0.03646
Q073	0.13169	0.10836	-0.02444	0.11771	-0.03621
Q075	0.18242	0.16005	-0.10167	0.18339	-0.00899
Q076	0.34671	0.14233	-0.02070	0.00913	-0.03127
Q077	-0.02581	-0.13678	0.40615	-0.06748	0.10776
Q078	0.12193	0.30536	0.01278	0.36744	0.01631
Q079	0.03975	-0.05924	-0.10871	-0.18865	0.05021
Q081	0.59509	0.12863	-0.12832	0.10205	-0.07981
Q082	0.28226	0.12282	-0.18275	-0.07341	-0.00360
Q083	0.68056	-0.03274	-0.15084	0.04811	-0.12190
Q084	0.25481	0.17652	-0.06595	-0.01426	-0.04631
Q086	0.25961	0.57325	-0.26600	0.11144	-0.00662
Q087	0.51843	-0.02905	0.00948	0.14500	0.03415
Q089	-0.42200	-0.11980	0.61831	-0.02631	-0.00087
Q090	0.66011	-0.02273	-0.05611	0.07103	-0.08209
Q092	0.63236	0.08382	-0.23624	0.02011	-0.06830

Question	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q093	0.32063	0.18902	0.01747	0.12604	-0.14535
Q094	0.05969	0.37653	-0.12276	0.33191	-0.16930
Q095	0.08111	0.34062	-0.07326	0.42127	-0.11110
Q096	0.08164	0.22288	-0.10388	0.28691	-0.09848
Q097	0.14555	0.42138	-0.16607	0.48817	-0.11351
Q098	0.15761	0.27180	-0.09296	0.31541	-0.05036
Q099	0.12569	0.32288	-0.08800	0.50625	-0.05684
Q100	0.13797	0.69307	-0.19072	0.08491	-0.09976
Q101	0.06782	0.63111	-0.13152	0.08120	-0.10105
Q102	0.06920	0.65910	-0.13658	0.05032	-0.08740
Q103	0.11117	0.74722	-0.09904	0.19096	-0.05958
Q104	0.07443	0.72051	-0.13658	0.09241	-0.04703
Q105	-0.09701	-0.09219	0.08848	-0.02358	0.67154
Q106	-0.01498	-0.02502	0.00666	-0.01466	0.50020
Q107	0.00988	0.11619	0.01617	0.02221	-0.16949
Q108	0.05463	0.05903	-0.00005	0.00111	-0.27510
Q109	-0.04141	-0.00190	0.11395	0.04272	0.29960
Q110	-0.08483	-0.08009	0.05398	0.03180	0.67239
Q111	-0.09333	-0.05403	0.03562	0.05458	0.69670
Q112	-0.05699	-0.02085	0.02507	-0.03608	0.49760
Q113	-0.08651	-0.06876	0.05514	-0.03443	0.73677
Q114	0.09968	0.04728	0.05081	-0.00380	-0.55013
Q014	-0.01186	0.37630	-0.08178	0.12117	-0.02797

APPENDIX E

SUMMARY TABULATION OF QUESTION PLACEMENT FOR THE RECONSTRUCTED VARIABLES

Question	Factor 1	2	3	4	5	Comment
14		X				
15-18						Deleted; fear of success
19-28						Deleted; low loadings
29-33				X		
34						Deleted; low loadings
35,36			X			
37						Deleted; low loadings
38, 39			X			
40	X					
41,42			X			
43	X					
44		X				
45	X					
46						No question in original questionnaire
47						Deleted; multiple factor loading
48			X			
49-51	X					
52						Deleted; low loadings
53						No question in original questionnaire
54,55	X					
56						Deleted; low loadings
57,58	X					
59						No question in original questionnaire
60			X			
61						Deleted; multiple factor loading
62	X					
63						Deleted; low loadings
64			X			
65		X				

Question	Factor 1	2	3	4	5	Comment
66						No question in original questionnaire
67						Deleted; low loadings
68			X			
69	X					
70						Deleted; low loadings
71,72	X					
73						Deleted; low loadings
74						No question in original questionnaire
75						Deleted; low loadings
76	X					
77			X			
78		X		X		Loaded to 4 for canonical correlation
79						Deleted; low loadings
80						No question in original questionnaire
81	X					
82						Deleted; low loadings
83	X					
84						Deleted; low loadings
85						No question in original questionnaire
86		X				
87	X					
88						No question in original questionnaire
89			X			
90	X					
91						No question in original questionnaire
92	X					
93						Deleted; multiple loading
94,95		X		X		Loaded to 4 for canonical correlation
96						Deleted; low loadings
97-99		X		X		Loaded to 4 for canonical correlation

Question	Factor 1	2	3	4	5	Comment
100-104		X				
105,106					X	
107,108						Deleted; low loadings
109-114					X	
115-118						Deleted; fear of success

APPENDIX F

RESPONSE FREQUENCIES TO FACTOR ONE QUESTIONS
PERCENTAGES OF TOTAL RESPONSES

		Factor One--Ability to do the job						
		1	2	3	4	5	6	7
	Question	Always						Never
40	Workload too heavy	3.2	6.1	9.4	26.1	14.7	22.1	18.2
		Strongly Agree						Strongly Disagree
43	Women, because they are generally shorter than most men, are not a disadvantage in this AFSC.	6.6	6.8	10.9	12.3	8.2	16.0	39.0
45	As a woman, my technical work is judged less harshly than the work of my male coworkers	3.2	3.7	6.5	11.3	9.8	20.5	44.9
49	I am restricted from doing certain tasks that are normally part of my career field.	9.8	6.6	6.8	12.8	6.6	16.0	41.0
50	I am strong enough to accomplish the tasks in my AFSC.	31.0	22.7	8.2	9.8	8.4	8.3	11.3
51	I do the same work as my male coworkers.	49.1	20.3	8.0	8.3	4.6	4.5	5.1
54	I can perform all assigned tasks in my AFSC.	29.4	23.7	9.5	12.3	8.0	7.0	9.8
55	My supervisor tries to keep me from experiencing the "unpleasant" portions of the job.	2.5	3.3	4.2	9.0	5.9	20.3	54.7
57	My skills are equal to those of male coworkers in my AFSC	35.8	22.8	9.9	11.3	7.7	6.8	5.3

Factor One--Ability to do the job (continued)

	Question	1 Strongly Agree	2	3	4	5	6	7 Strongly Disagree
58	The workload in my AFSC is heavier than I expected.	11.9	5.9	6.0	17.2	10.2	20.4	28.0
62	The equipment I am expected to work with is too bulky for me.	7.8	8.6	9.8	13.6	9.9	19.0	30.9
69	I need help to do tasks that typically would take only one man to accomplish.	8.8	7.9	10.7	12.2	6.3	19.7	34.2
71	Male coworkers help me lift heavy objects more than they help men.	26.0	20.0	15.6	11.2	6.2	9.1	11.7
72	I find that my supervisor makes allowances for me that he does not make for males under his supervision.	3.8	5.2	10.1	14.0	7.3	17.9	41.6
76	I get preferential treatment in this assignment of hazardous, heavy, dirty, work.	2.9	4.1	7.6	15.7	8.2	18.7	42.4
81	The tools I am expected to use are too bulky and heavy for me.	4.2	3.6	5.5	12.5	8.9	17.9	47.3
83	I believe there are tasks in this AFSC that should be performed by men, not women.	18.3	7.2	7.3	11.0	4.4	11.9	39.8

Factor One--Ability to do the job (continued)

	Question	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7
87	My AFSC is more physically demanding for me than for a man.	26.6	17.5	15.1	10.9	4.7	9.2	15.8
90	Men are more capable than women in my AFSC	20.5	8.7	11.2	13.2	5.8	13.9	26.6
92	I have the stanima needed to accomplish the tasks in my AFSC	40.5	23.2	10.6	10.6	5.0	4.6	5.3

NOTE: Percentages do not add to 100 because of missing responses and rounding.

Percentages are based on 1730 responses.

APPENDIX G

RESPONSE FREQUENCIES TO FACTOR TWO QUESTIONS
PERCENTAGES OF TOTAL RESPONSES

Factor Two--Supervisory treatment of women

	Question	About Same			More Female			More Male
14	In giving recognition for a job well done, my immediate supervisor gives:	86.6			2.3			9.9
		1	2	3	4	5	6	7
		Strongly Agree						Strongly Disagree
44	My immediate supervisor accepts me very well now.	38.4	21.7	10.8	13.2	6.4	5.4	3.9
65	My supervisor judges my work more harshly because I am a woman.	5.8	3.9	6.6	15.7	7.2	16.1	44.4
78	In trying to offer assistance, male coworkers frequently interfere with my work effort.	9.1	11.7	15.3	13.4	9.0	17.9	17.6
86	My supervisor has confidence in my ability to perform the tasks in my AFSC.	35.8	24.0	12.1	11.4	6.5	4.7	5.1
	Indicate how often each of these traits applies to your male coworkers:	Always						Never
94	Friendly	38.7	34.2	12.2	10.6	2.1	1.4	0.5
95	Uncooperative	0.9	4.2	8.7	16.0	14.3	33.0	22.7
97	Accept me	27.2	33.2	13.1	13.4	6.7	4.8	1.3

Factor Two--Supervisory treatment of women (continued)

	Question	1 Always	2	3	4	5	6	7 Never
98	Bothers me while I work	2.8	5.4	10.9	18.7	13.5	28.0	20.5
99	Are hostile to women in the same job.	2.2	7.2	12.6	16.4	10.9	23.8	26.7
	Use the responses below to indicate how each description applies to your supervisor:							
100	Listens to my suggestions	24.7	22.3	13.8	19.0	6.6	6.8	6.5
101	Things of people as machines rather than human beings	5.1	3.8	5.1	9.0	7.8	18.0	50.8
102	Patient	26.9	24.5	12.9	14.7	8.7	5.5	6.4
103	Treats women less fairly than men on the job	3.2	2.8	5.3	13.8	8.0	19.5	47.1
104	Hinders rather than helps	5.3	4.6	6.8	11.6	7.0	19.4	45.0

NOTE: Percentages do not add to 100 because of missing responses and rounding.

Percentages are based on 1730 responses.

APPENDIX H

RESPONSE FREQUENCIES TO FACTOR THREE QUESTIONS PERCENTAGES OF TOTAL RESPONSES

Factor Three--Job satisfaction

	Question	1 Always	2	3	4	5	6	7 Never
Factors which apply to your job:								
35	Challenging	18.9	20.6	20.6	19.8	8.7	7.2	4.2
36	Recognized for work well done	9.8	16.2	17.3	23.5	13.1	14.3	5.8
38	Chance to fully use my abilities	6.6	11.6	12.9	21.0	16.1	17.4	14.3
39	Gives me a sense of accomplishment	11.4	19.9	19.9	20.3	10.5	10.5	7.3
41	Boring	7.2	12.7	14.6	25.7	13.8	16.0	9.9
42	Gives me a sense of pride	15.3	20.2	17.2	22.8	8.8	9.4	6.2
		Strongly Agree						Strongly Disagree
48	Given the opportunity I would leave the Air Force immediately.	10.1	6.3	7.0	16.3	7.7	14.3	37.9
60	I enjoy being in the U.S. Air Force.	34.4	20.1	12.2	16.7	4.9	5.5	6.0
64	My assigned AFSC is similar to my preferred AFSC	29.0	7.9	4.3	14.9	3.8	7.3	32.4
68	Given the chance I would change career fields.	41.4	8.4	8.4	13.5	3.7	8.7	15.7

Factor Three--Job satisfaction (continued)

	Question	1 Strongly Agree	2	3	4	5	6	7 Strongly Disagree
77	I would advise other women to join the Air Force.	25.8	16.0	13.3	22.7	5.5	6.4	10.0
89	I am satisfied with my AFSC.	18.5	14.8	9.9	13.5	7.1	9.9	26.2

NOTE: Percentages do not add to 100 because of missing response and rounding.

Percentages are based on 1730 responses.

APPENDIX I

RESPONSE FREQUENCIES TO FACTOR FOUR QUESTIONS
PERCENTAGES OF TOTAL RESPONSES

Factor Four--Perceptions of male coworkers

	Question	1 Never	2	3	4	5	6	7 Always
	How would male coworkers classify women:							
29	As a professional working woman	8.5	17.2	24.2	28.0	11.3	7.2	3.0
30	As an equal working partner	11.7	19.4	25.7	19.0	9.5	9.3	5.0
31	As one of this pushy WAFs	11.7	19.2	12.0	22.5	17.6	10.8	5.6
32	As a woman who is working until she can find a husband	13.8	12.4	9.2	18.6	18.2	17.0	10.3
33	As a "women's libber"	6.5	7.6	9.2	21.3	20.5	21.4	13.1
78	In trying to help, male coworkers frequently interfere with my work effort.	Strongly Agree 9.1	11.7	15.3	19.4	9.0	17.9	Strongly Disagree 17.6
	Indicate how often each of these traits applies to your male coworkers:	Always						Never
94	Friendly	38.7	34.2	12.2	10.6	2.1	1.4	0.5
95	Uncooperative	0.9	4.2	8.7	16.0	14.3	33.0	22.7
97	Accept me	27.2	33.2	13.1	13.4	6.7	4.8	1.3

Factor Four--Perceptions of male coworkers (continued)

	Question	1 Always	2	3	4	5	6	7 Never
98	Bothers me while I work	2.8	5.4	10.9	18.7	13.5	28.0	20.5
99	Are hostile to women in the same job	2.2	7.2	12.6	16.4	10.9	23.8	26.7

NOTE: Percentages do not add to 100 because of missing responses and rounding.

Percentages are based on 1730 responses.

APPENDIX J

RESPONSE FREQUENCIES TO FACTOR FIVE QUESTIONS
PERCENTAGES OF TOTAL RESPONSES

		Factor Five--Desirable traits						
		1	2	3	4	5	6	7
	Question	Most Desirable						Least Desirable
	Indicate the desirability of the following characteristics which you might observe in a coworker:							
105	Ambitious	36.5	27.3	17.5	13.4	2.7	1.2	1.2
106	Independent	24.9	29.2	21.7	17.2	4.3	1.3	1.1
109	Competitive	18.3	22.4	22.0	22.7	5.9	4.3	4.0
110	Self-confident	48.0	29.3	10.4	8.8	1.6	1.0	0.5
111	Tactful	45.5	23.6	12.5	12.0	2.9	1.4	1.6
112	Gentle	19.0	19.7	21.8	27.0	6.4	2.9	2.8
113	Logical	50.3	24.5	10.8	9.9	1.4	1.2	1.6
114	Conceited	1.8	2.1	2.4	9.8	5.9	13.2	63.5

NOTE: Numbers do not add to 100 percent because of missing values and rounding.

Percentages are based on 1730 responses.

APPENDIX K

CANONICAL CORRELATION COEFFICIENTS FOR THE RESTRUCTURED FACTORS

STANDARDIZED CANONICAL CORRELATION COEFFICIENTS FOR THE RESTRUCTURED ROLE STEREOTYPES AND SOCIALIZATION FACTORS

Variables of Criterion and Predictor Sets	Canonical Coefficients	
	Canonical Variate Set 1	Canonical Variate Set 2
Socialization Set		
Supervisor Treatment	0.63326	-0.52602
Job Satisfaction	-0.53431	-0.00348
Coworker Relations	0.08503	1.07423
Stereotype Set		
Ability	0.89426	0.46575
Desirable Traits	-0.34755	0.94649

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