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TECHNIQUES FOR RESEARCH ON FACTORS AFFECTING THE UTILIZATION OF WOMEN IN NON-TRADITIONAL ROLES

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This study compared and contrasted questionnaire types to discover the format most effective for a future Army-wide survey concerning attitudes toward the roles of women. Methodological issues involved (1) comparison of Likert style (presents respondents wtih an assertion with which they are asked to agree or disagree with varying intensity) and Multiple Choice style (presents respondents with questions to be answered by choosing from among four or five alternatives). Second, marking responses in the traditional method (circling desired alternative response) versus OPSCAN answer sheets (which are separate from questionnaire booklets). Third, a dispersed version of the questionnaire was tested against a compact version. Fourth, on half the questionnaires respondents were asked about men first; on the remaining half, questions were asked about women first. Significantly, minor manipulations of format and style did not greatly influence respondents' answers.

The study was also designed to yield preliminary data bearing on substantive attitudinal questions. Most respondents felt that women had an important role to play in the Army. By far, the majority of respondents thought that a company could do a better job at full strength with women than below strength without women.

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EXECUTIVE SUMMARY

The U.S. Army Research Institute (ARI) in planning an Army-wide sample survey of soldiers' attitudes toward the role of women in the Army, has been confronted with a number of technical questions relating to item types, formatting, wording of items and so on. The present study represents a pilot survey designed to assist ARI in making various methodological decisions. In addition, the pilot effort was designed to yield preliminary data bearing on substantive attitudinal questions.

In this project two possible item types were tested. The Likert item style presents respondents with an assertion with which they are asked to agree or disagree with varying intensity. The Multiple Choice item style presents respondents with a question to be answered by choosing from among four or five alternatives.

Two methods of marking responses were tested in this study. In the first or traditional method, respondents were instructed to mark their answers on their questionnaire booklets by circling the desired response alternative. The second method involves the use of OPSCAN answer sheets. Respondents receive both questionnaire booklets and separate answer sheets and are instructed to mark their answers on the answer sheet only.

The questions were arranged in the questionnaire booklets according to two designs. The compact version of the questionnaire made the most efficient use of space possible in order to simulate the layout for an OPSCAN booklet, the expense of which requires an effort to conserve space. In the dispersed version of the questionnaire, the items are more loosely spaced.

Certain sections of the questionnaire asked respondents to give their opinions and impressions about men and women soldiers. On half of the questionnaires, respondents were asked about men first, followed by women. On the remaining half, the order of presentation differed and the questions asked about women first and then about men.

Sixteen forms of the survey instrument were prepared to encompass the four manipulated variables (2x2x2x2). A stratified random plan was used for administering the various forms of the questionnaires to soldiers, with rank (officers versus enlisted), and sex used as the stratifying variables. Approximately 1100 soldiers from five major sites, four Army bases in the U.S. and a group of European bases, took part in the survey. The major administration periods involved groups of about eighty respondents who were assigned to one of two simultaneous sessions based on whether this questionnaire was OPSCAN or traditional format. All sixteen forms were administered at any given administration period. Administrations were followed by discussion sessions in which a sample of enlisted personnel and officers were asked their opinions about the survey items.

There were no outstanding differences in the quality of data collected depending on the format of the questionnaire. All forms produced data that was demonstrated to be highly reliable and valid. Comments made by soldiers were of the same nature regardless of the survey form to which they were exposed.

Based on factor analysis of the questionnaires, a number of clearly defined factors emerged for both the Likert and Multiple Choice items which were analyzed separately. The Likert scales seemed slightly superior to the Multiple Choice scales in that they accounted for a greater percent of variance but this difference was quite small. Multiple regression analyses favored the Multiple Choice questionnaires because the scales derived from them were able to be predicted with demographic variables accounting for a higher percent of variance than the predictive equations for Likert scales. On the whole, demographic variables did not account for a very high percent of variance for either Multiple Choice or Likert scales.

Since there is little evidence indicating the superiority of the OPSCAN over the Traditional answer format or the Dispersed over the Compact, practical considerations become of most central concern. The Traditional answer format was found to be cheaper, to be more convenient to prepare and assemble, to take less time for respondents to complete and to elicit more written comments. In favor of the OPSCAN forms is the fact that they took less time to prepare for analysis and fewer people responding on OPSCAN answer sheets left blank items. In general, there were not many missing items for any of the formats.

As might be expected, officers took less time to complete the questionnaires on an average than did enlisted personnel. Considering all the treatment variables, the Compact Traditional form was the most efficient and took an average of almost ten minutes less per respondent to complete than the Dispersed OPSCAN forms. The compact forms also took less time to key punch than the dispersed forms.

Although no differences between the "Men First" and "Women First" forms were expected, some did emerge. Those forms which addressed questions about women first resulted in scales with higher average reliabilities and respondents who enjoyed the survey more than those who had the opposite ordering. Also, those who received "Women First" forms found it easier to decide on an answer. Since ordering is such a subtle treatment, it is hard to explain why it had an effect in areas where item type and answer format did not. Perhaps this suggests that more attention should be focused on psychological factors (such as ordering) rather than the mechanical aspects of layout and answering mode. When considering the reactions of respondents, it is also the case that those taking Likert forms thought that the survey was more valuable than did those people taking Multiple Choice forms.

Most respondents felt that women had an important role to play in the Army. However, more than half felt the Army would be less effective with women in combat units. That still leaves a sizable number (42.3 percent) who thought that the Army would be just as effective or more

effective with women in combat jobs. In all cases, the majority of respondents thought that a company could do a better job at full strength, with women than when the company was below authorized strength without women.

Female respondents were more likely than males to encourage fuller participation of women in the Army and to reject traditional sex-role stereotypes. Women were more likely than men to have a favorable opinion of including women in support companies and male officers were most likely to think that functioning would be harmed. The combat career branch had more negative attitudes toward women than the combat support or combat service support and those soldiers who had been in the Army the longest had the least favorable attitudes.

Age variable

Although many physical and societal reasons were offered to explain why women should not be in combat, there was often an acceptance of the idea that some women were capable of performing in combat. There was also a recognition of the fact that some problems of women in the Army are due to officers who do not know how to handle the situation or Army policies which do not insure competency before placing a soldier in a job and do not provide preparation for units before introducing women for the first time. The general opinion seemed to be that there are currently many problems with utilizing women effectively in the Army but that a substantial number of these can be overcome.

It is important to note how little difference format makes in the various components of this survey. This finding allows researchers the freedom to use formats with which they are comfortable and which seem most appropriate for a given situation. Practically, it is most helpful to know that decision makers can consider economic concerns and convenience without feeling that such calculations will jeopardize the quality of data. It is also valuable to know that minor manipulations of format and style do not have a great influence on the way people respond to questions so that attention can be focused on matters of content and meaning.

TABLE OF CONTENTS

	Page
Acknowledgements	i
Executive Summary	ii
List of Tables	vii
I. Introduction	1
A. Purpose and Background of the Project	2
B. Hypotheses To Be Tested	2
1. Hypotheses: Multiple Choice vs. Likert Items	2
2. Hypotheses: Traditional Questionnaire vs. OPSCAN Answer Sheet Format	3
3. Hypotheses: Compact vs. Dispersed Layout	5
4. Hypotheses: Order of Presentation of Items	6
5. Hypotheses: First-Order Interactions	7
II. Methodology	9
A. Overview	9
B. The Survey Instrument	9
1. Organization of the Instrument	9
2. Manipulations in the Instrument	11
C. The Sample	16
D. Procedures	19
1. Preparation of the Instruments	19
2. Training	19
3. General Administrative Procedures	19
4. Assignment of Soldiers to Sessions	22
5. Questionnaire Administration	23
6. Observation During the Administration	23
7. Collection of the Questionnaires	23
8. Timing the Respondents	25
9. Sampling for Discussions	25
10. Discussion Sessions	26
III. Results and Findings	28
A. Introduction	28
B. Administrative Issues	29

TABLE OF CONTENTS
(Continued)

		Page
C.	Quantitative Methodological Results	32
	1. Respondents' Reactions to the Survey	32
	2. Time to Complete the Survey	51
	3. Blank (Missing) Items	54
	4. Factor Analysis	57
	5. Multiple Regression Analyses	66
	6. Reliability	73
	7. Validity	76
D.	Written Comments and Comments in Discussion Groups	91
E.	Summary of Findings	95
IV.	Substantive Results	96
A.	Background of the Problem	96
	1. Women in the Military	96
	2. Historical Trends of Women in the Service	97
	3. Women and Occupational Assignments in the Military	98
	4. Women in Combat Roles	99
	5. Attitudes Toward Women in the Military	100
B.	Statistical Analyses of Questionnaire Responses	101
	1. Descriptive Overview of the Questionnaire Results	102
	2. Influence of Demographic Variables	108
C.	Comments and Discussion	128
V.	Summary and Conclusions	132

LIST OF TABLES

Table No.		Page
2. 1	Summary of Major Sections of the Survey Instrument	9
2. 2	Comparison of Parallel Likert and Multiple Choice Items	11
2. 3	Comparison of Instructions for Traditional and OPSCAN Answer Sheet Formats	12
2. 4	Comparison of Compact and Dispersed Layouts	13
2. 5	Comparison of "Men First" and "Women First" Ordering	14
2. 6	Questionnaire Forms	15
2. 7	Sex of Participants at Army Bases	16
2. 8	Extent of Contact Between Men and Women in Army Units	17
2. 9	Educational, Pay, and Career Branch Differences Among Army Bases	18
2.10	Identification Numbering System	20
2.11	Order of Questionnaire Booklets Within Packets	21
2.12	Schedule of U.S. Administration Sessions	24
2.13	Schedule of U.S. Discussion Sessions	27
3. 1	Printing Costs	29
3. 2	Preparation for Analysis of Forms with the Traditional Answer Format	31
3. 3	Analysis of Variance Summary Table for Enjoyment of Survey	35
3. 4	Respondents' Self-Reported Enjoyment by Questionnaire Form	36
3. 5	Analysis of Variance Summary Table for Perceived Survey Value	37
3. 6	Respondents' Perception of Survey Value by Questionnaire Form	38
3. 7	Analysis of Variance Summary Table for Perceived Truthfulness	39
3. 8	Respondents' Agreement That Soldiers Will Answer Truthfully by Questionnaire Form	40
3. 9	Analysis of Variance Summary Table for "There Should Be More Surveys Like This"	41
3.10	Respondents' Agreement There Should Be More Surveys by Questionnaire Form	42
3.11	Analysis of Variance Summary Table for "Had A Chance to Say What I Really Felt"	43

Table No.		Page
3.12	Respondents' Perception That They Had a Chance to Express Feelings by Questionnaire Form.	44
3.13	Analysis of Variance Summary Table for Difficulty of Deciding on Answers.	45
3.14	Respondents' Perceptions of Difficulty in Deciding on Answers by Questionnaire Form	46
3.15	Analysis of Variance Summary Table for Ease of Marking Answer.	47
3.16	Respondents' Perception of Ease of Marking Answer by Questionnaire Form	48
3.17	Analysis of Variance Summary Table for Willingness to Volunteer for a Similar Survey	49
3.18	Respondents' Willingness to Volunteer for Similar Survey by Questionnaire Form.	50
3.19	Analysis of Variance Summary Table for Completion Time.	52
3.20	Mean Time Code by Questionnaire Form.	53
3.21	Time Spent Completing the Survey by Questionnaire Form.	54
3.22	Percentage of Respondents with Missing Items by Questionnaire Form.	55
3.23	Summary of Information - Likert Scales.	62
3.24	Summary of Information - Multiple Choice Scales	63
3.25	Summary of Information - Scales from Part G	65
3.26	Regression Results - Likert Scales.	67
3.27	Regression Results - Multiple Choice Scales	68
3.28	Comparison of Traditional vs. OPSCAN Regression Results	70
3.29	Comparison of Compact vs. Dispersed Regression Results.	71
3.30	Comparison of "Men First" vs. "Women First" Regression Results	72
3.31	Comparison of Multiple Choice and Likert Reliabilities.	74
3.32	Likert Reliabilities.	75
3.33	Multiple Choice Correlations with "Criterion" Measures.	79
3.34	Likert Correlations with "Criterion" Measures	80
3.35	Likert Correlations with "Criterion" Measures for Different Forms	81
3.36	Multiple Choice ANOVA Results	82
3.37	Likert ANOVA Results.	84

Table No.		Page
3.38	Likert ANOVA Results: Men First Version.	85
3.39	Likert ANOVA Results: Women First Version.	86
3.40	Likert ANOVA Results: Traditional Version.	87
3.41	Likert ANOVA Results: OPSCAN Version	88
3.42	Likert ANOVA Results: Compact Version.	89
3.43	Likert ANOVA Results: Dispersed Version.	90
4. 1	Summary of Results, Part D, of Multiple Choice Questionnaire	106
4. 2	Percentage of Respondents Agreeing to Questions in Part E, Likert Form	107
4. 3	Percentage of Respondents Preferring Full-Strength Company	108
4. 4	Mean Attitude Scale Scores by Whether or Not Assigned to Unit With Woman Company Commander.	111
4. 5	Mean Attitude Scale by Whether or Not Assigned to Unit With Men and Women Soldiers.	112
4. 6	Mean Attitude Scale Score by Whether or Not Assigned to Small Unit With Men and Women Soldiers	113
4. 7	Mean Attitude Scale Scores by Supervisory Experience.	114
4. 8	Mean Attitude Scale Scores by Experience With Opposite Sex Supervision	115
4. 9	Mean Attitude Scale Score by Experience With Same Sex Supervisor.	116
4.10	Mean Attitude Scale Scores by Experience in Field Training Exercise	117
4.11	Mean Attitude Scale Scores by Years of Schooling.	118
4.12	Mean Attitude Scale Scores by Highest Educational Diploma or Degree	119
4.13	Mean Attitude Scale Score by Career Branch Category	120
4.14	Mean Attitude Scale Score by Length of Time in Army	121
4.15	Mean Attitude Scale Scores by Responses to Question "Do you think you will be in the Army 5 years from now?".	122
4.16	Mean Attitude Scale Score by Type of Friends.	123
4.17	Mean Attitude Scale Scores by Race.	124
4.18	Mean Attitude Scale Scores by Vietnam Experience.	125
4.19	Mean Attitude Scale Score by Administration Base.	126
4.20	Perceptions of Men's Abilities vs. Women's Abilities (Mean of 6 Scales from Parts B, D and E).	127

I. INTRODUCTION

A. PURPOSE AND BACKGROUND OF THE PROJECT

Recent changes in personnel policies within the Army have opened almost all job specialties to women. Substantially larger numbers of women are entering the Army and are being assigned to traditionally male fields than has ever been true in the past. Furthermore, there is increasing interest on the part of women in the services to assume combat-related duties. These developments have resulted in increased concern about the social-psychological and administrative dynamics of expanding the role of military women. Consequently, investigators have for the past several years been studying various aspects of attitudes among Army personnel toward women, sex roles, job appropriateness for women and the like. This report presents the results of a project which is a part of this continuing effort.

The U.S. Army Research Institute (ARI) in planning an Army-wide sample survey of soldiers' attitudes, has been confronted with a number of technical questions relating to item types, formatting, wording of items and so on. The present study represents a pilot survey designed to assist ARI in making various methodological decisions. In addition, the pilot effort was designed to yield preliminary data bearing on substantive attitudinal questions.

The technical issues addressed in this project are as follows:

1. Item Type Two possible item types were tested. The Likert item style presents respondents with an assertion with which they are asked to agree or disagree with varying intensity. The multiple choice item style presents respondents with a question to be answered by choosing from among four or five alternatives.

2. Format Two methods of marking responses were tested in this study. In the first, or "traditional" method, respondents are instructed to mark their answers on their questionnaire booklets by circling the desired response alternative. The second method involves the use of OPSCAN answer sheets; respondents receive both questionnaire booklets and separate answer sheets and are instructed to mark their answers on the answer sheet only.

3. Layout The questions were arranged in the questionnaire booklets according to two designs. The "Compact" version of the questionnaire made the most efficient use of space possible, in order to simulate the layout for an OPSCAN booklet [1], the expense of which requires an effort to conserve space. In the "Dispersed" version of the questionnaire, the items are more loosely spaced.

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1. The original plan for this project was to use OPSCAN booklets as a third format possibility. The "layout" variable was substituted for the booklets.

4. Order of Presentation of Items Certain sections of the questionnaire asked respondents to give their opinions and impressions about men and women soldiers. On half of the questionnaires, respondents were asked about men first, followed by women, while on the remaining half the questions asked about women first and then about men.[2]

In sum, the study explored the effects of four experimentally manipulated variables on the quality of data obtained in the pilot survey. Data quality was measured by looking at a number of methodological characteristics such as reliability, validity, missing items and so forth. The hypotheses which were tested are described more fully in the next section of this chapter.

In addition to the data obtained through the manipulations described above, information concerning item wording, questionnaire length, and overall impressions of the survey was sought on a more limited basis in discussion sessions which followed questionnaire administration. This combination of experimental variables and direct feedback from respondents, together with observations from the administrators, was intended to provide a broad and solid basis for ARI to make decisions concerning the ultimate Army-wide Survey.

B. HYPOTHESES TO BE TESTED

A number of hypotheses relating to the experimental variables were developed to guide the analysis of data. The analyses for this project were not, however, restricted to a testing of these hypotheses. In particular, a considerable number of analyses with substantive relevance were performed. However, inasmuch as the project was a pilot study focussing on technical issues, no substantive hypotheses were formulated.

Presented below are four sets of hypotheses, each set corresponding to one of the manipulated independent variables.

1. Hypotheses: Multiple Choice vs. Likert Items

The following hypotheses relate to predicted outcomes for the Likert and multiple choice comparisons. These hypotheses fall for the most part into two categories: (a) those dealing with the psychological dynamics of responding, which predict that multiple choice items will be preferable; and (b) those dealing with the analytic capabilities and technical characteristics of the items, which predict an advantage for the Likert items.

(a) There will be fewer unanswered (missing) items for the multiple choice questions than for Likert items.

(b) The multiple choice items will take longer for respondents to complete than the Likert items.

---

2. This variable was introduced in lieu of creating an alternate form, as originally planned.

(c) Respondents will be less inclined to select a neutral response with multiple choice items than with Likert items.

(d) The reliability of Likert scales (as measured by Cronbach's alpha for internal consistency) will be higher with Likert items than with multiple choice questions.

(e) The factorial structure of the Likert items will be "cleaner" (in terms of percentage of variance accounted for) for the Likert items than for multiple choice items.

(f) The prediction of scale scores using demographic characteristics as predictors will be better (i.e., result in a higher R^2) for Likert items than for multiple choice items.

(g) The Likert items will manifest more construct validity than the multiple choice items using the "known groups" approach to assess validity.

(h) Respondents will report that the questionnaire was more enjoyable (#95) and more valuable (#96) for the multiple choice items than for the Likert items.

(i) Respondents will more often agree that soldiers will answer the questions truthfully (#97), that there should be more surveys like this one (#98), and that the questions gave the chance to say what they really felt (#99) for multiple choice items than for Likert items.

(j) Respondents will feel that it was easier to decide on their answers (#100) for multiple choice questions than for Likert items.

(k) Respondents will volunteer to take a similar survey (#102) more often with multiple choice items than with Likert items.

2. Hypotheses: Traditional Questionnaire vs. OPSCAN Answer Sheet Format

The following hypotheses relate to predicted outcomes for the two designated format types: OPSCAN answer sheets and traditional questionnaires.

(a) There will be more unanswered items with OPSCAN answer sheets than with traditional questionnaire format.

(b) The OPSCAN answer sheets will require more time for respondents to complete than traditional questionnaire format.

(c) The number of outliers will be higher for traditional questionnaires than for OPSCAN answer sheet format.

(d) The reliability (internal consistency) of scales will be lower for OPSCAN answer sheets than for traditional questionnaire format.

(e) The factorial structure of the OPSCAN answer sheets will be less clean than that of the traditional questionnaire format.

(f) The traditional questionnaires will result in fewer unusable questionnaires than the OPSCAN answer sheet format.

(g) The traditional questionnaires will be easier to administer in terms of respondent questions and interruptions than the OPSCAN answer sheet format.

(h) The prediction of scale scores using demographic characteristics as predictors will be better (i.e., result in a higher R^2) for OPSCAN items than for traditional questionnaire items.

(i) Respondents will tend to agree that there should be more surveys like this one (#98) more often for the traditional questionnaire format than for OPSCAN answer sheets.

(j) Respondents will more often agree that the answers were easier to mark (#101) for the traditional questionnaire format than for OPSCAN answer sheets.

(k) Respondents will volunteer to take a similar survey (#102) more often with traditional questionnaire items than with OPSCAN items.

(l) There will be an interaction between the rank of the respondent (officer vs. enlisted) and the format type with regard to the quality of the data. Specifically, the following sub-hypotheses have been developed:

i. There will be more unanswered items with OPSCAN answer sheets for the enlisted personnel than for officers, and this difference will exceed the difference for missing items on the traditional questionnaire format.

ii. Enlisted personnel will require more time to complete OPSCAN answer sheets than the officers and this rank difference will be greater than that obtained with the traditional questionnaire format.

iii. The internal consistency of the scales will be lower for enlisted personnel responding on OPSCAN answer sheets than that for officers, and this rank difference will be greater than that obtained with the traditional questionnaire format.

iv. Officers will agree more often than enlisted personnel that the answers were easier to mark (#101) when responding on an OPSCAN answer sheet, and this rank difference will be greater than that obtained with the traditional questionnaire format.

(m) The cost of the questionnaires will be higher for OPSCAN answer sheets than for the traditional questionnaire format.

(n) More calendar time will be required to produce the OPSCAN answer sheets than traditional questionnaires.

(o) More calendar time will be required to transfer responses to machine readable form for the traditional questionnaire format than for the OPSCAN answer sheets.

3. Hypotheses: Compact vs. Dispersed Layout

The following hypotheses concern predicted outcomes for the two types of layout, compact versus dispersed. The hypotheses were based on the belief that the compact might be somewhat less easy for respondents to follow and understand than the dispersed layout, but that the compact version might appear less burdensome to respondents because it involves fewer pages and fewer readings of the response alternatives.

(a) There will be fewer unanswered questions in the first half of the questionnaire for the dispersed condition, and fewer unanswered questions in the second half for the compact condition.

(b) The compact condition will take less time to complete than the dispersed condition.

(c)*

(d) The reliability (internal consistency) of the scales will be higher in the dispersed condition than in the compact condition.

(e) The factorial structure of the compact condition will be less clean than that for the dispersed condition.

(f) The dispersed condition will result in fewer unusable questionnaires than the compact condition.

(g)

(h) Officers will report that the compact condition was more enjoyable (#95), and enlisted personnel will report that the dispersed condition was more enjoyable.

(i) Officers will more often agree that there should be more surveys like this one (#98) in the compact condition, while enlisted personnel will more often agree with that statement in the dispersed condition.

(j) Officers will more often agree that it was easier to mark their answers (#101) for the compact condition, while enlisted personnel will agree to that statement more often in the dispersed condition.

(k) Officers will volunteer to take a similar survey (#102) more often in the compact condition, while enlisted personnel will volunteer more often in the dispersed condition.

* Several blanks are left in order to maintain the similarity of the hypotheses between sections 1, 2, 3, and 4.

(l) There will be an interaction between the rank of the respondent and the condition with regard to the quality of the data:

i. There will be more unanswered items in the compact condition for the enlisted personnel than for the officers, and this rank difference will be greater than that obtained in the dispersed condition.

ii. Enlisted personnel will require more time to complete the compact condition questionnaires, and this rank difference will be greater than that obtained in the dispersed condition.

iii. The internal consistency of the scales will be lower for enlisted personnel in the compact condition than for officers, and this rank difference will be greater than that obtained in the dispersed condition.

(m)

(n) More calendar time will be required to code and keypunch dispersed (traditional) questionnaires than compact (traditional) questionnaires.

4. Hypotheses: Order of Presentation of Items

The hypotheses below relate to whether respondents were asked to indicate their impressions of men soldiers first and then women soldiers, or vice versa in certain sections of the questionnaire. The order variable was introduced primarily to eliminate any possible consequences of maintaining a consistent order of presentation. Respondents were alerted to the fact that they would be answering questions about men first and then about women (or vice versa), so that it was anticipated that ordering would have no effect.

(a) There will be no difference in the number of unanswered items on the "men first" and "women first" forms.

(b) There will be no difference in the time to complete the "men first" and "women first" forms.

(c) There will be no difference in the number of neutral responses selected on the "men first" and "women first" forms.

(d) There will be no difference in the internal consistency of the scales for the "men first" and "women first" forms.

(e)

(f)

(g)

(h) There will be no difference in the respondents' opinion of the enjoyment and value of the questionnaire on the "men first" and "women first" forms.

(i) There will be no difference in the extent of agreement that soldiers will answer the questions truthfully (#97), that there should be more surveys like this one (#98), and that the questions gave the chance to say what they really felt (#99) for the "men first" and "women first" forms.

(j) There will be no difference in the ease of deciding answers on the "men first" and "women first" forms.

(k) There will be no difference in the willingness to volunteer for a similar survey for the "men first" and "women first" forms.

In addition to hypotheses for main effects, several hypotheses for first-order interactions have been formulated and are presented below.

5. Hypotheses: First-Order Interactions

(a) There will be an interaction between the item type and the format for marking answers with regard to the respondents' reactions to the survey and data quality. Specifically, the following sub-hypotheses have been developed:

i. There will be more unanswered items with OPSCAN answer sheets for the multiple choice items than for the Likert items, and this difference will exceed the difference for missing items on the traditional questionnaire format.

ii. Multiple choice items will require more time to complete than Likert items in the OPSCAN format, and this difference will exceed the time difference between the two item types in the traditional format.

iii. Respondents will agree that the answers were easier to mark for the traditional format than for the OPSCAN format, and this difference will be greater on multiple choice questionnaires than on Likert questionnaires.

(b) There will be an interaction between the answer format and question layout with regard to the respondents' reactions to the survey and data quality. Specifically, the following sub-hypotheses have been developed:

i. There will be more unanswered items with OPSCAN answer sheets for the compact layout items than for the dispersed layout items, and this difference will exceed the difference for missing items on the traditional questionnaire format.

ii. Compact layout items will require less time to complete than dispersed layout items in the OPSCAN format, and this difference will exceed the time difference between the two item types in the traditional format.

iii. Respondents will agree that the answers were easier to mark for the traditional format than for the OPSCAN format, and this difference will be greater on compact layout questionnaires than on dispersed layout questionnaires.

(c) There will be an interaction between item type and question layout with regard to the respondents' reactions to the survey and data quality. Specifically, the following sub-hypotheses have been formulated.

i. There will be more unanswered items with the compact layout for the multiple choice items than for the Likert items, and this difference will exceed the difference for missing items on the dispersed layout.

ii. Multiple choice items will require more time to complete than Likert items in the compact layout, and this difference will exceed the time difference between the two item types in the dispersed layout.

iii. Respondents will agree that the answers were easier to mark for the dispersed layout than for the compact layout, and this difference will be greater on multiple choice questionnaires than on Likert layout questionnaires.

(d) There will be no interactions between the "men first" and "women first" ordering of items and the format type, item type or layout.

II. METHODOLOGY

A. OVERVIEW

Sixteen forms of the survey instrument were prepared to encompass the four manipulated variables (2 x 2 x 2 x 2). A stratified random plan was used for administering the various forms of the questionnaires to soldiers, with rank (officers versus enlisted) and sex used as the stratifying variables. Approximately 1100 soldiers from 5 major sites - 4 Army bases in the U.S. and a group of European bases - took part in the survey. The major administration periods involved approximately 80 respondents, who were assigned to one of two simultaneous sessions based on whether their questionnaire was OPSCAN or traditional format. All 16 forms were administered at any given administration period. Administrations were followed by discussion sessions in which a sample of enlisted personnel and officers were asked their opinions about the survey items.

B. THE SURVEY INSTRUMENT*

1. Organization of the Instrument

All 16 forms of the instrument contain 8 sections, a total of 134 questions. Table 2.1 summarizes the contents of each major section. Examples of the complete instruments are included in Appendix A.

Table 2.1

SUMMARY OF MAJOR SECTIONS OF THE SURVEY INSTRUMENT

Section	Description	Number of Items
Part A	Effects of Women in Support and Combat Companies	18
Part B	Perceived Capabilities of Men and Women Performing Various Tasks	40
Part C	Policy Questions and Sex-Role Stereotype Questions	22
Part D	Behavior of a Male and Female Private in Specific Situations	8
Part E	Perceived characteristics of men and women vis à vis combat role	6
Part F	Opinions about the Questionnaire Itself	8
Part G	Criterion Measures	12
Part H	Personal Information	20

* The instruments were developed by personnel at ARI, under the direction of Dr. Joel Savell. The project team from the Laboratory provided some feedback on early drafts of the questionnaire but did not play a major role in the development of the items.

Part A asks respondents for their opinion concerning what happens to various aspects of company functioning (such as morale, teamwork and group spirit) when women are assigned to support companies such as Signal or Military Police. A parallel set of 9 questions asks for opinions of what would happen if women were assigned to combat companies such as Armor or Infantry.

Part B provides the respondent with a list of various Army tasks, such as driving a jeep, carrying a full field pack, using an M-16 rifle to attack an enemy position and so forth. The respondents are asked their opinions about the ability of enlisted men and enlisted women to perform each of these 20 tasks.

Part C consists of two major types of questions. One type solicits opinions concerning what policies the Army should adopt in utilizing women. For example, one question asks whether women should be drafted if men are drafted. The second type deals with sex-role stereotypes. For instance, one question asks whether the respondent thinks that men have more common sense than women.

Four brief situations are described in Part D. For instance, in the first situation the respondent is asked to imagine being in a company which is under small arms fire from an enemy 300 meters to the front. In each situation the respondent must indicate what two hypothetical soldiers, Pfc. John Jones and Pfc. Mary Jones, would probably do.

In Part E respondents are asked whether they think enlisted men have enough strength, stamina and guts to be a combat soldier. The same questions are asked with respect to enlisted women.

These first 5 sections represent the core of the instrument. It is in these sections that the experimental variables are manipulated, as will be described below. The remaining three sections of the instrument were included for such purposes as validation, obtaining opinions about the questionnaire itself, and collection of demographic data.

Part F asks respondents for feedback concerning their reactions to various aspects of the survey. For example, respondents are asked how much they enjoyed taking the survey, how valuable the survey was, and so forth.

The twelve questions in Part G were designed as criterion measures. That is, the same 12 questions appear in all 16 forms of the questionnaire in the same format and therefore constitute a set of measures against which other parts can be compared and validated. Nine of the twelve questions ask respondents to make a decision concerning company strength reduction versus the inclusion of a certain percentage of women. The remaining 3 questions are forced-choice items regarding the assignment of women to various units and fields.

The final section of the instrument, Part H, asks for basic background information, such as sex, pay grade, educational attainment, length of time spent in the Army, ethnic background and so forth. The The back cover of the questionnaire was used as a comment page.

2. Manipulations in the Instrument

While all instruments contain the main sections described above, the experimental conditions required the production of 16 separate forms of the questionnaire. This section described the differences in the forms necessitated by the experimental manipulations. As mentioned above, a complete set of exemplary questionnaires is available for inspection in Appendix A.

There is a one-to-one correspondence between the Likert items and the Multiple Choice items in terms of the substantive nature of the questions. In general, Multiple Choice items are worded in the interrogative and provide respondents with 4 or 5 alternative answers. The Likert item takes one of these alternatives, words each stem together with the alternative as a declarative statement, and then asks respondents to indicate their degree of agreement or disagreement. All Likert items offer 6 alternatives: strongly agree, moderately agree, slightly agree, slightly disagree, moderately disagree and strongly disagree. Table 2.2 highlights the differences between Likert and Multiple Choice items by showing a set of parallel questions.

Table 2.2

COMPARISON OF PARALLEL LIKERT & MULTIPLE CHOICE ITEMS

Likert Compact

	Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
77. Women would be a lot worse than men as frontline soldiers, even if they were given the same training.	1	2	3	4	5	6
78. If women were assigned to combat units, the Army would become somewhat less effective.	1	2	3	4	5	6
79. Women don't make very good bosses at work.	1	2	3	4	5	6
80. Women should be included in space missions.	1	2	3	4	5	6

* * * *

Multiple Choice Compact

77. How good would women be as frontline soldiers if they were given the same training that men are given?

1. A lot better than men
2. A little better than men
3. About the same as men
4. A little worse than men
5. A lot worse than men

78. If women were assigned to combat units, the Army would:

1. Become much more effective
2. Become somewhat more effective
3. Remain just as effective
4. Become somewhat less effective
5. Become much less effective

79. What sort of bosses at work do women make?

1. Very good
2. Fairly good
3. So-so
4. Not very good
5. Poor

80. Do you think women should be included in space missions?

1. No, they should not be included
2. Perhaps – but only if there aren't enough qualified men available
3. Perhaps – but only if they are single and don't have any children
4. Yes – provided there are some men along also
5. Yes, they should be included

Table 2.3

COMPARISON OF INSTRUCTIONS FOR TRADITIONAL AND OPSCAN ANSWER SHEET FORMATS

Traditional

INSTRUCTIONS

This survey is sponsored by the Department of the Army. Its purpose is to find out how soldiers (both male and female, officers and enlisted) feel about the assignment of men and women to various kinds of Army jobs.

All questions should be answered on the questionnaire itself. In each case, just circle the number of the answer you have chosen.

EXAMPLE: "How good are most soldiers at their job?"

1. Very good
2. Fairly good
3. So-so
4. Not very good
5. Not good at all

(In this example, the person believes most soldiers are "very good" at their job and therefore marked answer #1.)

Select only one answer to each question. If you want to comment on a particular question, this is what you should do: *first* circle the number in front of the answer you think is best, and *then* write your comment in the margin or on the back of the questionnaire.

If you have any questions, please feel free to ask one of the people administering the survey. Just raise your hand, and one of them will come over to you.

When you have finished, look back over all the questions and make sure you didn't accidentally skip any of them. Then give your completed questionnaire to one of the survey personnel.

THANK YOU FOR YOUR HELP!

OPSCAN

INSTRUCTIONS

This survey is sponsored by the Department of the Army. Its purpose is to find out how soldiers (both male and female, officers and enlisted) feel about the assignment of men and women to various kinds of Army jobs.

All questions should be answered on the separate answer sheet you have been given. In each case, fill in the block on the answer sheet that corresponds to the answer you have chosen.

EXAMPLE

Questionnaire Item

23. How good are most soldiers at their job?

1. Very good
2. Fairly good
3. So-so
4. Not very good
5. Not good at all

Answer Sheet



(In this example, the person believes most soldiers are "very good" at their job and therefore filled in block #1 on the answer sheet.)

Select only one answer to each question. If you want to comment on a particular question, this is what you should do: *first*, fill in the block on the answer sheet that corresponds to the answer you think is best, and then, write your comment on the back of the questionnaire. (DO NOT MAKE ANY EXTRA MARKS ON THE ANSWER SHEET.)

If you have any questions, please feel free to ask one of the people administering the survey. Just raise your hand, and one of them will come over to you.

When you have finished, look back over all the blocks on your answer sheet and make sure you didn't accidentally skip any of them. Then give your completed answer sheet and questionnaire to one of the survey personnel.

THANK YOU FOR YOUR HELP!

Table 2.4

COMPARISON OF COMPACT AND DISPERSED LAYOUTS

Compact

When women are assigned to *support* companies like Signal or Military Police.

	Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
1. . .company morale usually goes way up.	1	2	3	4	5	6
2. . .the level of discipline usually goes way down.	1	2	3	4	5	6
3. . .the soldiers take their jobs just as seriously as before.	1	2	3	4	5	6

Dispersed

When women are assigned to *support* companies like signal or military police,

1. . .company morale usually goes way up.

    1. Strongly agree
    2. Moderately agree
    3. Slightly agree
    4. Slightly disagree
    5. Moderately disagree
    6. Strongly disagree

2. . .the level of discipline usually goes way down.

    1. Strongly agree
    2. Moderately agree
    3. Slightly agree
    4. Slightly disagree
    5. Moderately disagree
    6. Strongly disagree

3. . .the soldiers take their jobs just as seriously as before.

    1. Strongly agree
    2. Moderately agree
    3. Slightly agree
    4. Slightly disagree
    5. Moderately disagree
    6. Strongly disagree

Table 2.5

COMPARISON OF "MEN FIRST" AND "WOMEN FIRST" ORDERING (Likert Compact)

"MEN FIRST"

PART E

It takes at least three things to be a combat soldier. It takes physical strength. It takes stamina or endurance. And it takes just plain guts. We'd like to consider these things one at a time. The statements below say that almost all enlisted men and almost all enlisted women have enough of each of these things – strength, stamina, and guts – to be a combat soldier. Please tell us how you feel about each of these statements. We'll start with the enlisted MEN. (Assume that they have the necessary training or experience).

	Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
89. Almost all enlisted *men* have enough physical strength to be a combat soldier.	1	2	3	4	5	6
90. Almost all enlisted *men* have enough stamina to be a combat soldier.	1	2	3	4	5	6
91. Almost all enlisted *men* have enough guts to be a combat soldier.	1	2	3	4	5	6

The questions above asked about enlisted men. Now let's take enlisted WOMEN. (Again, assume they have the necessary training or experience).

	Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
92. Almost all enlisted *women* have enough physical strength to be a combat soldier.	1	2	3	4	5	6
93. Almost all enlisted *women* have enough stamina to be a combat soldier.	1	2	3	4	5	6
94. Almost all enlisted *women* have enough guts to be a combat soldier.	1	2	3	4	5	6

★ ★ ★ ★ ★ ★

"WOMEN FIRST"

PART E

It takes at least three things to be a combat soldier. It takes physical strength. It takes stamina or endurance. And it takes just plain guts. We'd like to consider these things one at a time. The statements below say that almost all enlisted women and almost all enlisted men have enough of each of these things – strength, stamina, and guts – to be a combat soldier. Please tell us how you feel about each of these statements. We'll start with the enlisted WOMEN. (Assume that they have the necessary training or experience).

	Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
89. Almost all enlisted *women* have enough physical strength to be a combat soldier.	1	2	3	4	5	6
90. Almost all enlisted *women* have enough stamina to be a combat soldier.	1	2	3	4	5	6
91. Almost all enlisted *women* have enough guts to be a combat soldier.	1	2	3	4	5	6

The questions above asked about enlisted women. Now let's take enlisted MEN. (Again, assume they have the necessary training or experience).

	Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
92. Almost all enlisted *men* have enough physical strength to be a combat soldier.	1	2	3	4	5	6
93. Almost all enlisted *men* have enough stamina to be a combat soldier.	1	2	3	4	5	6
94. Almost all enlisted *men* have enough guts to be a combat soldier.	1	2	3	4	5	6

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With regard to the format for responding to the questions (Traditional versus OPSCAN Answer Sheet), the instruments differed only in the instructions on the front inside cover. The instructions, shown in Table 2.3, give directions for marking the chosen response alternative according to one of the two format types. Copies of the two OPSCAN answer sheets (Likert and Multiple Choice) may be found in Appendix B.

The questions were organized in the booklet differently according to whether the layout was Compact or Dispersed. For the most part, the items were arranged in matrix fashion in the Compact condition. That is, item stems were aligned vertically along the left-hand side of the page, while response alternatives were set horizontally across the top of the page. In the Dispersed layout, all alternatives are listed vertically below the item stem. The difference in the layout resulted in booklets of different length. On the average, the Dispersed layout resulted in a booklet which was 25% longer than the Compact layout. Examples of the two layout forms are presented in Table 2.4.

Finally, Parts B, D and E asked respondents to give opinions about the characteristics and capabilities of both men and women soldiers. To offset potential ordering effects, the order of presentation of the items was varied. That is, half the questionnaires asked for opinions about men first, while the other half asked about women first. Table 2.5 illustrates this difference.

In sum, the requirements of this project called for the production of 16 questionnaires which had a high degree of similarity substantively, but which differed in terms of methodological/technical consideratons. All possible combinations of the 4 manipulated variables resulted in the 16 booklets which are summarized in Table 2.6.

Table 2.6

QUESTIONNAIRE FORMS

1. Likert	compact	men first	traditional
2. Likert	compact	women first	traditional
3. Likert	dispersed	men first	traditional
4. Likert	dispersed	women first	traditional
5. Likert	compact	men first	OPSCAN sheet
6. Likert	compact	women first	OPSCAN sheet
7. Likert	dispersed	men first	OPSCAN sheet
8. Likert	dispersed	women first	OPSCAN sheet
9. Multiple Choice	compact	men first	traditional
10. Multiple Choice	compact	women first	traditional
11. Multiple Choice	dispersed	men first	traditional
12. Multiple Choice	dispersed	women first	traditional
13. Multiple Choice	compact	men first	OPSCAN sheet
14. Multiple Choice	compact	women first	OPSCAN sheet
15. Multiple Choice	dispersed	men first	OPSCAN sheet
16. Multiple Choice	dispersed	women first	OPSCAN sheet

C. THE SAMPLE

The Army Research Institute contacted each of the Army Bases where the survey was administered and gave instructions to provide a stratified random sample of soldiers for this survey. The contacts at each base were asked to arrange for 250 soldiers to report to fill out questionnaires including 100 officers and 150 enlisted personnel. Although the contacts at each base stated that it would not be possible to have equal representation of men and women and that women officers were particularly difficult to locate in adequate numbers, they did agree to try to balance the ratio of men to women as much as possible. The final sample consisted of 327 (28.7%) enlisted men, 328 (28.8%) men officers, 265 (23.3%) enlisted women, and 218 (19.2%) women officers from four bases in the United States and four bases in Europe. At the four bases in the United States, about 40% of the participants were women. In Europe, a better job was done of obtaining equal sex representation and 50% of the respondents were female. The number and sex of participants at each base is presented in Table 2.7. We are unable to determine to what extent departures were made from the instructions to obtain random samples but we assume that directions were carried out as much as possible and that any departures were minor.

TABLE 2.7

SEX OF PARTICIPANTS AT ARMY BASES

Base	Male	Female	Total
Fort Lewis	120 (60%)	80 (40%)	200
Fort Leonard Wood	129 (56.3%)	100 (43.7%)	229
Fort Polk	134 (64.4%)	74 (35.6%)	207
Fort Bragg	133 (58.8%)	93 (41.2%)	225
Four Bases in Europe	136 (50.2%)	135 (49.8%)	273
			1,134

It is of interest in a survey regarding attitudes toward women in the Army to note the extent to which men and women have interacted within the Army. 80.5% reported having been in a company size unit with both men and women and 65.7% had been in a smaller unit containing both sexes but only 29.2% of respondents had been in a unit with a woman company commander. Most of the respondents had at some point in their careers supervised the work of other soldiers. Only 14% had never supervised soldiers, while 65% had experience supervising both men and women. There were 18.8% of the sample who had only supervised men and 2.1% who had supervised women only. 64.8% of the participants in this survey had been in training with both men and

women. There were differences among the bases in the extent of contact between men and women in units and companies. At Fort Bragg 90.7% of the soldiers had been in Company size units with both men and women but at Fort Lewis only 71.4% had been in this situation. Table 2.8 presents figures demonstrating the different extent of contact within units for the different Army bases.

TABLE 2.8

EXTENT OF CONTACT BETWEEN MEN AND WOMEN IN ARMY UNITS

	Base				
	Fort Lewis	Fort Leonard Wood	Fort Polk	Fort Bragg	Four Bases in Europe
Have you ever been in a Company-size unit of men and women?					
NO	57 (28.6%)	35 (15.3%)	43 (20.7%)	21 (9.3%)	65 (24.1%)
YES	142 (71.4%)	194 (84.7%)	165 (79.3%)	205 (90.7%)	205 (75.9%)
Have you ever been in a smaller unit of men and women?					
NO	79 (40.7%)	82 (36.3%)	76 (36.9%)	49 (22.1%)	98 (36%)
YES	115 (59.3%)	144 (63.7%)	130 (63.1%)	173 (77.9%)	174 (64%)

In this sample of soldiers, about the same number of respondents have High School diplomas (36.6%) as have Bachelors degrees (35.2%). There are 8% in this sample with less than a high school degree, 8.7% with an associate degree and 11.5% with a graduate or professional degree. 76.1% of the sample are white and 16.4% are Black with the remainder registering their race as Mexican American, Puerto Rican, Filipino American, American Indian, Asian American and Other. 25% of those surveyed had served a tour in Viet Nam. Most of the respondents have been in the Army from one to three years (43.4%). 7.7% have been in the Army less than one year, 18% from four to six years and 10.6% from seven to ten years. About one fifth of the respondents have been in the Army for ten years or more. The majority of those who participated in this survey are in combat service support career branches with 56.2% in those branches. Combat support branches account for 21.6% of the respondents and 20.6% are in combat occupational specialities. Differences among the bases are evident in educational levels, pay grade and proportions in combat career branches. Some percentages are presented in Table 2.9 to demonstrate the differences in representation from the various bases. There is a substantially higher percentage of those with advanced degrees and higher pay grade

at the four bases in Europe than at the American bases. It can also be seen that Fort Lewis has the highest percent of soldiers in combat career branches while Fort Polk has the smallest percentage of respondents in combat career branches.

TABLE 2.9

EDUCATIONAL, PAY, AND CAREER BRANCH DIFFERENCES AMONG ARMY BASES

Base	Fort Lewis	Fort Leonard Wood	Fort Polk	Fort Bragg	Four Bases in Europe
Highest Educational Diploma:					
None	3.6%	.4%	1.0%	2.2%	2.6%
G.E.D.	7.1%	6.5%	5.3%	10.2%	2.2%
High School	35.5%	34.8%	41.3%	40.3%	32.5%
Associate	10.2%	9.1%	10.2%	8.4%	6.6%
Bachelors	34.5%	38.3%	36.9%	34.1%	32.8%
Graduate or Professional	9.1%	10.9%	5.3%	4.9%	23.2%
Pay Grade:					
E1 - E2	6.0%	2.6%	6.3%	7.6%	3.0%
E3 - E5	38.0%	31.7%	39.4%	39.1%	34.2%
E6 - E9	5.5%	18.1%	12.0%	12.9%	7.9%
W1 - W4	8.0%	.9%	2.9%	4.0%	.8%
01 - 03	34.0%	43.2%	36.5%	34.2%	35.7%
04 or above	8.5%	3.5%	2.9%	2.2%	18.4%
Carrer Branch:					
Combat	30.1%	20.9%	21.4%	12.7%	19.4%
Combat Support	18.9%	20.4%	23.3%	23.6%	21.3%
Combat Service Support	49.5%	56.0%	54.4%	61.8%	58.6%

D. PROCEDURES

Soldiers were assigned to a questionnaire "treatment" separately by rank (officer versus enlisted) and sex. This fact, coupled with the requirement for the simultaneous administration of all 16 forms followed by discussion groups with a sample of respondents, necessitated rather complex administration procedures and detailed training.

1. Preparation of the Instruments

Each questionnaire was given a unique identification number, the first two digits of which represent a code indicating the form of the questionnaire. The coding scheme used is presented in Table 2.10.

For the OPSCAN questionnaires (Forms 5 - 8 and 13 - 16), the identification section of an answer sheet was filled in to match the booklet ID. A Privacy Act Statement* and, where applicable, the answer sheet were inserted into the booklet, which was secured with a color-coded tab indicating the form of the questionnaire. The color scheme used was as follows: blue - Multiple Choice, OPSCAN: green - Multiple Choice, Traditional; yellow - Likert, OPSCAN; and red - Likert, Traditional. This visual coding was adopted to enable the administrators to assign respondents to administration and discussion sessions. The procedures by which this was accomplished will be described below.

The questionnaires thus prepared were assembled in packets of 16, with each packet containing all 16 forms once. The order scheme arranged the booklets in such a fashion that, for any group of four questionnaires, all variations of the four main effects (item type, answer format, layout and order of presentation) are presented. The ordering scheme is shown in Table 2.11.

2. Training

The laboratory field team was trained for the administration during the week of January 2 - 6. To facilitate the training process, a detailed training manual was prepared. A copy of the training manual is provided in Appendix C. The training sessions involved step-by-step explanations of the administration procedures and their rationale, followed by several trial runs of the survey administration and discussion groups.

3. General Administration Procedures

Data from the U.S. bases were collected by a team from the Laboratory for Statistical and Policy Research. The European data were collected by representatives of the U.S. Army Research Institute.

* A copy of the Privacy Act Statement is included in Appendix B.

Table 2.10

IDENTIFICATION NUMBERING SYSTEM

	Itemtype	Layout	Order	Answer Format	ID Numbers	ID Numbers
1.	Likert	compact	men first	traditional	100-199	(2100-2199)
2.	Likert	compact	women first	traditional	200-299	(2200-2299)
3.	Likert	dispersed	men first	traditional	300-399	(2300-2399)
4.	Likert	dispersed	women first	traditional	400-499	(2400-2499)
5.	Likert	compact	men first	OPSCAN sheet	500-599	(2500-2599)
6.	Likert	compact	women first	OPSCAN sheet	600-699	(2600-2699)
7.	Likert	dispersed	men first	OPSCAN sheet	700-799	(2700-2799)
8.	Likert	dispersed	women first	OPSCAN sheet	800-899	(2800-2899)
9.	Multiple Choice	compact	men first	traditional	900-999	(2900-2999)
10.	Multiple Choice	compact	women first	traditional	1000-1099	(3000-3099)
11.	Multiple Choice	dispersed	men first	traditional	1100-1199	(3100-3199)
12.	Multiple Choice	dispersed	women first	traditional	1200-1299	(3200-3299)
13.	Multiple Choice	compact	men first	OPSCAN sheet	1300-1399	(3300-3399)
14.	Multiple Choice	compact	women first	OPSCAN sheet	1400-1499	(3400-3499)
15.	Multiple Choice	dispersed	men first	OPSCAN sheet	1500-1599	(3500-3599)
16.	Multiple Choice	dispersed	women first	OPSCAN sheet	1600-1699	(3600-3699)

Table 2.11

ORDER OF QUESTIONNAIRE BOOKLETS WITHIN PACKETS

Form Number	Item Type	Layout	Order	Answer Format
1	Likert	Compact	Men First	Traditional
15	Multiple Choice	Dispersed	Men First	OPSCAN
8	Likert	Dispersed	Women First	OPSCAN
10	Multiple Choice	Compact	Women First	Traditional
2	Likert	Compact	Women First	Traditional
16	Multiple Choice	Dispersed	Women First	OPSCAN
7	Likert	Dispersed	Men First	OPSCAN
9	Multiple Choice	Compact	Men First	Traditional
3	Likert	Dispersed	Men First	Traditional
13	Multiple Choice	Compact	Men First	OPSCAN
6	Likert	Compact	Women First	OPSCAN
12	Multiple Choice	Dispersed	Women First	Traditional
4	Likert	Dispersed	Women First	Traditional
14	Multiple Choice	Compact	Women First	OPSCAN
5	Likert	Compact	Men First	OPSCAN
11	Multiple Choice	Dispersed	Men First	Traditional

The procedures described here and in subsequent sections apply for the most part to all the survey sessions. However, some procedures were modified slightly at some sites due to a number of constraints. Major procedural descrepancies will be pointed out.*

A team of four persons (2 male and 2 female) traveled to the four U.S. Army bases during the weeks of January 9 - 13 and 16 - 20. A military representative who acted as a liaison person accompanied the team to all four bases. Four sessions (2 sessions per day) were scheduled at each base. The bulk of the questionnaires were administered during the morning and afternoon of the first day, while the second day was used primarily for make-ups.

A schedule of administrations was established such that a male and female administrator would be present, on a rotating basis, in each survey and discussion session. This system was adopted to eliminate the possibility of a "sex of administrator" effect.

4. Assignment of Soldiers to Sessions

At each U.S. base, approximately 125 soldiers were requested to report to a designated location on either the morning or the afternoon of the first day. An Army representative checked the roll as respondents entered the reception area. The soldiers remained in the reception area until the roll was completed.

The Army representative then explained to the participants the procedure for picking up a questionnaire and proceeding to the test room. At the front of the reception room, the project team placed four piles of questionnaire booklets (maintaining the pre-arranged sequence shown in Table 2.11). Each pile was labeled by rank and sex: "enlisted men", "enlisted women", "officers - men", and "officers - women." The soldiers were instructed** to pick up a questionnaire from the applicable pile.

Two sessions were always held simultaneously, one for respondents with OPSCAN answer sheets and another for those with Traditional formats.*** Room assignments were made on the basis of the color-coded tabs securing the booklets. Soldiers with blue or yellow tabs (the OPSCAN format) were instructed to stay in the reception room, while those with red or green tabs (the Traditional format) were told to report to a second room. Signs directing soldiers to the correct rooms were prominently displayed.

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* A detailed base-by-base description of the administration procedures for both European and U.S. sites is available in Appendix D.

** The exact wording of these instructions may be found on page 5 of the Field Manual in Appendix C.

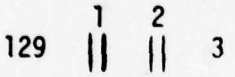
*** At Fort Bragg, there was only one room available for the administration, so that all 16 forms were given in a single room. Instructions for the OPSCAN and Traditional questionnaires were given separately. Since fewer respondents could be accomodated at a given time than was true at other bases, 4 sessions were scheduled for one day at Fort Bragg.

5. Questionnaire Administration

In each of the two simultaneous sessions, two members of the field team were present - one male and the other female. One of the two assumed the responsibilities of main administrator, according to the schedule presented in Table 2.12. Each team member was assigned a code (also shown in Table 2.12), and the main administrator's code was noted on the questionnaires and subsequently key-punched with the other data.

After the respondents were assembled and seated in the room to which they had been assigned, the main administrator gave them instructions for completing the questionnaire. The respondents were told to open their booklets by breaking the tab with the eraser end of their pencil, to review the Privacy Act Statement which had been inserted into the booklets, and to follow along as the administrator read the instructions which were printed on the inside front cover. The exact instructions and procedures used may be found on pages 6 - 13 of the Field Manual in Appendix C.

During the first administration, a previously undetected error came to light. In Part H of the answer sheets, there were 4 items for which there was an insufficient number of options, in comparison with the options specified on the questionnaire itself. For example, question 129 ("Are most of your friends in the Army ...?") has 3 alternative responses, but the answer sheet had room for only options 1 and 2. After this error was detected, the soldiers were instructed to write in the number corresponding to their choice directly beside the question number on their answer sheets as shown below. A sign was made and held up to show respondents how to record their answers should this problem arise.



Answer sheets with such write-ins were corrected manually, as described in a subsequent section.

6. Observation During the Administration

During each session, the secondary administrator made and recorded observations concerning comments made, questions asked and the overall atmosphere during the administration. These observations were recorded on a form prepared for this purpose. The form is shown on page 16 of the Field Manual.

7. Collection of the Questionnaires

Respondents were instructed to place their answer sheets inside the questionnaires (in the OPSCAN session) and to place the booklets in one of four piles, depending upon their rank and the color of the tab. The four piles were labeled with appropriate signs: Officers - Blue Tabs; Officers - Yellow Tabs; Enlisted Personnel - Blue Tabs; and Enlisted Personnel - Yellow Tabs. (Red and Green were substituted for Blue and Yellow, respectively, in the Traditional response mode condition). The purpose of distinquishing between these 4 groups was to enable the administrators to sample respondents for discussion groups, as will be described below.

Table 2.12

SCHEDULE OF U.S. ADMINISTRATION SESSIONS

SESSION	ADMINISTRATORS			
	Fort Lewis	Fort Leonard Wood	Fort Polk	Fort Bragg
Morning OPSCAN	J. Hunter* R. Nuttall	S. Weissbach R. Nuttall*	S. Weissbach* L. Weissbach	J. Hunter L. Weissbach*
Morning Traditional	S. Weissbach* L. Weissbach	J. Hunter L. Weissbach*	J. Hunter* A. Orenstein	S. Weissbach A. Orenstein*
Afternoon OPSCAN	S. Weissbach L. Weissbach*	J. Hunter* L. Weissbach	J. Hunter A. Orenstein*	S. Weissbach* A. Orenstein
Afternoon Traditional	J. Hunter R. Nuttall*	S. Weissbach* R. Nuttall	S. Weissbach L. Weissbach*	J. Hunter* L. Weissbach

* Main Administrator

CODES

A0 - L. Weissbach (Male)

A1 - S. Weissbach (Female)

A2 - R. Nuttall (Male)

A3 - J. Hunter (Female)

A4 - A. Orenstein (Male)

8. Timing the Respondents

Pre-numbered time cards were placed on the piles of questionnaires at five-minute intervals. This method of timing the respondents was considered more practical than recording the actual time of completion, since it was anticipated (and found) that many respondents finished the survey at approximately the same time. Each of the two administrators in a session was responsible for timing the questionnaires of one item type, either Likert or Multiple Choice. After the soldiers had been working on the questionnaire for 10 minutes, time cards with the code "one" (T1) were placed on the piles. At subsequent 5 - minute intervals, the administrators continued to place time cards (T2, T3, etc.) on the piles, until all the questionnaires were completed. The time code was later marked on the last page of the questionnaires (and on the OPSCAN sheets), in the spot designated for this information.

9. Sampling for Discussions

As the respondents turned in their questionnaires, they were handed a card by the administrator. The purpose of the card was to notify some of the soldiers that they should remain in the room for the discussion sessions. The majoriety of cards (for the non-sampled respondents) had a message which thanked them for their participation in the survey.

At any given administration, discussion groups were held for only one item type - Likert or Multiple Choice. Inasmuch as officers and enlisted personnel were to participate in separate discussions, it was necessary to ask respondents to deposit their booklets in one of four piles. For each pile of questionnaires there was a corresponding set of hand-out cards. All of the respondents who took the Multiple Choice version during sessions when the Likert form was to be discussed (or vice versa) were given the "thank you" cards. The remaining respondents, who were to be sampled for discussions, were given cards from a set which had been pre-arranged to sample the soldiers. It was anticipated that there would be approximately 50 officers and 70 enlisted persons during each administration, only half of whom would be taking either the Likert or Multiple Choice form. Since a discussion group of 10 to 15 participants was desired, the decks for the sampled groups were arranged so that every other officer and every third enlisted person was given a card bearing the message "You have been chosen to participate in a discussion session. Please return to your seat and wait until given further instructions. Thank you." All other respondents received a card thanking them for their help. Due to the fact that some sampled soldiers were unable to attend the discussion groups, it was sometimes necessary to make modifications to this sampling procedure on the spot. At Fort Bragg, item type was not considered in assigning soldiers to a discussion group because only one room was available for the administration and discussion. It had been discovered at previous bases that item type made little difference in the nature of the discussions, so to avoid additional complications, the sampling plan for discussion groups was simplified by sampling from the total group of officers or enlisted persons regardless of questionnaire type.

10. Discussion Sessions

At each base, two simultaneous discussion sessions were held - one for officers and another for enlisted personnel. The purpose of the separate discussions according to rank was to encourage the soldiers to speak more freely than might be the case in a mixed session. Only Multiple Choice or Likert items were discussed at any given session.* Thus, four discussion sessions in total were held at each base, on the first administration day.

Following the survey administration, one of the two administrators accompanied half of the sampled soldiers (either the officers or enlisted personnel) to the other room. The schedule of the discussion sessions and the administrators who lead those sessions is shown in Table 2.13. As in the questionnaire administration, 2 members of the field team were present in each room. The schedule rotated the team members through the sessions, with one male and one female always assigned to a discussion.

When the discussion group was assembled, the soldiers were given a blank questionnaire to use as a guide. A "Compact - Men First" form was always used, and the soldiers were told that the form might be somewhat different than the one they completed. Overhead transparencies of the questionnaire pages were also available.

The discussion group leader informed the soldiers that the purpose of the discussions was to find out their opinions about the different sections of the questionnaire.**It had originally been planned to discuss the questionnaire on a section-by-section basis, encouraging comments about individual items. In accordance with this aim, the discussion form (shown on pages 18 - 25 of the Field Manual) was arranged according to questionnaire sections. In practice, however, it was seldom possible to impose such a structure on the discussions. For example, in discussing a particular item or section, respondents were often reminded of an issue raised in another section.

On the whole, it was considerably more difficult to generate comments concerning methodological than substantive issues. The soldiers appeared to be very interested in the question of women in the Army, and there was therefore no difficulty in stimulating a discussion. However, it was generally not feasible to obtain reactions on an item-by-item basis.

The discussion sessions required, on the average, about 30 to 45 minutes to complete. The secondary administrator recorded notes and comments, and also made observations according to a pre-determined plan. The majority of the discussions were also tape recorded.

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* At Fort Bragg, it was necessary to discuss both forms simulaneously, due to the room constraint.

** Page 18 of the Field Manual in Appendix C presents the exact instructions read to the discussants.

Table 2.13

SCHEDULE OF U.S. DISCUSSION SESSIONS

BASE	TIME	ITEM TYPE	ADMINISTRATORS	
			ENLISTED	OFFICERS
Lewis	Morning	Likert	S. Weissbach R. Nuttall*	J. Hunter L. Weissbach*
Lewis	Afternoon	Multiple Choice	J. Hunter* L. Weissbach	S. Weissbach* R. Nuttall
Leonard Wood	Morning	Likert	S. Weissbach* L. Weissbach	J. Hunter* R. Nuttall
Leonard Wood	Afternoon	Multiple Choice	J. Hunter R. Nuttall*	S. Weissbach L. Weissbach*
Polk	Morning	Multiple Choice	J. Hunter L. Weissbach*	S. Weissbach A. Orenstein*
Polk	Afternoon	Likert	S. Weissbach* A. Orenstein	J. Hunter* L. Weissbach
Bragg	Morning	Likert & Multiple Choice	J. Hunter* A. Orenstein	S. Weissbach* L. Weissbach
Bragg	Afternoon	Likert & Multiple Choice	L. Weissbach* S. Weissbach	A. Orenstein* J. Hunter

* Discussion Leader.

III. RESULTS AND FINDINGS

A. INTRODUCTION

The section of this report on results and findings deals with many aspects of questionnaire preparation, administration and analysis. The first topics addressed in this section relate to administrative issues. The ease of arranging printing, costs of printing and time needed for printing and preparation of questionnaires are all analyzed. Observations are made concerning the questions and comments that soldiers offered during the survey administration, the number of written comments on questionnaires and the comparative difficulty of preparing the different forms for analysis.

The major quantitative results of this report are presented next in the seven sub-sections of Part C. First, the respondents' reactions to the survey are assessed. The different forms of the questionnaire are compared to judge if they influence how much respondents enjoyed taking the survey, how valuable they thought the survey was, whether they thought most soldiers would answer questions truthfully and whether they thought there should be more surveys like this one. There is also an evaluation of whether or not the soldiers thought that they had a chance to say what they really felt, whether they had difficulty deciding on answers or marking the answers and whether or not they would be willing to volunteer for participation in another similar survey.

The next section deals with the average amounts of time it took to complete the different forms and the extent to which the times were different for enlisted personnel and officers. This is followed by a discussion of the way in which the number of missing items is affected by sex of respondent, rank of respondent and format of the questionnaire.

The procedures used in factor analysis are explained and information is presented for the analyses which are based on all items being factored together and then for section-by-section analyses. Factors derived from Likert and Multiple Choice questionnaires are compared and the meanings of identified factors are clarified. The factors from Part G of the questionnaire are defined and the resultant scales are established as criterion measures for further analyses.

An attempt to predict scale scores from demographic variables is presented in the section on multiple regression. Those variables which are the best predictors are identified and the proportion of variance accounted for in the Multiple Choice and Likert scales is compared. Based on the Likert scales, comparisons of answer format, layout and ordering are shown.

The reliabilities of the various scales are presented and compared in Section C.6. Average reliabilities are given as well as section-by-section comparisons. Some attempts are made to eliminate scales which may have a masking effect on true differences between the reliabilities of the Multiple Choice and Likert scales and then these average reliabilities are contrasted. Comparisons of reliabilities based on Likert scales are made for the different experimental treatments.

Measures of validity of the questionnaire as a whole and for the Multiple Choice scales as compared to the Likert scales are presented next in the report. Correlations with criterion measures derived from Part G of the questionnaire are shown to substantiate validity. Analysis of variance by sex and rank is used to establish validity by the "known groups" method. Average F values from these analyses are given as a means of comparison across the various formats.

The comments which soldiers made about the questionnaire are organized according to the sections of the questionnaire that they relate to. There are also comments presented which make suggestions regarding the survey form as a whole. This discussion is followed by a summary of all the relevant and significant findings uncovered in the preceeding analyses.

B. ADMINISTRATIVE ISSUES

During the first three months of this project, the major tasks involved revising questionnaires and putting them in a final form, arranging for printing of questionnaires and OPSCAN answer sheets, and monitoring the progress of the printers. For the questionnaire booklets, we were able to deal with a local printer which was very convenient since extensive proofreading was involved at every stage of the process. Most of the mistakes which were discovered were corrected and only a few minor typographical errors were present on the final questionnaires. National Data Forms in Pennsylvania is the only firm which can reliably print OPSCAN materials and so the answer sheets were printed by that company. Setting up the OPSCAN answer sheets took only about one person day but dealing with National Data Forms took a great deal of time. Many phone calls were involved in getting time and cost estimates. After submitting the two pages to be printed, it took four weeks until proofs were returned and an additional three weeks for printing. It took only four weeks to print all sixteen forms of the questionnaire booklet at the local printer. National Data Forms did not meet the deadlines they had agreed upon and errors on the final answer sheets had not been present on the plates which were approved by our office. The cost per page was approximately thirteen cents. Since the major charge involved was for layout, this cost reflects the fact that the two pages printed were very similar. It should be noted that, the cost per page decreases as the total number ordered increases so each individual answer sheet would be significantly cheaper for a study on a larger scale.

The total cost of printing 200 copies of each of the sixteen different questionnaire booklets and the confidentiality statement was $4,919.00. The cost of printing the two OPSCAN answer sheets was $539.60. Based on the number of pages in each booklet, the costs of the various formats was computed and is presented in Table 3.1. The cost of the OPSCAN sheets was divided among the four OPSCAN formats and added to the printing costs.

TABLE 3.1

PRINTING COSTS

	COST	INDEX*
Likert, compact traditional	$504.34	100
Multiple Choice, compact traditional	$531.06	105
Likert, compact OPSCAN	$639.24	127
Multiple Choice, compact OPSCAN	$666.87	132
Multiple Choice, dispersed traditional	$697.78	138
Likert, dispersed traditional	$725.42	144
Multiple Choice, dispersed OPSCAN	$832.68	165
Likert, dispersed OPSCAN	$860.32	171
TOTAL	$5,458.58	

*Using the cost of Likert, compact traditional as 100.

When the questionnaires and answer sheets were printed they had to be prepared for administration. This involved inserting a confidentiality statement and putting a tab on every booklet. For questionnaires on which answers were to be recorded on separate OPSCAN answer sheets, additional steps were necessary. Answer sheets had to be numbered to correspond with the booklet in which they were inserted. Both OPSCAN and traditional questionnaires were stamped with identifying numbers so that aspect of preparation accounted for no discrepancy in the amount of time needed for assembly. Still, it took approximately twice as long to assemble questionnaires which included OPSCAN answer sheets because of the time involved in filling in spaces in the appropriate grid with each identification number. Sixteen hundred traditional answer format questionnaires were completed in about four and one half hours whereas assembly of sixteen hundred booklets with OPSCAN answer sheets were done in eight and one half hours.

During the administration and discussion sessions there was no discernible difference in the way people reacted to Likert vs. Multiple Choice questions or OPSCAN vs. traditional answering formats. The number of questions asked and topics mentioned did not seem to be related to questionnaire format at all. When respondents were specifically asked if they had any trouble with the OPSCAN answer sheets they said that they were familiar with such answer sheets and so did not have difficulty dealing with them.

The questions and comments made during the administration sessions generally related to spelling mistakes or printing errors which were discovered. A common type of question dealt with the reasons for the survey. A number of soldiers asked what to do if they did not know how to answer. In such cases they were encouraged to try and answer the question but if they insisted that they could not they were instructed to leave the item blank. A few questions asked for clarification of how to fill in the item concerning the person's Military Occupational Speciality because some people were not clear about which category to use to describe their jobs.

One difference in the way in which people handled the various formats emerged when the data was being analyzed. Questionnaires using the traditional answering format included many more written comments on the questionnaires than those where answers were recorded on separate OPSCAN answer sheets. Only 23% of respondents using OPSCAN answer sheets wrote comments on their questionnaires whereas 49% of those with the traditional answer formats wrote additional comments. One reason for this might be that the OPSCAN answer sheets took more time to fill in so people did not have enough patience to also write comments. It could also be that the traditional forms established the habit of entering answers directly in the booklets so that it encouraged this group to write on the questionnaire as they went along and to continue writing when they reached the page for comments.

After administration of the questionnaires was completed, all forms were returned to Boston College to be prepared for analysis. For the questionnaires answered in the traditional manner, responses were punched on computer cards twice so that accuracy could be verified. Errors were identified and corrected and one deck of completed cards was assembled in final form to be read onto

computer tapes. The amount of time that it took to prepare answers for analysis for each of the traditional forms is given in Table 3.2. It can be seen that the compact forms were prepared in less time than the dispersed forms and within that division, Likert forms were completed more quickly than the multiple choice forms.

TABLE 3.2

PREPARATION FOR ANALYSIS OF FORMS WITH THE TRADITIONAL ANSWER FORMAT

FORM	TOTAL NUMBER OF PERSON HOURS	INDEX*
Likert, compact	18.1	100
Multiple Choice, compact	19.6	108
Likert, dispersed	20.0	110
Multiple Choice, dispersed	22.4	124

* Using Person Hours for Likert, compact as 100.

Preparation of the OPSCAN answer sheets for analysis involved a great deal of checking and copying sheets. Answer sheets in poor condition could not be handled by the OPSCAN reader so that sheets with torn edges or which were not dark enough to be read by the machine were gone over and stray marks were erased from pages. A total of fifty-seven hours was spent on preparing the OPSCAN sheets and amount of time divided among the four questionnaire formats equals 14.25 hours per form. This number does not include the time spent correcting part H of the answer sheet which had to be rearranged due to printing errors since it is assumed that such errors will be avoided in any future surveys where there is a greater allocation of time for printing and proofreading.

In relation to the original hypotheses which were set forth in the introduction, the following findings emerged:

1. We had assumed that administration of the traditional format would be easier but in fact there was no difference between traditional questionnaires and OPSCAN answer sheet format in ease of administration in terms of respondent questions and interruptions.

2. In accordance with our initial assumption, the cost of the questionnaires was higher for OPSCAN answer sheets than for the traditional questionnaire format.

3. As hypothesized, more calendar time was required to produce the OPSCAN answer sheets than traditional questionnaires.

4. As hypothesized, more time was required to transfer responses to machine readable form for the traditional questionnaire format than for the OPSCAN answer sheets.

5. As hypothesized, more time was required to code and keypunch dispersed (traditional) questionnaires than compact (traditional) questionnaires.

C. QUANTITATIVE METHODOLOGICAL RESULTS

1. Respondents' Reactions to the Survey

Section F of the questionnaire asked the respondents for direct feedback concerning their opinions of the survey. Essentially, it was expected that reactions would be more favorable for the Multiple Choice form than for the Likert form; for the Traditional answer mode than for the OPSCAN answer sheets; and for the Compact form for officers and the Dispersed form for enlisted personnel. No differences were hypothesized for the Men First/Women First forms. Several hypotheses relating to interactions among the experimental variables were also developed (see pages 7 and 8).

By and large, the results indicate that the soldiers' reactions to the questionnaire were not affected by the form they received. Question 95 asked the subjects to indicate how much they enjoyed taking the survey. The answers, measured on a 5-point scale, were analyzed using a four-way ANOVA which is summarized in Table 3.3. The only significant effect to emerge in this analysis was the Order of Presentation variable (Men First versus Women First). The effect was, however, rather small, with a mean value of 2.74 for the Men First form and 2.87 for the Women First form (higher values represent greater enjoyment). Table 3.4 presents a breakdown of the percentage of respondents who gave positive, neutral and negative responses to Question 95, according to questionnaire form. Differences accross all forms tended to be small.

There was also only one significant difference attributable to the experimental variables on Question 96, which asked: "In your opinion, how valuable are surveys like this one?" (See ANOVA summary, Table 3.5). The Likert respondents were significantly more likely than Multiple Choice respondents to perceive the survey as valuable. The mean responses were 2.92 for the Likert form and 3.07 for the Multiple Choice form, with higher values associated with lower perceived value. Table 3.6 shows the actual breakdown of responses according to the questionnaire form. The largest group of respondents, irrespective of form, thought that the survey was "somewhat valuable."

There were no main or interaction effects for Question 97 (Table 3.7). This item asked respondents to agree or disagree with the statement, "Most soldiers will answer the survey questions truthfully." The large majority of respondents agreed that soldiers would answer truthfully, as shown in Table 3.8. This opinion was unrelated to the form to which respondents had been assigned.

Similarly, the analysis of variance, for responses to Question 98, shown in Table 3.9, yielded no significant results. Respondents were asked to agree or disagree with the statement, "There should be more surveys like this one." The majority of soldiers either strongly, moderately or slightly agreed with this statement. Their opinion was apparently more influenced by the content of the survey than by the form of the questionnaire.

Question 99 solicited the respondents' opinion about whether the questions gave them a chance to say what they really felt. Responses to this item were analyzed by a four-way ANOVA, shown in Table 3.11, which yielded no significant effects at conventional levels of statistical significance. There was a trend toward significance for the first order interaction of Item Type by Order ($p < .10$). Respondents with the Women First form had a tendency to feel they could express themselves better on the Multiple Choice version ($\bar{x} = 3.16$) than on the Likert version ($\bar{x} = 3.40$), while Men First respondents were slightly more comfortable with the Likert form ($\bar{x} = 3.33$) than the Multiple Choice form ($\bar{x} = 3.46$). Again, the differences are so small as to be of little practical significance. The soldiers were divided in their opinion about this question, with a slight majority agreeing they had a chance to express their views, but with a substantial number (42%) indicating disagreement (see Table 3.12). Again, this opinion was essentially independent of questionnaire form.

The analysis of variance of responses to Question 100 yielded one significant effect. As shown in Table 3.13 the order of presentation was the only manipulated variable to affect the respondents' perceived difficulty in deciding on answers. Those who completed the Women First version of the questionnaire perceived slightly less difficulty ($\bar{x}=3.01$) than those completing the Men First version ($\bar{x} = 2.89$). Table 3.14 indicates that most respondents felt there was little difficulty, though about one out of every four soldiers said it was "fairly hard" or "very hard" to decide on a response.

The next question was aimed primarily at identifying possible difficulties with the Answer Format. Item 101 asks for the respondent to agree or disagree with the statement, "It was easy to mark the answer--after I had decided which one I wanted." The analysis of variance for this question, summarized in Table 3.15, revealed no main effects. Respondents with Opscan answer sheets felt just as comfortable marking their answers ($\bar{x} = 2.01$) as those with Traditional booklets ($\bar{x} = 2.01$). The interaction for Item Type and Layout attained significance at the .05 level. Marking answers was easier for Likert Dispersed ($\bar{x} = 1.88$) than Likert Compact ($\bar{x} = 2.06$) respondents, but was easier for Multiple Choice Compact ($\bar{x} = 1.97$) than Multiple Choice Dispersed ($\bar{x} = 2.12$) respondents. There was also a trend toward significance for the Item Type by Order interaction, with a very small tendency for greatest reported marking ease for those taking the Women First, Likert form and Men First Multiple Choice form. Table 3.16 shows that, by and large, respondents felt that it was easy to mark their chosen answers.

The last question in Section F (#102) asked the soldiers whether they would be willing to volunteer for a similar survey. Table 3.17 summarizes the results of the four-way analysis of variance on this question. As shown, no effects were significant at conventional levels, although Order and the Interaction of Answer Format by Layout approached significance. Slightly more willingness to volunteer was expressed by those taking the "Women First" than "Men First" form. (Means are 2.66 and 2.77, respectively, with lower values expressing greater willingness to volunteer.) Respondents with the Compact Traditional and Dispersed Answer Sheet versions

of the questionnaire were more likely to volunteer than those with the opposite combination of Layout and Answer Format, but it is probable that this effect is spurious. Slightly more than half of the survey respondents said that they would either probably or definitely be willing to take another similar survey on their own time, as shown in Table 3.18.

The original hypotheses concerning respondents' reactions to the survey were not supported by the data which was collected. It was hypothesized that there would be no differences between reactions of those who took forms where questions about women came first and those in which questions about men were first. In fact, people who took the Women First forms enjoyed the survey more and said they had less difficulty deciding on an answer than did those who took the Men First forms. There was also a tendency for those taking the Women First forms to be more willing to volunteer to participate in a similar survey. Since the ordering differences between the forms were so subtle, it is difficult to account for the findings. In constructing hypotheses, it was assumed that the different ordering of questions across versions was a measure to control for a variable which was not of central concern. Therefore, it was surprising to find that whether questions about men or women came first resulted in small but significant differences. The probable explanation for the results which emerged is that ordering made some impact on respondents because presentation of items about women before those about men seemed appropriate in a survey concerning attitudes toward the roles of women in the Army. It is also possible that people are accustomed to dealing with situations in which men are presented first and offered as the norm so that when half of the sample in this survey received questionnaires which asked about women before men, the novelty of the approach had a minor effect and that half of the sample reacted slightly more favorably to the questionnaire as a whole.

Another hypothesis which was unsubstantiated was that those taking the Multiple Choice forms of the questionnaire would react more favorably to the survey than those taking Likert forms. It was assumed that the Multiple Choice format would be less boring because of a wider variety of response categories and thus it was expected that it would be more appealing to people than the Likert format. Contrary to our expectations, those who took the Likert format thought that the survey was more valuable than those who took the Multiple Choice format. To some extent this may indicate that options offered for the Multiple Choice questions were not satisfying so that those who were given the chance to agree or disagree with statements to a varying extent on the Likert forms felt that their opinions were being tapped in a more meaningful manner. It is true that repeatedly offering the options of "almost all", "more than half", "about half", "fewer than half" and "almost none" is not taking optimal advantage of the Multiple Choice format so that items in the Likert questionnaires may have seemed more appropriate for getting at the desired information.

The reasons that no differences in reactions emerged between those taking OPSCAN and traditional forms were clarified through the written and spoken comments of soldiers who stated that they are used to dealing with OPSCAN answer sheets and did not find that mode of answering to be any more difficult than writing answers directly on the questionnaire. In comparing the dispersed and compact forms, we hypothesized that officers would prefer the economy of the compact forms whereas enlisted personnel would prefer the

Table 3.3

ANALYSIS OF VARIANCE SUMMARY TABLE FOR ENJOYMENT OF SURVEY
(Question 95)

Source	DF	MEAN SQUARE	F	p
Item Type	1	.02	.02	n.s.
Answer Format	1	.05	.04	n.s.
Layout	1	3.07	2.56	n.s.
Order	1	5.49	4.58	<.05
Itemtype X Answer Format	1	1.97	1.64	n.s.
Itemtype X Layout	1	.12	.10	n.s.
Itemtype X Order	1	1.14	.95	n.s.
Answer Format X Layout	1	.00	.00	n.s.
Answer Format X Order	1	.20	.17	n.s.
Layout X Order	1	1.14	.95	n.s.
Itemtype X Format X Layout	1	.26	.22	n.s.
Itemtype X Format X Order	1	.26	.22	n.s.
Itemtype X Layout X Order	1	2.06	1.72	n.s.
Format X Layout X Order	1	.13	.11	n.s.
Residual	1113	1.20		
Total	1128			

Table 3.4

RESPONDENTS' SELF REPORTED ENJOYMENT, BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Negative Reactions*	38.2%	36.4%	37.3%	37.2%	38.5%	36.1%	39.5%	35.0%
Neutral Reactions*	36.6	40.4	39.3	37.7	38.8	38.2	37.4	39.6
Positive Reactions*	25.3	23.2	23.4	25.1	22.8	25.8	23.2	25.3
	100%	100%	100%	100%	100%	100%	100%	100%

* Negative Reactions = "not at all" or "not very much"; Neutral Reactions = "somewhat"; Positive Reactions = "quite a bit" or "a very great deal".

Table 3.5

ANALYSIS OF VARIANCE SUMMARY TABLE FOR PERCEIVED SURVEY VALUE
(Question 96)

Source	DF	MEAN SQUARE	F	p
Item Type	1	6.70	5.56	<.05
Answer Format	1	.07	.06	n.s.
Layout	1	1.52	1.26	n.s.
Order	1	2.48	2.05	n.s.
Itemtype X Answer Format	1	1.23	1.02	n.s.
Itemtype X Layout	1	.11	.09	n.s.
Itemtype X Order	1	.32	.26	n.s.
Answer Format X Layout	1	1.01	.84	n.s.
Answer Format X Order	1	.70	.58	n.s.
Layout X Order	1	.07	.06	n.s.
Itemtype X Format X Layout	1	2.26	1.87	n.s.
Itemtype X Format X Order	1	2.12	1.76	n.s.
Itemtype X Layout X Order	1	.17	.14	n.s.
Format X Layout X Order	1	.74	.61	n.s.
Residual	1113	1.21		
Total	1128			

Table 3.6

RESPONDENTS' PERCEPTION OF SURVEY VALUE, BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Extremely Valuable	13.5%	9.0%	11.5%	11.0%	11.1%	11.4%	10.9%	11.6%
Quite Valuable	17.9	18.6	17.4	19.1	18.1	18.4	18.1	18.5
Somewhat Valuable	39.0	38.8	40.1	37.8	37.1	40.7	36.5	41.4
Not Very Valuable	21.8	23.4	22.0	23.2	23.6	21.6	24.9	20.2
Not Valuable At All	7.7	10.2	9.1	8.9	10.0	7.9	9.6	8.3
	100%	100%	100%	100%	100%	100%	100%	100%

Table 3.7

ANALYSIS OF VARIANCE SUMMARY TABLE FOR PERCEIVED TRUTHFULNESS
(Question 97)

Source	DF	MEAN SQUARE	F	p
Item Type	1	.13	.10	n.s.
Answer Format	1	.01	.01	n.s.
Layout	1	.23	.18	n.s.
Order	1	2.03	1.62	n.s.
Itemtype X Answer Format	1	.03	.02	n.s.
Itemtype X Layout	1	.45	.36	n.s.
Itemtype X Order	1	1.52	1.22	n.s.
Answer Format X Layout	1	2.90	2.31	n.s.
Answer Format X Order	1	1.42	1.13	n.s.
Layout X Order	1	.26	.21	n.s.
Itemtype X Format X Layout	1	.55	.43	n.s.
Itemtype X Format X Order	1	.42	.34	n.s.
Itemtype X Layout X Order	1	1.68	1.34	n.s.
Format X Layout X Order	1	.23	.18	n.s.
Residual	1113	1.25		
Total	1128			

Table 3.8

RESPONDENTS' AGREEMENT THAT SOLDIERS WILL ANSWER TRUTHFULLY, BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Agree Responses*	90.4%	89.8%	90.3%	90.3%	89.0%	91.2%	89.5%	90.8%
Disagree Responses*	9.6	10.2	9.7	9.7	11.0	8.8	10.5	9.2
	100%	100%	100%	100%	100%	100%	100%	100%

* Responses collapsed across all categories of agree and disagree (Strongly, Moderately & Slightly).

Table 3.9

ANALYSIS OF VARIANCE SUMMARY TABLE FOR "THERE SHOULD BE MORE SURVEYS LIKE THIS" (Question 98)

Source	DF	MEAN SQUARE	F	p
Item Type	1	5.14	1.94	n.s.
Answer Format	1	2.10	.80	n.s.
Layout	1	.64	.24	n.s
Order	1	3.16	1.19	n.s.
Itemtype X Answer Format	1	2.75	1.04	n.s.
Itemtype X Layout	1	.62	.24	n.s.
Itemtype X Order	1	.22	.09	n.s.
Answer Format X Layout	1	.39	.15	n.s.
Answer Format X Order	1	.45	.17	n.s.
Layout X Order	1	.04	.01	n.s.
Itemtype X Format X Layout	1	1.97	.74	n.s.
Itemtype X Format X Order	1	1.67	.63	n.s.
Itemtype X Layout X Order	1	1.59	.60	n.s.
Format X Layout X Order	1	4.42	1.67	n.s.
Residual	1113	2.65		
Total	1128			

Table 3.10

RESPONDENTS AGREEMENT THAT THERE SHOULD BE MORE SURVEYS,
BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Agree Responses*	63.8%	60.7%	61.8%	62.9%	73.7%	60.8%	60.6%	63.9%
Disagree Responses*	36.2	39.3	38.3	37.2	36.3	39.1	39.4	36.1
	100%	100%	100%	100%	100%	100%	100%	100%

* Responses collapsed across all categories of agree and disagree (Strongly, Moderately & Slightly).

Table 3.11

ANALYSIS OF VARIANCE SUMMARY TABLE FOR "HAD A CHANCE TO SAY WHAT I REALLY FELT" (Question 99)

Source	DF	MEAN SQUARE	F	p
Item Type	1	.38	.13	n.s.
Answer Format	1	2.82	.93	n.s.
Layout	1	.00	.00	n.s.
Order	1	3.37	1.11	n.s.
Itemtype X Answer Format	1	1.07	.35	n.s.
Itemtype X Layout	1	.74	.24	n.s.
Itemtype X Order	1	10.81	3.57	<.10
Answer Format X Layout	1	2.28	.75	n.s.
Answer Format X Order	1	1.12	.37	n.s.
Layout X Order	1	1.14	.38	n.s.
Itemtype X Format X Layout	1	.25	.08	n.s.
Itemtype X Format X Order	1	.67	.22	n.s.
Itemtype X Layout X Order	1	4.95	1.63	n.s.
Format X Layout X Order	1	.00	.00	n.s.
Residual	1113	3.03		
Total	1128	3.02		

Table 3.12

RESPONDENTS' PERCEPTION THAT THEY HAD A CHANCE TO EXPRESS FEELINGS, BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Agree Responses*	57.7%	57.6%	59.2%	56.2%	58.9%	56.6%	56.0%	59.5%
Disagree Responses*	42.2	42.3	40.8	43.7	41.1	43.4	44.0	40.6
	100%	100%	100%	100%	100%	100%	100%	100%

* Responses collapsed across all categories of agree and disagree (Strongly, Moderately & Slightly).

Table 3.13

ANALYSIS OF VARIANCE SUMMARY TABLE FOR DIFFICULTY OF DECIDING ON ANSWERS (Question 100)

Source	DF	MEAN SQUARE	F	p
Item Type	1	.18	.26	n.s.
Answer Format	1	.54	.79	n.s.
Layout	1	.00	.00	n.s.
Order	1	2.79	4.06	<.05
Itemtype X Answer Format	1	.06	.09	n.s.
Itemtype X Layout	1	.05	.08	n.s.
Itemtype X Order	1	.91	1.33	n.s.
Answer Format X Layout	1	.05	.07	n.s.
Answer Format X Order	1	.15	.22	n.s.
Layout X Order	1	.27	.39	n.s.
Itemtype X Format X Layout	1	.64	.93	n.s.
Itemtype X Format X Order	1	1.10	1.60	n.s.
Itemtype X Layout X Order	1	.16	.23	n.s.
Format X Layout X Order	1	.31	.45	n.s.
Residual	1110	.69		
Total	1115			

Table 3.14

RESPONDENTS' PERCEPTIONS OF DIFFICULTY IN DECIDING ON ANSWERS, BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Very Hard	4.1%	4.9%	3.5%	5.5%	4.9%	4.1%	4.4%	4.6%
Fairly Hard	22.9	23.9	22.5	24.3	23.9	22.9	26.0	20.7
Not Very Hard	45.9	43.8	47.3	42.3	42.8	46.9	45.3	44.3
Not Hard At All	27.2	27.4	26.7	27.9	28.4	26.1	24.3	30.3
	100%	100%	100%	100%	100%	100%	100%	100%

Table 3.15

ANALYSIS OF VARIANCE SUMMARY TABLE FOR EASE OF MARKING ANSWER
(Question 101)

Source	DF	MEAN SQUARE	F	p
Item Type	1	1.59	.94	n.s.
Answer Format	1	.00	.00	n.s.
Layout	1	.09	.06	n.s.
Order	1	.00	.00	n.s.
Itemtype X Answer Format	1	1.74	1.03	n.s.
Itemtype X Layout	1	7.11	4.20	<.05
Itemtype X Order	1	5.78	3.41	<.10
Answer Format X Layout	1	.03	.02	n.s.
Answer Format X Order	1	.75	.45	n.s.
Layout X Order	1	.41	.24	n.s.
Itemtype X Format X Layout	1	3.01	1.78	n.s.
Itemtype X Format X Order	1	.80	.47	n.s.
Itemtype X Layout X Order	1	.00	.00	n.s.
Format X Layout X Order	1	3.18	1.88	n.s.
Residual	1110	1.69		
Total	1115			

Table 3.16

RESPONDENTS' PERCEPTION OF EASE OF MARKING ANSWER,
BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Agree Responses*	88.4%	84.7%	86.8%	86.4%	86.8%	86.4%	86.0%	87.2%
Disagree Responses*	11.4	15.2	13.3	13.6	13.1	13.7	14.0	12.8
	100%	100%	100%	100%	100%	100%	100%	100%

* Responses collapsed across all categories of agree and disagree (Strongly, Moderately & Slightly).

Table 3.17

ANALYSIS OF VARIANCE SUMMARY TABLE FOR WILLINGNESS TO VOLUNTEER FOR A SIMILAR SURVEY (Question 102)

Source	DF	MEAN SQUARE	F	p
Item Type	1	1.22	.67	n.s.
Answer Format	1	2.18	1.19	n.s.
Layout	1	1.34	.73	n.s.
Order	1	5.33	2.91	<.10
Itemtype X Answer Format	1	.32	.17	n.s.
Itemtype X Layout	1	.05	.03	n.s.
Itemtype X Order	1	1.47	.80	n.s.
Answer Format X Layout	1	5.48	2.99	<.10
Answer Format X Order	1	.03	.02	n.s.
Layout X Order	1	.31	.17	n.s.
Itemtype X Format X Layout	1	.06	.03	n.s.
Itemtype X Format X Order	1	.34	.19	n.s.
Itemtype X Layout X Order	1	1.75	.95	n.s.
Format X Layout X Order	1	4.42	2.41	n.s.
Residual	1110	1.83		
Total	1115			

Table 3.18

RESPONDENTS' WILLINGNESS TO VOLUNTEER FOR SIMILAR SURVEY,
BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Yes Definitely	22.0%	20.2%	23.5%	18.7%	20.8%	21.4%	20.0%	22.2%
Yes Probably	31.3	33.5	30.5	34.3	32.2	32.5	31.2	33.5
Not Sure	17.4	12.7	14.8	15.3	14.8	15.3	16.1	13.9
Probably Not	15.1	18.3	16.7	16.7	16.2	17.2	17.0	16.4
Definitely Not	14.2	15.3	14.5	15.1	16.0	13.5	15.6	13.9
	100%	100%	100%	100%	100%	100%	100%	100%

dispersed forms because directions for the dispersed forms would be easier to follow. Actually, rank of respondent did not make any differences in reactions. Instead, an unanticipated interaction occurred and the dispersed form was considered easier to mark than the compact among those who filled in Likert forms but those with Multiple Choice forms thought that the compact forms were easier to mark. This is almost surely an example of the type of spurious effect which appears to be significant when dealing with large numbers of people and repeated tests of significance although it is actually not a meaningful finding. The differences between the groups were very small and as a whole most people felt it was easy to mark their answers. It would be a mistake to try to interpret such slight differences to the various formats when it is more reasonable to assume that some comparisons are likely to reach significant levels due to chance when a large number of comparisons are being made as they are in the present study. In general, respondents reacted favorably to this survey and differences which were attributable to the different formats were very slight.

2. Time to Complete the Survey

As described in the methodology chapter, the questionnaire administrators kept a record of the time respondents needed to complete the questionnaire, within 5-minute time bands. It was expected that some forms of the instrument would take longer to finish than others. Specifically, it was hypothesized that the Multiple Choice form would require more time than the Likert form; that the OPSCAN answer mode would be more time-consuming than the traditional answer mode; and that more time would be needed for the Dispersed than Compact layout. It was not expected that the Order of Presentation variable would affect completion times. Several interactions among these experimental variables were also hypothesized (See pages 7 and 8).

The time codes (the values ranged from 1 = 10 minutes or less to 13 = 70 to 75 minutes) were subjected to a four-way Analysis of Variance, with Item Type, Answer Format, Layout and Order as the independent variables. The results are summarized in Table 3.19. In terms of main effects, both the Answer Format and Layout were highly significant. Only one interaction (Item Type by Order) attained statistical significance.

The mean time codes for each of the independent variables is presented in Table 3.20. On the average, respondents took approximately 30 minutes to complete the survey. Those who were assigned to the Traditional answer mode required significantly less time (on the average, more than 5 minutes difference) to finish the questionnaire than those assigned to the OPSCAN condition. Although the difference was less substantial, the Compact form required significantly less time to complete than the Dispersed form. There was a tendency (not shown in Table 3.20) for those with the Likert form to require less time for the Women First version ($\bar{x}$ = 5.40) than the Men First version ($\bar{x}$ = 5.65), while for those with the Multiple Choice form less time was taken for the Men First ($\bar{x}$ = 5.49), than for the Women First ($\bar{x}$ = 5.75) form. However, this difference was quite small and probably not very important.

TABLE 3.19

ANALYSIS OF VARIANCE SUMMARY TABLE FOR COMPLETION TIME

Source	DF	Mean Square	F	p
Item Type	1	.47	.16	N.S.
Answer Format	1	599.67	209.62	.001
Layout	1	42.01	14.69	.001
Order	1	.04	.01	N.S.
Item Type x Answer Format	1	.08	.03	N.S.
Item Type x Layout	1	3.58	1.25	N.S.
Item Type x Order	1	13.88	4.85	.05
Answer Format x Layout	1	1.64	.57	N.S.
Answer Format x Order	1	1.46	.51	N.S.
Layout x Order	1	.46	.16	N.S.
Item Type x Format x Layout	1	1.18	.41	N.S.
Item Type x Format x Order	1	1.33	.47	N.S.
Item Type x Layout x Order	1	2.01	.70	N.S.
Format x Layout x Order	1	2.56	.89	N.S.
Residual	1100	2.86		
	1115			

The time data are shown in a somewhat more meaningful fashion in Table 3.21, which indicates the percentage of soldiers who required either 30 minutes or less, or more than 30 minutes, broken down by the form which they were given. As this table shows, more than twice as many soldiers assigned to the traditional mode than those assigned to the OPSCAN mode completed the survey in 30 minutes or less.

It had also been hypothesized that the rank of the respondent would interact with several of the manipulated variables in terms of time to complete the questionnaire. Not surprisingly, officers required significantly less time to complete the survey than enlisted personnel ($p < .001$). However, there was no interaction between rank and either Answer Format or Layout. That is, both officers and enlisted personnel required less time for the Traditional than OPSCAN format and for the Compact than Dispersed layout, and to about the same degree.

The above findings failed to support several of the original research hypotheses. On the other hand, the variables which had the highest expectation of affecting completion time, Answer Format and Layout, did result in significant differences in the hypothesized directions. In terms of length of time to complete the questionnaire, the Compact Traditional form was the most efficient (mean time code = 4.75) and the Dispersed OPSCAN form was the least efficient (mean time code = 6.52). This represents an average difference of almost 10 minutes per respondent.

TABLE 3.20

MEAN TIME CODE, BY QUESTIONNAIRE FORM

	Mean*	Standard Deviation
Likert	5.53	1.85
Multiple Choice	5.62	1.95
Traditional	4.87	1.62
OPSCAN	6.30	1.90
Compact	5.38	1.83
Dispersed	5.76	1.96
Men First	5.	1.
Women First	5.	1.
Total	5.57	1.90

*A code of 4 = 25 minutes; 5 = 30 minutes; 6 = 35 minutes.

TABLE 3.21

TIME SPENT COMPLETING THE SURVEY, BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
30 Minutes or Less	55.7%	51.1%	71.3%	35.2%	57.6%	49.2%	53.7%	53.1%
More Than 30 Minutes	44.3%	48.9%	28.7%	64.8%	42.4%	50.8%	46.3%	46.9%

3. Blank (Missing) Items

It was initially hypothesized that respondents would manifest their difficulty with, or lack of interest in, different versions of the questionnaire by differentially failing to answer some questions. More specifically, it was predicted that there would be more unanswered items (missing data) in the Likert than Multiple Choice items; in the OPSCAN answer format than in the Traditional format; and in the first half of the Compact but second half of the Dispersed layout. Differences were not anticipated due to the Order of Presentation variable.

Due to the fact that relatively few people had missing data, it was considered inappropriate to perform an analysis of variance on the number of missing items since the assumption of a normal distribution would have been seriously violated. Therefore, individuals were coded as either having or not having any blank items for each section of the questionnaire. Cross-tabulations, crossing the missing/not missing variable with the various experimental manipulations, were performed and chi-squared statistics calculated.

The results are presented in Table 3.22. As indicated in the table, there were few significant differences attributable to any of the manipulated variables, and existing differences do not generally conform to predictions. There was a consistent trend for Multiple Choice respondents to leave items unanswered more frequently than the Likert respondents, although the differences were not significant. There were a significantly higher proportion of Traditional respondents with blanks than OPSCAN respondents in Part G of the questionnaire. This tendency (which was contrary to predictions) ran throughout most other parts of the instrument, with the exception of Part H, where significantly more blank items were left in the OPSCAN version than in the Traditional version. The layout of the instrument appeared to be totally unrelated to having missing items. Finally, it was found that in 3 parts of the questionnaire and for the entire instrument, there was a higher proportion of respondents with missing data for the Women First than for the Men First version.

TABLE 3.22

PERCENTAGE OF RESPONDENTS WITH MISSING ITEMS BY QUESTIONNAIRE FORM

	Item Type		Answer Format		Layout		Order	
	Likert	Multiple Choice	Traditional	OPSCAN	Compact	Dispersed	Men First	Women First
Part A	3.0%	3.5%	3.5%	3.0%	3.5%	3.0%	3.1%	3.3%
B	2.6	4.5	4.2	3.0	4.4	2.8	3.1	4.0
C	4.6	6.8	6.6	4.8	5.3	6.1	3.7**	7.7
D	1.6	2.3	2.6	1.2	2.1	1.7	1.0*	2.8
E	.7	1.7	1.2	1.2	1.8	.7	.5*	1.9
F	2.1	2.6	2.8	1.9	1.9	2.8	2.1	2.6
G	3.3	4.4	5.7**	1.9	4.6	3.1	3.8	3.8
H	8.8	9.2	5.9***	12.2	10.0	8.0	8.7	9.3
Total	19.4	20.6	18.2	21.9	21.7	18.3	17.5*	22.6

* $p < .05$

** $p < .01$

*** $p < .001$

Further analyses were performed to ascertain if the subject's sex or rank was related to leaving items unanswered. It was found that the male and female respondents were equally likely to have blank items. The differences attributable to the respondents' rank were small and inconsistent. There was a significant effect in Part B, with more enlisted personnel than officers having blank items. However in other parts of the instrument a reverse effect was obtained so that the significant difference in Part B might be spurious.

There were similarly few interactions between the rank of the respondent and the manipulated variables in terms of blank items. The obtained significant effects were so small and inconsistent that we have concluded that officers and enlisted personnel did not react differentially to the various forms of the questionnaire insofar as their leaving unanswered items was concerned.

The few obtained significant results relating to missing data were almost all contrary to those hypothesized. With regard to the answer format, we expected respondents to have a more difficult time actually marking their answers in the OPSCAN than in the Traditional mode, and for this greater difficulty to show up in terms of missing data. It appears that the respondents are so thoroughly familiar with using separate answer sheets that problems of the nature anticipated were completely avoided. The higher proportion of unanswered questions in the Traditional mode may be the result of a number of phenomena. First, it might be more compelling to fill in a little box than to circle a number, and the respondent might wish to have an answer sheet that looks completed. Secondly, there might be more motivation for respondents to fill in an answer for every question on the answer sheet if they subconsciously relate the survey to experiences in ability or achievement testing. The one exception to these findings were obtained in Part H, where significantly more OPSCAN respondents left items unanswered. It seems very likely that this effect can be attributed to the problems with response options which occured on the answer sheets for Part H.

It is unclear why respondents would have left questions unanswered more frequently on the "Women First" than "Men First" version of the instrument. The differences may be spurious. For example, there is no reason for there to be differences on Part C of the questionnaire, where the order of presentation was not manipulated. On the other hand, the significant differences did emerge in two sections of the instrument in which the Order of Presentation was manipulated, Parts D and E.

In sum, the effects of the experimental manipulations on missing responses were quite weak. The vast majority of respondents completed all items in each section of the questionnaire. In the whole instrument, only 20% of the soldiers left one or more items blank.

4. Factor Analyses

In order to develop scales of items, a series of factor analyses were undertaken. The factor analyses in themselves yielded valuable information about the quality of the data. In this section we discuss the factor analytic approaches used and the results obtained, both in terms of the factors yielded and comparisons between different forms of the questionnaire. Subsequent sections deal with analyses performed with the scales obtained, such as reliability comparisons, regression analyses and the like.

The factor analyses began with a set of 100 variables, comprising all of the questions in Parts A through E and some of the questions in Part G.* Separate analyses were performed for the Likert and Multiple Choice forms of the instrument. The method of factoring adopted was principal factoring with iteration (PA2 method of SPSS). Rotation of factors was restricted to those whose associated eigenvalue was greater than 1.0. Both orthogonal (varimax) and oblique rotations were performed. Our discussion will focus on the results of the oblique rotations, inasmuch as the correlations among the factors tended to be high and the results were more readily interpretable with oblique than with orthogonal solutions.

Factor analysis of the 100 items yielded 22 factors with an eigenvalue greater than 1.0 in the case of the Multiple Choice instrument and 20 factors in the case of the Likert form. The 20 Likert factors resulted in a slightly higher percentage of variance accounted for (68.2%) than the first 20 Multiple Choice factors (64.6%), as well as the full 22 Multiple Choice factors (66.7%), indicating a somewhat higher overall communality of Likert items. The communality results are shown in Tables E.1 and E.2 of Appendix E.

In both analyses, many of the resulting factors tended to be strongly identified with a particular section of the questionnaire. For example, in the first factor of the Multiple Choice analyses, many of the items relating to combat abilities of women from Part B had high loadings. Since some of the factors** from this overall analysis were difficult to interpret, and other factors contained only one item, it was decided to proceed with factoring on a section-by-section basis.

The factoring of Part A of the questionnaire yielded four factors with eigenvalues greater than 1.0 for both the Likert and Multiple Choice forms. These factors accounted for 56.7% of the variance (of items 1 through 18)

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* The factor program used (SPSS) permitted a maximum of 100 items. Therefore, not all items from Section G could be included. The decision was made to include questions dealing with combat issues and items in which there was a fairly high degree of variability of response. Questions 109 to 114 were selected for inclusion.

** The factor pattern matrix for the 100-variable Likert and Multiple Choice forms are presented in Tables E.3 and E.4, respectively, of Appendix E.

in the Multiple Choice form, and 67.6% of the variance for the Likert version. Thus, the Likert items again manifested higher average communality. These results are shown in the first two tables of Appendix F. An examination of the factor pattern matrices revealed that the first three factors of both forms were identical in terms of the items which had high loadings.* Factor A1 related to the effects of women in combat units (#10-16, 18). Factor A2 was a comparable factor for women in support units (#1-7, 9). The third factor, A3, concerned the effects of pregnancy (#8 and 17). It was decided not to form a scale based on the fourth factor in Part A, both because they differed in the Multiple Choice and Likert forms and because it involved items which were already used in Factors 1-3. The pattern matrices for Part A, together with the factor correlation matrices, are shown in Tables F.3 and F.4 of Appendix F.

Part B was divided into two sections for the purpose of the factor analysis: items 19-38, dealing with men's abilities and items 39-58, dealing with women's abilities. The results revealed differences between the men's and women's subsections, as well as differences between the Likert and Multiple Choice forms.

Both the first and second half of the Likert form produced strong "methods" factors. The analysis revealed a strong distinction between the first ten items in each subsection, in which respondents were asked to give their perception of what almost all men or women could do, and the second ten items, in which respondents were instructed to give their opinion about what fewer than half men and women could do. In light of the numerous comments made in discussion sessions, the factor was interpreted as one which discriminates those respondents who noticed the change in instructions from those who failed to do so. These first two factors were extremely powerful, accounting for 60.5% of the variance for the men's items and 56.8% of the variance in the women's items, as shown in Tables F.5 and F.6, respectively, of Appendix F. Because it was considered impossible to distinguish in subsequent analyses those who responded appropriately from those who did not (i.e., failed to observe the switch), no Likert scales were formed for Part B. The factor pattern and factor correlation matrices for the Likert analyses are presented in Appendix F, Tables F.9 and F.10.

The Multiple Choice form did not have similar problems due to the nature of the questioning. The men's abilities (#19-38), when factored, resulted in four factors with eigenvalues larger than 1.0, which accounted for 60.5% of the variance. (See Table F.7 in Appendix F.) Factor BM1 had high loadings on items which concerned combat-related functions (#27, 30, 32-35, 37 and 38). The second men's factor, BM2, was identified as one which related to non-combat abilities (#19, 20, 22, 28, 29). Factor BM3 had three items with high loadings, #24, 25 and 26. These items appeared to concern a man's adjustment or adaptation to the Army. The final factor, BM4, involved two items (#21 and 36) relating to leadership abilities. The relevant matrices are displayed in Table F.11 of Appendix F.

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* A factor loading of |.30| or greater was considered a high loading for the purposes of interpreting the factors.

The women's abilities of the Multiple Choice form (#39-58) yielded three rather than four factors. As shown in Table F.8 in Appendix F, these three factors accounted for 68.6% of the variance, which is higher than that accounted for by the four factors in the men's subsection. The first two factors of the women's items overlapped with the first two of the men's. Factor BW1 had high loadings on items relating to combat abilities (#43-48, 50-58). The second factor, BW2, focused on women's general or non-combat-specific abilities (#39-42, 49). The third factor, BW3, was interpreted as relating to women's competencies in sex-stereotyped activities such as leadership roles and activities involving physical strength (#41, 48, 50, 51, 56 and 58). Table F.12 (Appendix F) presents the factor pattern and factor correlation matrices for Part B, women's items.

Section C of the questionnaires resulted in different factor structures for the Likert and Multiple Choice forms. Four factors with eigenvalues greater than 1.0 were extracted for the Likert version. These factors accounted for 55.7% of the variance in Part C, as shown in Table F.13 of Appendix F. In the Multiple Choice version of the instrument, the factor analysis yielded five factors with eigenvalues larger than 1.0, accounting for 56.1% of the variance. (See Table F.14.)

The first Likert factor in Part C (CLIK1) had high loadings on eleven items, and appeared to be a factor relating to overall attitudes to women (#61, 64-66, 68, 69, 74-76, 79, 80). Factor CLIK2 had only two items with high loadings (#67 and 72). These items seem to deal with women in followers' roles. The third factor, CLIK3, concerns policies on the utilization of women in the Army (#60-63). Finally, the last Likert factor (CLIK4) was interpreted, on the basis of high factor loadings on items 60, 69-71, 73, 77 and 78, to be a factor contrasting men and women in the Army. The relevant matrices for these interpretations are shown in Table F.15.

The Multiple Choice factors bore little similarity to the Likert factors, with one exception. The first Multiple Choice factor in Part C (CMC1) had high loadings on five items dealing with leadership roles and abilities of men versus women (#66, 68, 75, 76, 79). Factor CMC2 resembled the third Likert factor in that it dealt with Army policies for the utilization of women. Items 59-63 had high loadings on CMC2. The third Multiple Choice factor, CMC3, had only two items with high loadings (#77 and 78); both of these items compare men and women in combat roles. Factor CMC4 compared men and women in terms of endurance (#69-71). The last factor (CMC5) was interpreted as focusing on sex-role stereotypes (#64, 65, 72, 79). (See Table F.16 of Appendix F.) It is not clear why the two forms of the questionnaire, which had essentially identical questions but phrased differently, should have yielded such different dimensionalities. The Multiple Choice factors more often involved explicit male/female contrasts, and this is congruent with the response task (e.g., Who have more physical strength--men or women?). In the Likert version, by contrast, an assertion of superiority was made, with which subjects either agreed or disagreed (e.g., Men almost always have more physical strength.). Thus the different response task could have affected the ways the issues were perceived by the respondents.

The eight items in Part D, when factored, yielded three factors for both the Multiple Choice and Likert forms. The three Likert factors accounted for a slightly higher percentage of variance accounted for (67.4%) in comparison with the three Multiple Choice factors (64.4%). Tables F.17 and F.18 of Appendix F present more detailed information. The factor structure of Part D differed among the two forms. Only in the Multiple Choice version was there a tendency for the situations dealing with Pfc. Mary Jones to load on a single factor, but those dealing with Pfc. John Jones did not load on any one factor in either version. There was a tendency in both the Likert and Multiple Choice analyses for factors to be associated with one of the situations rather than the soldiers' sex. These results are shown in Tables F.19 and F.20. It was considered unmeaningful, for the purposes of this research, to form scales relating to soldiers' reactions to a particular combat-related situation rather than to their reactions to how men vs. women might behave in combat. Therefore, the factor analyses were not used as a basis for the development of scales for Part D.*

Two identical factors were obtained from the factor analyses of Part E of the Likert and Multiple Choice forms. These factors accounted for 79.5% of the variance for the Likert version and 78.1% of the variance for the Multiple Choice version, as shown in Tables F.21 and F.22 in Appendix F. In both forms, the two factors were identified, on the basis of factor loadings, as: (1) perceptions of women's guts, strength and stamina (items 92-94), Scale E1; and (2) perceptions of men's guts, strength and stamina (items 89-91), Scale E2. The factor pattern and factor correlation matrices are presented in Tables F.23 and F.24.

The final factor analysis focused on Part G, and used responses from all forms of the questionnaire since no manipulations were made in this section. The twelve items in Section G, when factored, yielded three factors with eigenvalues greater than 1.0. (See Table F.25 in the Appendix). The first factor (G1) had high loadings on six items, and these items were concerned with the utilization of women in combat. It therefore appears that the resulting scale can be appropriately used as a sort of criterion measure against which comparisons among forms can be made. The second factor (G2) had four items with high loadings on it (#104, 105, 107, 108). These items involved non-combat roles in which 30% to 50% of a unit might be women. The last factor (G3) had high loadings on the two items (#103 and 106) in which 10% of a non-combat unit might be women. These results are shown in Table F.26 in the Appendix.

In sum, the factor analyses of the two versions of the questionnaire yielded a large number of factors. Except for Part B of the instrument (in which there were problems in the Likert form), it appears that the factoring of the Likert version consistently yielded factors which accounted for a higher proportion of variance than the Multiple

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* However, for the purposes of subsequent analyses, two scales were formed on a judgmental rather than empirical basis. The men's items (#81, 83, 85 and 87) were combined for Scale D1 and the women's items (#82, 84, 86 and 88) were combined for Scale D2.

Choice version. These differences, though consistent, tended to be small, however.

The section-by-section analyses resulted in factors which were fairly readily interpretable, so that it was these analyses rather than the overall factoring that was used as the basis for the formation of scales. It might be noted that the overall factor analysis produced many similar factors to those yielded in the section-by-section analyses, indicating a tendency to get factors within rather than across sections.

Factor scores, or scales, were formed using the composite index method, wherein items with high loadings on a factor were combined, with unit weighting. Items were always scored in such a way that high values on the resulting scale were associated with positive attitudes (e.g. favored women in combat roles) while low values were associated with unfavorable attitudes on those scales in which women's and men's abilities were contrasted (e.g. CMC1). A summary of all of the scales formed for the Likert form, together with means and standard deviations, is presented in Table 3.23. A similar presentation for the Multiple Choice form is shown in Table 3.24. The scales for Section G (the "Criterion" section) are summarized in Table 3.25.

As one might expect, many of the scales were fairly highly correlated with one another. The full correlation matrix for the Likert Scales is available for inspection in Appendix F, Table F.27, while the Multiple Choice correlation matrix is presented in Table F.28.

TABLE 3.23

SUMMARY OF INFORMATION - LIKERT SCALES

Scale Abbreviation	Underlying Concept	Items Included	Minimum Possible Score	Maximum Possible Score*	Mean	Standard Deviation	Number of Cases**
ALIK1	Perceived effects of women in combat units	10-16, 18	8	48	30.3	10.3	561
ALIK2	Perceived effects of women in support units	1-7, 9	8	48	35.8	7.8	561
ALIK3	Perceived effects of pregnancy	8, 17	2	12	6.1	3.2	564
CLIK1	Overall attitudes toward women	61, 64-66, 68, 69, 74-76, 79, 80	11	66	44.8	12.4	549
CLIK2	Women in leader/follower roles	67, 72	2	12	7.0	2.5	568
CLIK3	Attitudes about policies for utilizing women	60-63	4	24	16.2	5.1	568
CLIK4	Perceptions of women vs. men in Army	60, 69-71, 73, 77, 78	7	42	20.2	8.5	561
DLIK1	Perceptions of men in four combat situations	81, 83, 85, 87	4	24	20.1	2.7	564
DLIK2	Perceptions of women in four combat situations	82, 84, 86, 88	4	24	18.2	4.0	564
ELIK1	Attitudes re: women's strength, guts & stamina	92-92	3	18	10.5	4.4	569
ELIK2	Attitudes re: men's strength, guts & stamina	89-91	3	18	14.6	2.9	560

* Higher scores reflect more positive attitudes.

** Scale scores were not computed for respondents who failed to answer an item on that scale.

TABLE 3.24

SUMMARY OF INFORMATION - MULTIPLE CHOICE SCALES

Scale Abbreviation	Underlying Concept	Items Included	Minimum Possible Score	Maximum Possible Score*	Mean	Standard Deviation	Number of Cases**
AMC1	Perceived effects of women in combat units	10-16, 18	8	40	21.5	6.0	562
AMC2	Perceived effects of women in support units	1-7, 9	8	40	24.5	4.2	559
AMC3	Perceived effects of pregnancy	8, 17	2	10	6.1	1.9	562
BMCM1	Opinions of men's combat-related abilities	27, 30, 32-35, 37, 38	8	40	34.2	4.7	565
BMCM2	Opinions of men's non-combat abilities	19, 20, 22, 28 29	5	25	23.6	2.1	571
BMCM3	Opinions of men's adjustment to Army	24-26	3	15	13.4	1.9	567
BMCM4	Opinions of men's leadership abilities	21, 36	2	10	7.3	1.6	568
BMCW1	Opinions of women's combat capabilities	43-48, 50-59	15	75	46.1	15.4	560
BMCW2	Opinions of women's non-combat abilities	39-42, 49	5	25	20.0	4.3	570
BMCW3	Opinions of women's abilities re: strength & leadership	41, 48, 50, 51, 56, 58	6	30	16.3	6.2	565
BMCW4***	Opinions of women's combat-related abilities using men's factor structure	47, 50, 52-55, 57, 58	8	40	24.7	8.6	565

Table 3.24 (Continued) Summary of Information - Multiple Choice Scales

Scale Abbrev.	Concept	Items	Min. Score	Max. Score*	Mean	Std. Dev.	# Cases**
BMCW5***	Opinions of women's non-combat abilities using men's factor structure	39, 40, 42, 48, 49	5	25	19.5	4.3	567
BMCW6***	Opinions of women's adjustment to Army using men's factor structure	44-46	3	15	10.0	3.6	570
BMCW7***	Opinions of women's leadership ability using men's factor structure	41, 56	2	10	5.7	2.1	571
CMC1	Perceptions of women vs. men as leaders	66, 68, 75, 76, 79	5	25	13.1	3.5	553
CMC2	Attitudes about policies for utilizing Army women	59-63	5	20	15.2	3.7	563
CMC3	Perceptions of women vs. men in combat roles	77, 78	2	10	4.6	1.7	566
CMC4	Perceptions of women's vs. men's endurance	69-71	3	15	6.1	1.7	571
CMC5	Stereotypes about women's roles	64, 65, 72, 79	4	20	12.4	2.4	560
DMC1	Perceptions of men in four combat situations	81, 83, 85, 87	4	16	14.4	1.6	563
DMC2	Perceptions of women in four combat situations	82, 84, 86, 88	4	16	12.7	2.6	562
EMC1	Attitudes re: women's strength, guts & stamina	92-94	3	15	11.6	3.1	563
EMC2	Attitudes re: men's strength, gut & stamina	89-91	3	15	15.3	2.0	564

* Higher scores reflect more positive attitudes.
** Scale scores were not computed for respondents who failed to answer an item on that scale.
*** These four additional scales were formed so that a direct comparison could be made between perceived men's and women's abilities. The following means can be compared: BMCM1 - BMCW4; BMCM2 - BMCW5; BMCM3 - BMCW6; BMCM4 - BMCW7.

TABLE 3.25

SUMMARY INFORMATION - SCALES FROM PART G

Scale Abbreviation	Underlying Concept	Items Included	Minimum Possible Score	Maximum Possible Score*	Mean	Standard Deviation	Number of Cases**
GALL1	Attitude toward the use of women in combat	109-114	6	12	9.4	2.0	1103
GALL2	Attitude toward women in non-combat: 30-50% of units	104, 105, 107, 108	4	8	7.6	0.9	1126
GALL3	Attitude toward women in noncombat: 10% of units	103, 106	2	4	3.8	0.6	1127

* Higher scores reflect more positive attitudes.

** Scale scores were not computed for respondents who failed to answer an item on that scale.

5. Multiple Regression Analyses

A series of multiple regression analyses were performed to provide further information concerning the quality of data obtained. The Likert and Multiple Choice scales were used as the dependent variables in the first set of analyses, with the respondents' demographic and background characteristics as the predictor variables (#115-118, 120-124, 126-132*). The purpose of these analyses was to determine if either the Likert or Multiple Choice scales resulted in better predictability on the basis of demographic variables. That is, did either the Multiple Choice or Likert Scales result in a higher overall R^2? It was initially hypothesized that a higher R^2 would be obtained for the Likert scales.

The results of the analyses are presented in Tables 3.26 and 3.27. These tables show: (1) the proportion of variance accounted for when all sixteen predictor variables are forced into the regression equation; (2) the R^2 when a step-wise approach was used, allowing only significant predictors to be stepped in; and (3) those variables which entered the equation in the stepwise analyses.

As these tables show, the proportion of variance accounted for was in most cases quite low for both the Likert and Multiple Choice scales. In only a handful of scales did the proportion of variance accounted for exceed .15. In the stepwise regression analyses, sex (V115) was fairly consistently the first variable stepped into the equation for scales dealing with attitudes toward women.

Comparisons between the Likert and Multiple Choice forms are complicated by the fact that the scales are not always identical. For those scales for which a direct comparison is possible (A1-A3, D1-E2), the R^2 was more often higher for the Multiple Choice than for the Likert Scales. If we compare the average R^2 for section C, we also find that the Multiple Choice scales perform somewhat better than the Likert scales. Finally, if we look at the overall average (across all scales), the R^2 for Likert and Multiple Choice are .10 and .11, respectively, while for those scales focusing on attitudes about women the R^2 are .12 and .14. In sum, the Multiple Choice scales were consistently easier to predict than the Likert Scales using demographic predictors, but the differences are too small to be considered of major importance.

The next set of analyses were undertaken to make similar comparisons for the other manipulated variables. Since the Likert/Multiple Choice differences were minimal, and an interaction between Item Type and the other experimental variables was considered unlikely, the remaining analyses made comparisons based on Likert scales only.

Table 3.28 presents the regression results comparing the Traditional versus OPSCAN answer format in terms of the R^2 on the Likert scales. In this table, there was a tendency for the R^2 to be higher for the Opscan than for the Traditional form. However, the average R^2 across all scales differed by only .01, so this difference cannot be considered important.

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* V131 (race) was dichotomized as white/nonwhite.

TABLE 3.26

REGRESSION RESULTS - LIKERT SCALES

Scale		R^2 Non-Stepwise	R^2 Stepwise	Stepped in Variables
*ALIK1		.10	.07	V115, V130, V117
*ALIK2		.12	.09	V115, V132
*ALIK3	$\bar{x}_A$=.10	.07	.06	V126, V120
*CLIK1		.32	.32	V115, V123, V120
*CLIK2		.08	.06	V123, Race
*CLIK3		.05	.04	V124, V120, V128
*CLIK4	$\bar{x}_C$=.16	.17	.16	V115, V123
DLIK1		.02(N.S.)	.01	V115
*DLIK2	$\bar{x}_D$=.06	.09	.06	V115
*ELIK1		.08	.06	V115
ELIK2	$\bar{x}_E$=.06	.03(N.S.)	.02	Race
	$\bar{x}_T$=.10			
	$\bar{x}_*$=.12			

* The indicated scales are those which focus on attitudes toward women.

TABLE 3.27

REGRESSION RESULTS - MULTIPLE CHOICE SCALES

Scale		R^2 Non-Stepwise	R^2 Stepwise	Stepped in Variables
*AMC1		.15	.14	V115, V124, Race
*AMC2		.19	.18	V115, Race, V124, V126, V117
*AMC3	$\bar{x}_A$=.14	.09	.08	V115, V124, V126
BMCM1		.03(N.S.)	.02	V130
BMCM2		.06	.04	V130, V128
BMCM3		.05	.04	V130, V126
BMCM4	$\bar{x}_{BM}$=.05	.04(N.S.)	.04	V128, V130, V115
*BMCW1		.13	.12	V115, V123
*BMCW2		.13	.11	V115, V130, Race
*BMCW3		.15	.14	V115
*BMCW4		.13	.12	V115, V123
*BMCW5		.12	.10	V115, V130, Race
*BMCW6		.10	.09	V115, V123, Race
*BMCW7	$\bar{x}_{BW}$=.13	.16	.15	V115
*CMC1		.26	.25	V115
*CMC2		.06	.05	V118, V115, V122, V123
*CMC3		.15	.13	V115, Race, V117, V124
*CMC4		.14	.12	V115, V123
*CMC5	$\bar{x}_C$=.18	.28	.26	V115
DMC1		.02(N.S.)	.01	Race
*DMC2	$\bar{x}_D$=.06	.09	.07	V115, V130
*EMC1		.07	.04	V115, V122
EMC2	$\bar{x}_E$=.05	.03(N.S.)	.02	V115
	$\bar{x}_T$=.11			
	$\bar{x}_*$=.14			

* The indicated scales are those which focus on attitudes toward women.

Comparisons of R^2 for the Layout variable are presented in Table 3.29. The Compact form resulted in a higher R^2 on seven of the eleven scales, and the average R^2 was higher for the Compact (.14) than for the Dispersed (.12) form. Once again, however, this average difference appears to be too small to be of significance.

Finally, the Men First and Women First versions are compared in terms of percentage of variance accounted for on the Likert Scales in Table 3.30. The results were highly inconsistent on a scale-by-scale basis, with each form yielding a higher R^2 on about half of the scales. The average R^2 was about the same for the Men First (.12) and Women First (.13) form.

In summary, it would appear that the experimental manipulations had little, if any, effect on the ease with which scales could be predicted with demographic data. Overall, the predictability was quite low. Whether this can be viewed as a methodological problem is difficult to determine. It may be that people's attitudes toward women in combat and other Army roles are related to aspects of their background or psychosocial makeup which were not examined here. The reliability estimates, which on the whole were acceptably high for group-level comparisons, suggest that this might be the case.

TABLE 3.28

COMPARISON OF TRADITIONAL VS. OPSCAN REGRESSION RESULTS

Scale	R^2 - Traditional Version	R^2 - Opscan Version
ALIK1	.11	.12
ALIK2	.12	.15
ALIK3	.11	.13
CLIK1	.32	.35
CLIK2	.11	.08(N.S.)
CLIK3	.90	.07(N.S.)
CLIK4	.19	.19
DLIK1	.02(N.S.)	.06(N.S.)
DLIK2	.11	.11
ELIK1	.09	.13
ELIK2	.04(N.S.)	.05(N.S.)
	$\bar{x}$=.12	$\bar{x}$=.13

TABLE 3.29

COMPARISON OF COMPACT VS. DISPERSED REGRESSION RESULTS

Scale	R^2 - Compact Version	R^2 - Dispersed Version
ALIK1	.18	.10
ALIK2	.18	.13
ALIK3	.08(N.S.)	.09
CLIK1	.37	.32
CLIK2	.10	.15
CLIK3	.09(N.S.)	.06(N.S.)
CLIK4	.21	.18
DLIK1	.03(N.S.)	.03(N.S.)
DLIK2	.13	.10
ELIK1	.15	.10
ELIK2	.04(N.S.)	.05(N.S.)
	$\bar{x}$=.14	$\bar{x}$=.12

TABLE 3.30

COMPARISON OF "MEN FIRST" VS. "WOMEN FIRST"
REGRESSION RESULTS

Scale	R^2 - Men First Version	R^2 - Women First Version
ALIK1	.08(N.S.)	.15
ALIK2	.12	.17
ALIK3	.10	.09
CLIK1	.35	.32
CLIK2	.11	.09
CLIK3	.07(N.S.)	.08(N.S.)
CLIK4	.22	.16
DLIK1	.06(N.S.)	.08(N.S.)
DLIK2	.08(N.S.)	.19
ELIK1	.10	.12
ELIK2	.07(N.S.)	.03(N.S.)
	$\bar{x}$=.12	$\bar{x}$=.13

6. Reliability

After scales were developed through factor analysis for the Multiple Choice and Likert questionnaires, these scales were used to compare reliabilities obtained through the use of the different question formats. Comparisons were made by applying Cronbach's alpha procedure for estimating internal consistency. An alpha program written in Fortran by Co-Investigator Denise Polit was utilized. No Likert scales were formed for Part B of the survey because of inconsistencies resulting from the fact that a large number of respondents did not notice the change in terminology half-way through Section B of the Likert forms. Consequently, no comparisons between the reliabilities of Likert and Multiple Choice forms are to be made for that section.

As can be seen in Table 3.31, the average reliability of the Multiple Choice items is .79, whereas the average reliability of the Likert scales is .75. Thus, it appears at first that the Multiple Choice scales are generally values of the B scales and when they are removed from the computation, the average reliability of the Multiple Choice scales is also .75. When comparing reliabilities on a section-by-section basis, it can be seen that the Likert scales are more reliable for Sections A (.85 versus .78), D (.66 versus .60) and E (.87 versus .86). The Multiple Choice scales are more reliable for Section C (.75 versus .67) and of course for Section B, where the extreme lack of reliability was an obstacle to developing Likert scales. This overall view tends to demonstrate that there are no consistent trends for one question type to be more reliable than the other as used in this survey.

It may be noted that in the multiple regression analyses, demographic variables accounted for a very small percent of the variance in both the Likert and Multiple Choice scales and that differences between the two formats were very small. Comparisons of the reliabilities of the Likert and Multiple Choice scales also did not give clear evidence for the superiority of one method over the other. Examination of Table 3.31 shows that the average reliability of the Likert scales is lowered by the reliability of scale CLIK2. Since this was a two item scale which was difficult to interpret (as explained in the section on factor analysis), a case could be made for excluding this scale from further comparisons. Still, this scale did emerge as a strong factor in factor analysis so that we are hesitant to ignore its impact. When the average reliability for the Likert scales is calculated, eliminating scale CLIK2, the average reliability is raised to .80, approximately the same as the Multiple Choice scale average when B scales are included. Again, we are brought back to a situation where any small differences between the two formats tend to balance out.

One additional attempt to identify the benefits of one item type over the other was made by comparing individual scales. When a one-to-one comparison was made for Likert and Multiple Choice scales (for example, ALIK1 to AMC1 and CLIK1 to CMC1), in nine out of eleven cases, the Likert scales showed higher reliabilities. Unfortunately, since the scales are not totally equivalent such comparisons are not really appropriate.

Since there was no definite empirical basis for favoring either method, an arbitrary decision was made to proceed with reliability comparisons based on the Likert scales alone. If major differences had been discovered between

TABLE 3.31

COMPARISON OF MULTIPLE CHOICE AND LIKERT RELIABILITIES

Multiple Choice Scale Abbreviation	Cronbach's Coefficient Alpha	Likert Scale Abbreviation	Cronbach's Coefficient Alpha
AMC 1	.85	ALIK 1	.90
AMC 2	.78	ALIK 2	.86
AMC 3	.72	ALIK 3	.79
BMCW1	.96		
BMCW2	.83		
BMCW3	.91		
BMCW4	.94		
BMCW5	.83		
BMCW6	.84		
BMCW7	.77		
BMCM1	.89		
BMCM2	.76		
BMCM3	.74		
BMCM4	.69		
CMC 1	.83	CLIK 1	.89
CMC 2	.71	CLIK 2	.29
CMC 3	.84	CLIK 3	.64
CMC 4	.70	CLIK 4	.85
CMC 5	.65		
DMC 1	.48	DLIK 1	.58
DMC 2	.71	DLIK 2	.74
EMC 1	.86	ELIK 1	.88
EMC 2	.85	ELIK 2	.86
Average	.79	Average	.75
Average, Excluding B Scales	.75	Average, Excluding CLIK2	.80

TABLE 3.32

LIKERT RELIABILITIES

Scale Abbreviation	Men First	Women First	Compact	Dispersed	Traditional	Opscan
ALIK 1	.90	.91	.91	.90	.90	.91
ALIK 2	.86	.86	.86	.86	.84	.87
ALIK 3	.80	.78	.77	.80	.79	.78
CLIK 1	.88	.90	.88	.90	.89	.89
CLIK 2	.19	.37	.33	.25	.31	.29
CLIK 3	.64	.65	.63	.65	.66	.63
CLIK 4	.84	.85	.82	.87	.85	.85
DLIK 1	.54	.62	.62	.54	.57	.58
DLIK 2	.67	.78	.75	.72	.69	.77
ELIK 1	.86	.89	.86	.90	.89	.86
ELIK 2	.88	.82	.86	.86	.85	.86
Average	.73	.77	.75	.75	.75	.75

the reliabilities of the Men First versus Women First forms, the Compact versus Dispersed forms, or the Traditional versus OPSCAN forms, then further analyses with the Multiple Choice scales could have been justified. In fact, the findings showed such small between-treatment differences in reliabilities that it was considered unnecessary to carry out any additional analyses.

The comparisons of reliabilities presented in Table 3.32 show that the average reliabilities of the Compact and Dispersed forms were exactly the same at .75. Both Traditional and OPSCAN forms also had a .75 average reliability. The only difference between manipulated variables which emerged in the comparison of reliabilities was the higher average reliability of the Women First forms (.77) when contrasted with the Men First forms (.73). This finding is in accordance with results from other components of this study which have shown with some consistency that the "Women First" questionnaires are eliciting data of a higher quality than questionnaires where items about men are presented first.

The hypotheses which were set forth in the Introduction were not substantiated by the analyses of reliabilities. It was expected that Likert scales would be more reliable than Multiple Choice scales and that the traditional questionnaire format would result in higher reliabilities than questionnaires where answers were recorded on separate OPSCAN sheets. Higher reliabilities were also hypothesized for the dispersed condition as compared to the compact condition. The findings demonstrated no differences in the internal consistencies relating to these treatments. The only manipulated variable which manifested an effect on reliability was the ordering of questions (Men First versus Women First) and that was the manipulation which was expected to have no effect. There was no evidence at all to support any of the interaction effects which were postulated. Officers and enlisted personnel did not react differentially to the OPSCAN and traditional answer format nor to the compact and dispersed versions of the questionnaire as manifested by measures of reliability.

7. Validity

Part G of the questionnaire was exactly the same across all forms of the questionnaires and was constructed to serve as a criterion measure for the sections of the survey in which the format of items was manipulated. The twelve items in this section yielded three factors with eigenvalues greater than 1.0 when factor analyzed. The first factor (GALL1) concerns the utilization of women in combat and as such is particularly appropriate as a criterion measure against which comparisons among forms can be made. The two other factors derived from Part G (GALL2 and GALL3) are basically methods factors involving the percentage of women preferred in non-combat units and do not provide as meaningful a point of comparison; but, they will be included in this discussion of validity since all respondents dealt with the items of these scales in exactly the same form. The tables accompanying this discussion clearly show that the scales dealing with the attitudes toward women do relate more directly to GALL1 than to GALL2 or GALL3 in accordance with what would be expected. The fact that the GALL1 scale is based on more items than the other G scales (six as opposed to four and two respectively) also makes it more appealing as an overall criterion measure.

Tables 3.33 and 3.34 present the correlations of the Multiple Choice and Likert scales with the criterion scales derived from Part G. The scales

which focus on attitudes toward women correlate substantially with the criterion scales. These tables of correlations also offer evidence of divergent validity since they show that the scales not relating to attitudes toward women (BMCM1-4, DMC1, EMC2, DLIK1 and ELIK2) are not correlated with the criterion measures.

Whereas correlations with the criterion scales do support the validity of the questionnaire as a whole, they do not demonstrate that the Likert items possess more validity than the Multiple Choice items as was hypothesized in the Introduction. The average correlations with GALL1 and the Likert scales is .51 and the average correlation with Multiple Choice scales is .53. For GALL2 and GALL3 the Multiple Choice scales correlate an average of .30 and .31 while the average Likert correlations are .26 and .32. Essentially these data show that there are no differences between the validity of the two item types when compared to an external criterion. The Multiple Choice scales tend to have higher average correlations but this tendency is very slight and is not consistent.

Our original hypothesis was that the Likert items would manifest more construct validity than the Multiple Choice items using the "known groups" approach to assess validity. This approach is predicated on established knowledge that the attitudes of women, and particularly women officers, are more positive toward the roles of women than are the attitudes of men.

A series of two-way analyses of variance was performed by sex and rank with scale scores used as the dependent variable. It is very clear from the information presented in Tables 3.36 and 3.37 that females consistently obtain higher scale scores than males (with higher scores indicating a more positive attitude) and that the differences between males and females are often highly significant. It is also clear that female officers as a group tend to have the highest scale scores of all groups studied. The average score for female officers on the Likert scales relating to attitudes toward women (ALIK1-3, CLIK1-4, DLIK2, ELIK1) is 24.36 and the average female enlisted personnel is 22.35. Male enlisted personnel have the next highest average score with a mean of 19.89 and male officers register the lowest average scale scores at 18.85. This ordering is identical for the average scores of the comparable Multiple Choice scales.

There is no definite tendency for officers or enlisted personnel to have higher scale scores when these two groups are compared. The reason for this is that since women officers consistently have the highest scores and men officers the lowest, the overall standing of officers as compared to enlisted personnel varies according to the sizes of discrepancies among scores for each scale. Both among the Likert and Multiple Choice scales the same trends emerge thus verifying the validity of the survey through the "known groups" approach although uncovering no evidence that the Likert scales are more valid than the Multiple Choice scales.

In order to assess the ways in which other manipulations affected validity, analysis of variance was performed by sex and rank for the Likert Traditional and OPSCAN versions, Compact and Dispersed versions, and Men First and Women First versions. As can be seen in Tables 3.38 to 3.43, the findings are very similar regardless of format. Repeatedly, significant differences emerge showing women and especially women officers to have the

most positive attitudes regarding this survey. Such consistent findings demonstrate that the questionnaire concerning the role of women in the Army is valid but that format, as defined in this study, does not seem to have any impact on validity.

The justification for claiming that there are no major differences depending on treatments is based on average F values for main effects in analysis of variance by sex and rank. The average F for the compact forms is 13.80 (with the standard deviation of the F's being 19.02) and for the dispersed forms is 12.18 (standard deviation = 15.27). The average F for OPSCAN forms is 14.58, with a standard deviation of 19.02, which is in contrast to the mean F of 11.36 for Traditional forms, with a standard deviation of 15.63. The Women First forms have an average F value of 12.65 and a standard deviation of 14.60 while the Men First forms have an average F value of 13.17 with a standard deviation of 19.49. Given the sizes of the standard deviations, it can be seen that differences between the mean F values are not at all meaningful.

TABLE 3.33

MULTIPLE CHOICE CORRELATIONS WITH "CRITERION" MEASURES

SCALE	GALL1	GALL2	GALL3	AVERAGE CORRELATION WITH GALL1	AVERAGE CORRELATION WITH GALL2	AVERAGE CORRELATION WITH GALL3
*AMC1	.53	.21	.29			
*AMC2	.29	.18	.30			
*AMC3	.28	.13	.20	.37	.17	.20
BMCM1	.05	.12	.01			
BMCM2	.07	.15	.03			
BMCM3	.04	.12	.01			
BMCM4	.07	.00	.00	.06	.10	.01
*BMCW1	.63	.38	.34			
*BMCW2	.47	.37	.31			
*BMCW3	.60	.32	.30	.57	.36	.32
*BMCW4	.63	.36	.33			
*BMCW5	.51	.39	.30			
*BMCW6	.50	.37	.31			
*BMCW7	.51	.28	.28	.54	.35	.30
*CMC1	.58	.33	.37			
*CMC2	.73	.34	.34			
*CMC3	.66	.24	.28			
*CMC4	.48	.23	.26			
*CMC5	.45	.30	.33	.58	.29	.32
DMC1	.04	.05	.09			
*DMC2	.56	.34	.39	.30	.30	.24
*EMC1	.59	.28	.30			
EMC2	-.01	.09	.02	.30	.19	.16
Average of Scales Dealing With Attitudes Toward Women (*)	.53	.30	.31			

TABLE 3.34

LIKERT CORRELATIONS WITH "CRITERION" MEASURES

SCALE	GALL1	GALL2	GALL3	AVERAGE CORRELATIONS WITH GALL1	AVERAGE CORRELATIONS WITH GALL2	AVERAGE CORRELATIONS WITH GALL3
*ALIK1	.61	.26	.36			
*ALIK2	.45	.35	.46			
*ALIK3	.34	.17	.23	.47	.26	.35
*CLIK1	.62	.36	.43			
*CLIK2	.13	.11	.06			
*CLIK3	.66	.27	.31			
*CLIK4	.71	.26	.30	.53	.25	.28
DLIK1	.10	.07	.06			
*DLIK2	.48	.32	.40	.29	.20	.23
*ELIK1	.59	.25	.32			
ELIK2	.02	-.05	-.06	.31	.15	.19
Average of Scales Dealing With Attitudes Toward Women (*)	.51	.26	.32			

TABLE 3.35

LIKERT CORRELATIONS WITH "CRITERION" MEASURES FOR DIFFERENT FORMS

	TRADITIONAL			OPSCAN			COMPACT			DISPERSED			MEN FIRST			WOMEN FIRST		
	GALL1	GALL2	GALL3	GALL1	GALL2	GALL3	GALL1	GALL2	GALL3	GALL1	GALL2	GALL3	GALL1	GALL2	GALL3	GALL1	GALL2	GALL3
*ALIK1	.60	.17	.31	.62	.35	.40	.64	.27	.39	.59	.25	.33	.62	.27	.32	.60	.25	.39
*ALIK2	.44	.28	.38	.46	.41	.52	.41	.28	.44	.49	.41	.48	.45	.33	.41	.45	.37	.50
*ALIK3	.36	.19	.24	.31	.15	.24	.29	.11	.21	.39	.23	.25	.36	.19	.26	.32	.15	.21
*CLIK1	.62	.29	.38	.62	.44	.48	.59	.36	.41	.65	.36	.46	.58	.33	.38	.66	.38	.48
*CLIK2	.08	.09	.06	.18	.13	.06	.07	.05	.12	.19	.17	.00	.18	.05	.09	.10	.16	.04
*CLIK3	.67	.22	.24	.65	.33	.36	.67	.30	.37	.66	.24	.24	.63	.32	.24	.69	.23	.37
*CLIK4	.71	.19	.26	.72	.34	.34	.71	.26	.32	.72	.27	.29	.67	.20	.28	.75	.33	.32
DLIK1	.11	.10	.06	.08	.02	.06	.05	.04	.10	.14	.09	.02	.01	.04	.06	.19	.09	.06
*DLIK2	.44	.22	.36	.51	.41	.43	.43	.31	.41	.51	.32	.39	.45	.28	.31	.50	.35	.47
*ELIK1	.62	.24	.31	.56	.26	.34	.54	.26	.33	.63	.23	.32	.50	.25	.26	.67	.24	.38
ELIK2	.08	.03	-.05	-.03	-.13	-.07	.05	-.04	.00	-.01	-.06	-.13	.07	-.08	-.06	.14	-.02	-.06
Average of Scales Dealing With Attitudes Toward Women (*)	.50	.21	.28	.51	.31	.35	.48	.24	.33	.54	.28	.31	.49	.25	.28	.53	.27	.35

TABLE 3.36

MULTIPLE CHOICE ANOVA RESULTS

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
AMC1	19.96	23.69***	22.61	20.42***	21.62	18.34	23.84	23.51**
AMC2	23.26	26.24***	25.07	23.95**	23.98	22.56	26.43	26.01
AMC3	5.67	6.60***	6.23	5.88*	5.78	5.56	6.81	6.36
BMCM1	34.36	33.95	33.66	34.72**	34.14	34.57	33.07	34.96
BMCM2	23.61	23.67	23.32	23.98***	23.24	23.99	23.41	23.98
BMCM3	13.59	13.24	13.17	13.73***	13.40	13.78	12.87	13.67
BMCM4	7.22	7.53*	7.46	7.22	7.32	7.12	7.65	7.38
BMCW1	41.88	51.72***	44.18	48.02***	41.02	42.72	48.24	55.77*
BMCW2	18.53	21.18***	19.19	20.15**	18.20	18.86	20.47	22.00
BMCW3	14.32	18.97***	15.95	16.66	14.29	14.35	18.09	20.01
BMCW4	22.36	27.92***	23.81	25.69**	22.05	22.66	26.09	30.07*
BMCW5	18.42	20.87***	18.86	20.11***	17.95	18.89	20.00	21.89
BMCW6	9.35	10.84***	9.38	10.65***	8.97	9.73	9.89	11.95
BMCW7	4.96	6.60***	5.67	5.64	5.08	4.84	6.43	6.79

Table 3.36 (continued) Multiple Choice ANOVA Results

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
CMC1	11.60	15.15***	13.15	13.11	11.72	11.48	14.90	15.45
CMC2	14.79	15.85***	15.07	15.42	14.98	14.60	15.20	16.61**
CMC3	4.14	5.23***	4.76	4.44*	4.42	3.87	5.18	5.28*
CMC4	5.53	6.64***	5.80	6.23***	5.29	5.77	6.43	6.90
CMC5	11.33	13.88***	12.33	12.53	11.18	11.48	13.71	14.09
DMC1	14.39	14.36	14.36	14.39	14.42	14.36	14.28	14.44
DMC2	12.16	13.40***	12.46	12.92*	12.02	12.29	13.02	13.85
EMC1	11.10	12.28***	11.49	11.72	11.10	11.10	11.98	12.64
EMC2	15.50	14.95**	15.29	15.24	15.45	15.56	15.11	14.76
GALL1	8.97	9.92***	9.37	9.36	9.15	8.79	9.67	10.21**
GALL2	7.45	7.70**	7.42	7.70***	7.29	7.61	7.58	7.84
GALL3	3.65	3.90***	3.76	3.75	3.65	3.65	3.88	3.91

* p <.05
** p <.01
*** p <.001

TABLE 3.37

LIKERT ANOVA RESULTS

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
ALIK1	28.56	32.84***	31.65	28.90**	31.21	25.98	32.22	33.61**
ALIK2	33.87	38.40***	35.81	35.70	34.61	33.13	37.38	39.68**
ALIK3	5.71	6.73	6.32	5.94	6.13	5.29	6.55	6.95
CLIK1	39.14	52.53***	43.55	46.12***	38.49	39.77	49.71	56.01**
CLIK2	7.01	6.91	7.38	6.51***	7.32	6.70	7.46	6.22
CLIK3	15.83	16.75*	15.80	16.67*	16.28	15.38	15.23	18.64***
CLIK4	17.37	23.98***	19.50	20.87**	17.48	17.28	22.02	26.40***
DLIK1	19.88	20.39*	20.24	19.94	20.02	19.74	20.51	20.24
DLIK2	17.32	19.39***	18.22	18.18	17.49	17.15	19.11	19.74
ELIK1	9.53	11.72***	10.66	10.23	10.01	9.04	11.48	12.02
ELIK2	14.72	14.34	14.71	14.39	14.69	14.75	14.75	13.82*
GALL1	9.08	9.98***	9.40	9.53	9.30	8.88	9.52	10.55***
GALL2	7.52	7.69**	7.47	7.73***	7.41	7.63	7.54	7.88
GALL3	3.70	3.88***	3.73	3.83*	3.64	3.75	3.83	3.95

* p <.05
** p <.01
*** p <.001

TABLE 3.38

LIKERT ANOVA RESULTS: MEN FIRST VERSION

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
ALIK1	28.88	32.69**	31.66	29.20*	31.69	26.20	31.62	33.96***
ALIK2	33.69	37.99***	35.23	35.79	34.41	32.99	36.27	40.04**
ALIK3	5.73	6.61**	6.11	6.08	6.09	5.37	6.14	7.17*
CLIK1	38.88	52.02***	42.86	46.06***	37.68	39.96	48.91	55.90*
CLIK2	7.26	7.15	7.70	6.69***	7.61	6.92	7.82	6.33
CLIK3	16.10	16.73	15.78	16.98*	16.35	15.86	15.09	18.72***
CLIK4	17.39	24.28***	19.57	21.09*	17.46	17.32	22.09	26.96**
DLIK1	19.93	20.00	20.03	19.88	19.93	19.93	20.15	19.81
DLIK2	17.61	18.93**	18.26	18.09	17.92	17.32	18.65	19.28
ELIK1	9.38	11.13***	10.49	9.72	10.00	8.77	11.09	11.19
ELIK2	14.51	13.66*	14.32	13.98	14.28	14.74	14.36	12.80**

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 3.39

LIKERT ANOVA RESULTS: WOMEN FIRST VERSION

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
ALIK1	28.24	32.99***	31.63	28.58*	30.74	25.75	32.79	33.25*
ALIK2	34.06	38.82***	36.38	35.62	34.82	33.28	38.45	39.29
ALIK3	5.69	6.86**	6.52	5.79	6.17	5.20	6.96	6.73
CLIK1	39.41	53.06***	44.25	46.18	39.27	39.55	50.54	56.12
CLIK2	6.76	6.67	7.06	6.33*	7.04	6.47	7.10	6.11
CLIK3	15.56	16.77	15.82	16.35	16.22	14.89	15.36	18.55**
CLIK4	17.36	23.67***	19.43	20.63	17.49	17.23	21.95	25.81*
DLIK1	19.83	20.78**	20.45	20.00	20.11	19.55	20.86	20.68
DLIK2	17.03	19.85***	18.19	18.27	17.07	16.97	19.57	20.21
ELIK1	9.67	12.31***	10.83	10.75	10.01	9.33	12.31	11.87
ELIK2	14.94	15.02	15.11	14.81	15.10	14.77	15.13	14.87

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 3.40

LIKERT ANOVA RESULTS: TRADITIONAL VERSION

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
ALIK1	29.29	32.66**	32.01	29.30*	31.73	26.84	32.35	33.04**
ALIK2	34.28	37.61***	35.52	35.88	34.83	33.73	36.40	39.07*
ALIK3	5.51	6.32*	5.84	5.87	5.69	5.33	6.03	6.69
CLIK1	40.12	52.07***	43.23	47.32***	37.68	42.15	49.53	55.17
CLIK2	6.96	7.06	7.48	6.48***	7.31	6.60	7.68	6.29
CLIK3	16.21	16.33	15.49	17.10**	16.37	16.05	14.44	18.67***
CLIK4	17.61	23.64***	19.18	21.31**	16.97	18.23	21.79	25.93
DLIK1	19.64	20.20	19.97	19.78	19.68	19.61	20.32	20.04
DLIK2	17.40	19.30***	18.25	18.19	17.49	17.32	19.15	19.49
ELIK1	9.70	11.69***	10.49	10.61	9.92	9.47	11.21	12.27
ELIK2	14.67	14.35	14.71	14.45	14.80	14.73	14.60	14.04

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 3.41

LIKERT ANOVA RESULTS: OPSCAN VERSION

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
ALIK1	27.83	33.03***	31.27	28.48*	30.67	25.12	32.09	43.22*
ALIK2	33.47	39.22***	36.10	35.53	34.40	32.55	38.35	40.31
ALIK3	5.91	7.16**	6.81	6.01	6.59	5.24	7.09	7.24
CLIK1	38.28	53.04***	43.88	44.86	39.25	37.33	49.90	56.92**
CLIK2	7.06	6.75	7.28	6.54*	7.33	6.79	7.23	6.15
CLIK3	15.45	17.18**	16.12	16.23	16.20	14.72	16.05	18.60
CLIK4	17.14	24.34***	19.81	20.43	17.96	16.33	22.27	26.88**
DLIK1	2.82	2.47	20.51	20.10	2.67	2.96	2.65	2.24
DLIK2	17.24	19.49***	18.19	18.17	17.50	16.99	19.08	20.00
ELIK1	9.36	11.76***	10.83	9.84	10.10	8.62	11.77	11.75
ELIK2	14.68	14.32	14.72	14.32	14.58	14.78	14.91	13.60*

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 3.42

LIKERT ANOVA RESULTS: COMPACT VERSION

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
ALIK1	28.37	33.03***	32.14	28.35**	31.19	25.56	33.36	32.62*
ALIK2	34.08	38.65***	36.39	35.51	35.01	33.12	38.21	39.17
ALIK3	6.01	6.81*	6.64	6.02	6.53	5.48	6.77	6.85
CLIK1	39.08	52.79***	44.23	45.63	39.22	38.95	50.44	55.58*
CLIK2	6.97	6.86	7.25	6.55*	7.26	6.67	7.24	6.38
CLIK3	15.78	16.84	15.95	16.53	16.40	15.15	15.39	18.61**
CLIK4	17.13	24.06***	19.90	20.20	17.86	16.38	22.51	25.93*
DLIK1	19.69	20.32	19.99	19.92	19.72	19.65	20.32	20.31
DLIK2	17.17	19.12***	17.87	18.15	17.22	17.13	18.67	19.67
ELIK1	9.21	11.42***	10.51	9.72	9.76	8.63	11.47	11.35
ELIK2	14.35	14.32	14.48	14.17	14.21	14.49	14.82	13.70*

* p <.05

** p <.01

*** p <.001

TABLE 3.43

LIKERT ANOVA RESULTS: DISPERSED VERSION

Scale Abbreviation	Sex		Rank		Sex + Rank			
	Male	Female	Enlisted	Officer	Male Enlisted	Male Officer	Female Enlisted	Female Officer
ALIK1	28.76	32.66**	31.15	29.43	31.24	26.40	31.12	34.62***
ALIK2	33.66	38.17***	35.24	35.89	34.20	33.14	36.60	40.19*
ALIK3	5.40	6.66***	6.00	5.86	5.71	5.10	6.34	7.06
CLIK1	39.20	52.28***	42.88	46.60***	37.74	40.54	49.00	56.45
CLIK2	7.06	6.96	7.51	6.47***	7.39	6.73	7.67	6.07
CLIK3	15.88	16.65	15.65	16.80*	16.16	15.61	15.06	18.66***
CLIK4	17.63	23.90***	19.08	21.54**	17.06	18.16	21.55	26.88*
DLIK1	20.07	20.46	20.50	19.96	20.33	19.83	20.70	20.17
DLIK2	17.47	19.67***	18.57	18.21	17.77	17.18	19.55	19.81
ELIK1	9.85	12.01***	10.81	10.72	10.26	9.45	11.49	12.69
ELIK2	15.10	14.36***	14.95	14.60	15.19	15.01	14.69	13.94**

* $p < .05$

** $p < .01$

*** $p < .001$

D. WRITTEN COMMENTS AND COMMENTS IN DISCUSSION GROUPS

As part of the survey on attitudes toward women in the Army, participants were instructed to write any comments they wanted to make on the back of their questionnaire on a page labeled for that purpose. Discussion sessions were also held with systematically sampled groups of officers and enlisted personnel. The purpose of these discussions was to obtain additional input concerning reactions to the questionnaire. After closely examining the notes taken during discussion sessions and reading the written comments, it was clear that both sets of data generally conveyed the same information so that findings from these two sources will be combined in the following discussion relating to methodological issues. Although the main focus of the questions asked in discussion groups was methodological, soldiers tended to raise substantive issues and spent the majority of time discussing the role of women in the Army. Most written comments also dealt with the theme of the survey rather than the form and information gleaned from such discussion and comments is presented in a separate section of this report. In general, the tone and topics of discussions with officers and enlisted personnel were very similar except that groups of officers usually did spend a greater amount of time responding to specific methodological points of interest. The officers were more likely to answer the questions they were asked about format and style (which are presented in the Field Manual in Appendix C) before shifting the focus of attention to concerns which were of most interest from their own points of view.

Section A of the questionnaire asked questions about what happens when women are assigned to support companies and then asks what would happen if women were assigned to combat companies. Some soldiers felt that terms used in this section such as morale and discipline were ambiguous. They would have preferred questions which were more specific. It was often mentioned that initial reactions to women would be different than long range effects. The questions as presented did not permit differentiating between changes over time. The suggestion was made that questions could be qualified with some asking about long term effects and others asking specifically about immediate reactions. Those responding to the Multiple Choice questions were given an option of "no change," but people who took Likert forms of the questionnaire had no comparable alternative. Several Likert respondents expressed a desire for a "no effect" option. They felt that disagreeing with the statement was not adequate because it was not clear that the reason they were disagreeing was that they assumed no changes would take place. The item in this section which elicited the most comments was the one asking if pregnancy would be a serious problem if women were introduced into support and combat companies. Some felt that the question could be interpreted in too many ways and that it is not clear what is meant by "serious" in this context.

In Part B, questions dealt with the percentages of men and women that could do certain tasks assuming they had the necessary training or experience. Some soldiers claimed that their answers would have been different if a

further qualification was stated that those who could not succeed in training would be screened out. They felt that this was not currently the practice so that it was possible to pass through training and still not be able to perform a job adequately. Other soldiers interpreted the question differently and said that if someone has the proper training and experience then by definition they must be able to do the job. The question about whether men and women could carry a full field pack was criticized a number of times because respondents did not know exactly what was meant by a full field pack. One soldier mentioned that the question about staying cool in combat was poor because no one stays cool in combat. He thought that using the term "stable in combat" was more likely to evoke a wider range of responses. In general, there was a favorable reaction to Section B, although among those taking the Likert form of the questionnaire there were some complaints that switching from "almost all" to "fewer than half" in the item stems was confusing.

The next section of the questionnaire, Part C, asked for opinions concerning the role of women in the Army. Some soldiers said that they would have liked more items of this type. They felt that they were best able to express their opinions through this section because questions asked directly what they thought about an issue. One person suggested that the questionnaire would have seemed more logical to him if Sections B and C had been in reverse order. Concerning the question about whether or not the Army's mission is best carried out by men only, there were some requests to clarify what was meant by the "Army's mission."

Hypothetical situations were presented in Part D and respondents were asked to decide how a typical male and a typical female would react under these circumstances. This section seemed to elicit more comments than any other section of the questionnaire. Perhaps this was the case because Part D used a unique approach so that it was easily contrasted to the other parts of the questionnaire. The major criticism of this section was that too much was unclear about the situations. For example, someone pointed out that it is usually not a good idea to go after an injured person in a clearing because a sniper may be waiting but the situation presented in the questionnaire gave no information for weighing this consideration, so they felt that the situation was not defined precisely enough. Some of those taking the Multiple Choice forms complained that the options in this section were inadequate so that a response they wanted to make was not available. This same problem arose for those taking Likert forms who hesitated to agree or disagree with statements because they felt that they could not express the reasons for their responses. Still, a number of soldiers stated that they preferred this section to all the others. Some said that it was easier to react to these questions because they seemed personalized.

Part E was a very short section asking if the respondent thought men and women had enough strength, stamina and guts to be combat soldiers. Although some people thought that the words stamina and guts were ambiguous, this section generally was received very favorably because it was to the point and many soldiers felt that it allowed them to sum up their feelings concisely.

Although Part G was not actually a component of the opinion questionnaire, but rather a group of questions to be used as criterion measures,

the participants in the survey did not know this and so reacted to Part G even though such reactions were not solicited by discussion leaders. Negative reactions were so pronounced that perhaps the validity of the questions in this section should be reconsidered. The section was most commonly criticized as being biased and irrelevant. Some considered the section boring. Many people resented the forced-choice nature of the questions and stated that they felt their true opinions were not reflected in the options.

In addition to the comments about particular sections, many comments were made concerning the questionnaire as a whole. People usually seemed to enjoy the questionnaire and the majority of comments regarding the survey were positive. Those who liked the questionnaire said that it was good because it was comprehensive and gave them an opportunity to express opinions on an important topic. Some general criticisms were that more detail was needed and that items were not specific enough. One person mentioned that the items were repetitive and he suggested that questions could be combined to result in a shorter form. A few women complained that they disliked the survey because it put sexist feelings in print. Some soldiers of both sexes said that they did not like being forced to stereotype men and women as the questionnaires required.

One of the problems that people had in answering questions was related to making judgments about areas in which they had no experience. Those who had no combat experience were especially hesitant to predict how people would perform in a crisis. Even those who had combat experience sometimes claimed that they couldn't know how women would react since they had never seen them in combat. To some extent this was a realistic limitation but there did seem to be a great deal of resistance to using imagination when answering questions. One suggestion that was offered a number of times was that each part of the questionnaire should have been given only to those with a relevant background. Nurses, in particular, said that they did not feel qualified to answer many of the questions. Since this survey dealt with attitudes, specific experiences should not be necessary in order to answer questions. It is reasonable to expect that opinions were expressed even when exact information about some items was missing. Still, there could be some weaknesses in the data gathered if soldiers were overly concerned about their limited experiences and thus were hesitant to express their opinions.

In relation to the response options offered, the most common suggestion was to include a "no opinion" category or one which states "neither agree nor disagree." It was pointed out that many people do not like answering questions in areas that are unfamiliar to them. The fact that a number of soldiers wanted a neutral category does not necessarily mean that one should be included. It is probably not advisable to make it too easy for people to avoid taking a position. On the other hand, there is little value in forcing respondents to make uninformed judgments with which they are not comfortable.

The page for comments at the end of each questionnaire was appreciated by many of the respondents. Some felt that it was the most important part of the questionnaire and among those, there were people who said that there

should have been space for comments on every page so that they would have been encouraged to write more and they could have avoided the inconvenience of constantly turning to the last page. Along these same lines, there were soldiers who said that they could have expressed their ideas better if they had been able to write a sentence in response to each question and others who would have preferred more global open-ended questions. It was also suggested that information gained in discussion sessions would be of more value than answers to the questionnaire because opinions could be qualified and fully explained.

Some respondents pointed out areas which they felt were missing in the questionnaires. One person said that more background relating to childhood experiences should have been solicited. Others thought that questions about marital status and geographic background would have been appropriate.

A noticeable amount of skepticism was expressed concerning this particular survey and Army surveys in general. Some enlisted persons felt that decisions were made by officers who only do paper work and do not have first-hand knowledge of situations so that they are more likely to have stereotypical attitudes. Others, both enlisted personnel and officers, felt that the Army makes decisions on a political basis and then uses the results of surveys to justify its policies. Soldiers often asked the purpose of the study and wanted to know how the information gained would be used. Some complained that they had participated in surveys previously, but had never seen any results. It is recommended that the results of this survey be disseminated in some way. Those who invested time and effort deserve to receive some feedback. If this recommendation is implemented, it can be expected that there will be increased cooperation in future Army surveys and a reduction in hostile feelings toward surveys.

E. SUMMARY OF FINDINGS

There were no outstanding differences in the quality of data collected depending on the format of the questionnaire. All forms produced data that was demonstrated to be highly reliable and valid. Comments made by soldiers were of the same nature regardless of the survey form to which they were exposed.

Based on factor analysis of the questionnaires, a number of clearly defined factors emerged for both the Likert and Multiple Choice items which were analyzed separately. The Likert scales seemed slightly superior to the Multiple Choice scales in that they accounted for a greater percent of the variance but this difference was quite small. Multiple regression analyses favored the Multiple Choice questionnaires because the scales derived from them were able to be predicted with demographic variables accounting for a higher percent of variance than the predictive equations for Likert scales. On the whole, demographic variables did not account for a very high percent of variance for either Multiple Choice or Likert scales.

Since there is little evidence indicating the superiority of the OPSCAN over the Traditional answer format or the Dispersed over the Compact, practical considerations become of most central concern. The Traditional answer format was found to be cheaper, to be more convenient to prepare and assemble, to take less time for respondents to complete and to elicit more written comments. In favor of the OPSCAN forms is the fact that they took less time to prepare for analysis and fewer people responding on OPSCAN answer sheets left blank items. In general, there were not many missing items for any of the formats.

As might be expected, officers took less time to complete the questionnaires on an average than did enlisted personnel. Considering all the treatment variables, the Compact Traditional form was the most efficient and took an average of almost ten minutes less per respondent to complete than the Dispersed OPSCAN forms. The compact forms also took less time to key punch than the dispersed forms.

There was some evidence from analyzing the results to indicate that the "Women First" ordering has benefits over the "Men First" ordering. Those soldiers who took "Women First" forms reported that they perceived less difficulty in answering questions and that they enjoyed the survey more than did the rest of the respondents. When considering the reactions of respondents, it is also the case that those taking Likert forms thought that the survey was more valuable than did those people taking Multiple Choice forms.

IV. SUBSTANTIVE RESULTS

Although the primary focus of this project is on the methodological aspects of the data collection, that is, on the evaluation of the manipulated methodological variables of Itemtype, Layout, Response Mode and Order of Presentation, the data yielded in this preliminary survey include a wealth of information on soldiers' attitudes toward women's roles in the army. Therefore, in this chapter we briefly examine some of the substantive results*. In the first part of this chapter we present an overview of the literature relating to women's roles in the army. Then a summary of the statistical findings from the analysis of questionnaire responses is presented. The concluding section of this chapter provides a summary of the comments made during the discussion sessions and also comments written directly onto the questionnaire booklet.

A. BACKGROUND OF THE PROBLEM

1. Women in the Military

Women within the armed forces, like their civilian counterparts, have begun to voice a number of demands. One major goal has been to press for a broader range of assignments. Indeed, the broad revisions in military assignment policy represent one of the most significant changes to affect military women during the present decade. The Army, Navy, and Air Force have opened up to women virtually all occupations except those which are combat-related (Central All-Volunteer Task Force (CAVTF), 1972). If and when the Equal Rights Amendment is ratified, it is unlikely that women will be barred from combat assignments on the basis of their sex alone (Frings, 1972). Because the changes in policy on women have been so rapidly enacted, and because the issues are so intimately linked with deeply embedded social values concerning masculinity/femininity and sex-segregated activities, there has naturally been some concern about potential psychological, interpersonal, and administrative difficulties stemming from such changes. All branches of the armed forces have inaugurated research programs focusing on the utilization of women in the military, including research on attitudes toward the military woman's expanding role. A brief review of the background of the situation should help to put the substantive issues into context.

*Our treatment of the substantive questions is fairly brief and superficial, inasmuch as the contract did not call for an analysis of the data from a substantive point of view.

2. Historical Trends of Women in the Services*

Prior to World War II, women in the armed forces served almost exclusively as nurses, although during the 1920's there were several proposals to organize a women's service corps. The personnel crisis resulting from the advent of World War II produced increasing interest in developing a mechanism to use women in the military. Despite some opposition from various branches of the Army, a bill calling for an auxiliary women's Army corps (WAAC) was signed into law in 1942. The women's reserve of the Navy (Women Accepted for Volunteer Emergency Service, or WAVES) was created later in that same year.

Even before the first WAACs had completed their training, it became apparent to military policymakers that the original limit of 12,000 women would be insufficient to ease the Army's severe personnel shortages. Furthermore, it seemed likely that recruiting women on an auxiliary basis would be problematic. In the spring of 1943 the WAAC was changed to WAC (Women's Army Corps), a distinct branch of the Army which entitled women to many of the same rights and privileges of men. During the wartime period, WACs were largely assigned to clerical and administrative positions, but shortages of men opened up most non-combat fields to the women. For example, some women worked in such jobs as bombsight maintenance specialists and Link trainer instructors. Women were deployed overseas and could be found in every major Army command. A total of 350,000 women served in active duty with one of the female military groups during the War, representing about two percent of those who served.

During the postwar period, some military women remained on active duty. The passage of the Women's Armed Forces Integration Act of 1948 enabled all four services (Army, Navy, Air Force, and Marines) to offer a permanent military career to women. At the same time, Congress imposed an upper limit for the regular utilization of women to two percent of the military services. In 1967, Congressional accession limitations on women were removed. However, until recently, none of the services came even close to recruiting to the two percent level. In the Army, from the period 1948 to 1970, the percentage of women remained remarkably constant, ranging from a low of .8 percent to a high of 1.8 percent during the Korean War period.

The early 1970's witnessed many changes both in and out of the military. Governmental planners were predicting, for example, that the services would have a serious shortfall of high-quality male recruits by 1985. The growth of women's labor force participation in the civilian sector has also played a part in changing people's conception of "women's roles" and in alerting the military personnel specialists to the possibilities of using "womanpower" to meet the services' needs. Furthermore, feminists in and out of the military were beginning to make people conscious of the sex discrimination which permeates much of our society.

*The material for this section was derived mostly from Corson (1972) and Goldman (1973), except as otherwise specified.

As a result of these and other forces, the military and its female branches are experiencing dramatic changes. Major policy revisions concerning age of entry, accession ceilings, admission to service academies, pregnancy and dependents, entitlements, and job assignments have favorably affected the recruitment and retention of female military personnel. At the present time, the proportion of women in the services is higher than has ever been true in the past. For example, during fiscal year 1976, women represented 8.7 percent of total enlisted accessions in the Army. In terms of absolute numbers, female enlisted accessions nearly doubled from 8,647 in FY 1973 to 15,986 in FY 1976. During this same four-year period the number of male enlisted accessions declined slightly (source: DCSPER 374).

Furthermore, there are some indications that attrition patterns are reversing themselves. Until recently women had higher attrition rates than males. In the Army in FY 1973, male enlisted personnel in every category in terms of months of tour (up to 36 months) had lower attrition rates than females. In FY 1974 through FY 1976 the trend was reversed, with higher retention rates for female enlistees (source: DCSPER 374). There are, therefore, several indications that young women are increasingly interested in and committed to careers within the military.

3. Women and Occupational Assignments in the Military

Until several years ago, the services were quite restrictive about the Military Occupational Specialties (MOS) which were open to women. The military, as well as private industry, has been subjected to increased pressure to comply with federal directives on equal opportunity employment. The Central All-Volunteer Task Force reported only 39 percent of its 468 job specialties for enlisted personnel to women, compared with 89 percent of 475 in 1972.

In the Army, as in other branches of the military, essentially all occupations are now open to women except those involving combat or combat-related duties. In reality, however, the majority of women continue to be concentrated in routine administrative and clerical assignments, with relatively small numbers entering fields traditionally held by men. Nevertheless, the changes in the assignment policies of the services are too new to assess their long-term impact on the utilization of women. There is some limited evidence that enlisted Army women are, in fact, increasingly represented among non-traditional occupational specialties. Over a one-year period from 1973 to 1974, the percentage of women in non-traditional MOS increased from 1.4 percent to 6.8 percent. A traditional MOS was defined as a job to which at least three percent of the WACs were assigned. It seems likely that internal and external constraints will result in the continued assignment of more women to technical fields such as mechanical and electrical job specialties in the future.

In terms of women enlistees' ability to enter traditionally male occupations, the evidence from entrance test scores indicates that males

perform substantially better than females on electronic and mechanical "aptitude" tests. Nevertheless, a considerable number of women do score over the male median on such tests, indicating skills and abilities which might profitably be tapped (CAVTF, 1972; Fuchs and Hammer, 1963; Vitola, Mullins and Weeks, 1974). A study conducted by the Air Force found that, over the 1970 to 1973 period, female basic trainees in the Air Force have improved their scores on the Mechanical and Electronics Subtests of the AQE, despite the fact that male scores on these subtests during the same period were declining. These data lend further support to the prediction that future years will witness some expansion of women's roles in the military.

4. Women in Combat Roles

One of the most controversial issues in the discussion about utilization of women in the armed forces is their assignment to combat duty. At present, all of the services prohibit assigning women to combat-oriented positions. Sections 6015 and 8549 of Title 10 of the U.S. Code prohibit the assignment of women in the Air Force, Navy, and Marine Corps to aircraft having a combat mission or to duty on Navy vessels other than hospital ships or transports. The Army, which is not covered by this same law, has established a ruling which excludes women from billets which are combat-oriented (Thomas, 1976).

The combat-related policies of the American armed forces are not markedly different from those of other nations. Kinzer (1976) has pointed out that Arab, Norwegian, Israeli, and Yugoslav women have served in combat. By and large, however, most countries exclude women from combat duty, although combat training is provided by some. Even in Israel, where universal conscription requires all 18-year-old men and women to participate in the Defense Force, women are primarily used to release men for combat (Thomas, 1976).

The passage of the Equal Rights Amendment, however, would undoubtedly necessitate some changes in American policy. Mr. William H. Rehnquist, who in 1971 was the Assistant Attorney General of the United States, gave his legal opinion on this issue during the House Judiciary Committee hearings on the ERA in April, 1971:

> The question here is whether Congress would be required either to draft both men and women or to draft no one. A closely related question is whether Congress must permit women to volunteer on an equal basis for all sorts of military service, including combat duty. We believe that the likely result of passage of the equal rights amendment is to require both of those results. As has been pointed out by many of the amendment's supporters, that would not require or permit women any more than men to undertake duties for which they are physically unqualified under some generally applied standard... (Rehnquist, cited in Frings, 1972)

If the Equal Rights Amendment passes, there will probably be an early test case of the legality of prohibiting women from combat. There are many indications that at least some women want to serve on combat duty. Women at all of the service academies have spoken out on this issue. Recently four women in the Navy sued the Navy for the right to be assigned to serve on ships at sea other than hospital ships. The contention of this class action suit is that prohibition from sea duty denies them opportunities for training and advancement and also prevents them from sharing in "the true Navy purpose".

5. Attitudes Toward Women in the Military

The issues surrounding the utilization of women have been of great concern to all branches of the armed forces. During the past few years, a concerted effort has been made to research problem areas relating to military women. In the Army, for example, an extensive research program, encompassing four broad research areas, has been developed to "investigate socio-cultural, physical, and psychological factors in the selection, classification, assignment, and training of female personnel to insure their effective utilization in the U.S. Army" (ARI memorandum, 1977). A major concern of such programs has been to study the attitudes of military personnel toward the expansion of women's roles so that difficulties may be anticipated and solutions proposed. The kind of question being asked by such research endeavors is: "Are soldiers likely to be so resistant to changes of this sort that the implementation of these changes will be made difficult?" (Savell and Collins, 1975).

Research conducted by investigators from the Army Research Institute for the Behavioral and Social Sciences has provided some interesting results. In one part of the study questionnaire, respondents (a sample of 721 male and female officers and enlistees from four Army installations) were asked to rate 24 job titles in terms of their judged appropriateness for women. Only one job (rifle-carrying infantry foot soldier) was judged by the majority of respondents to be inappropriate for women. Women respondents, especially women officers, were more likely than men to judge distinctly military occupations, such as bomb disposal specialists, as appropriate for a women (Savell, et al., 1975). Despite this difference, many combat-oriented jobs were perceived to be appropriate by a majority of both men and women. A report by Segal, Kinzer, and Woelfel (1975) has pointed out that civilians appear to be more opposed to the assignment of women to combat duties than are Army personnel, based upon surveys in both sectors.

The 1974 Army survey of 721 soldiers also included a question designed to determine the "traditional" and "contemporary" orientation of respondents based on their endorsement of one of two alternative statements. Subjects were also asked to indicate their perceptions of how other individuals or groups (the majority of men in the Army, the majority of women in the Army, their best friend of the opposite sex, their best friend of the same sex, their mother and their father) would respond. The majority of both women and men, when indicating their own attitudes,

agreed with the statement that "Relationships between men and women are ideally equal and husbands and wives should share domestic, child rearing and financial responsibilities." Women respondents were much more likely to agree with this statement than men, however. Both sexes considered themselves to be more contemporary in their views toward sex roles than their best friend of the same sex. This finding suggests the possibility that it may be perceived to be socially unacceptable to admit to traditional views and that corresponding changes in attitudes may result over time (Savell and Collins, 1975).

Overall, there have emerged some notable consistencies among the various studies concerning the attitudes of military personnel toward women and sex-roles. First, as might be expected, women themselves have more favorable views toward the expansion of women's roles (Coye, Denby, Hooper, and Mullen, 1973; Fuller, 1973; Savell, et al., 1975; Savell and Collins, 1975; Woelfel, Savell, Collins, and Bentler, 1976). Secondly, officers have been found to be more contemporary in their sex-role attitudes than enlisted personnel (Fuller, 1973; Savell, et al., 1975; Woelfel, et al., 1976). By and large, the results have suggested that men in the services are not adamantly opposed to the expansion of women's roles.

The present project is part of the continuing effort to investigate the reactions of military personnel to the utilization of women in non-traditional roles, and to discover what socio-demographic or situational factors are related to these attitudes. The current policy of the Army is to seek a more productive utilization of the talents of its women. Existing evidence suggests that the underutilization of women in traditionally male fields reflects more than just disinterest in such positions by women. Several investigators have found, for example, that female job applicants with identical qualifications as males have been perceived as less desirable job applicants than men (Cohen and Bunker, 1975; Rosen and Jerdee, 1974). As Cohen and Penner (1975) have observed, women may refrain from applying for traditionally male occupations, and leave such jobs sooner, in part because of perceived male rejection of them in those roles. The successful integration of women into non-traditional billets may thus depend to a large degree on the Army's sensitivity to attitudes and ways to change them.

B. STATISTICAL ANALYSES OF QUESTIONNAIRE RESPONSES

In this section we examine how the soldiers participating in this study felt about women in various roles in the military, particularly combat roles. First, descriptive results are presented on a section-by-section basis, in which responses to individual items are analyzed. Then some of the scales described in the preceding chapter are used as the dependent variables in a series of analyses in which various demographic characteristics are used as the predictor variables, in order to shed some light on the relationships between a person's attitudes toward women in combat roles and his or her background traits.

1. Descriptive Overview of the Questionnaire Results*

Part A

The first section of the questionnaire asked respondents for their opinions concerning what happens to various aspects of company functioning (such as morale, teamwork and group spirit) when women are assigned to support companies such as Signal or Military Police. A parallel set of nine questions asked for opinions of what would happen if women were assigned to combat companies such as Armor or Infantry.

By and large, the majority of respondents thought that the presence of women in support companies has no adverse effects and may even have positive effects on company functioning. For example, 86.5 percent of all Multiple Choice (MC) respondents thought that company morale either stays the same or improves; 81 percent of all Likert respondents agreed that there is just as much group spirit as before; and 83.5 percent of the MC respondents thought that the company carries out its mission as well as or better than before. The only problem area perceived by a majority of respondents was pregnancy: 52.8 percent of the Likert respondents agreed that "pregnancy very often becomes a serious problem".

Female soldiers were considerably more likely than male soldiers to have a favorable opinion concerning the effects of including women in support companies. For instance, 90 percent of the women taking the MC form thought that as much or more work gets done with women in support companies, as opposed to only 64 percent of the males expressing this view. However, a large number of women soldiers believed, as did male soldiers, that pregnancy could be a problem.

For the most part, women officers** and enlisted personnel held similarly positive attitudes. Among the male soldiers, however, there was somewhat of a tendency for officers to have less favorable views than non-officers. For example, 20 percent of the male non-officers, compared with 34 percent of the officers (MC form) thought that when women are assigned to support companies, the company carries out its mission worse than before.

When the questions referred to combat companies, the opinions became considerably more negative. For instance, 56.5 percent of the MC respondents thought that the level of confidence soldiers develop in each other would decrease with women in combat companies, compared with 27.3 percent who felt this way when the question dealt with support companies. Nevertheless, a substantial number of respondents felt that women would not adversely affect combat company functioning: 48.6 percent agreed that morale would go up; 67.4 percent agreed that the soldiers would take their jobs just as seriously; 59.4 percent thought there would be as much teamwork; and 58.4 percent disagreed that less work would get done if women were assigned to combat jobs (Likert form). Once again, pregnancy was perceived by a majority of respondents to constitute a potential problem, with 70 percent of the Likert respondents agreeing that the problem would very often be serious.

*The actual instruments may be found in Appendix A.

**Officers = respondents with pay grade of O1 or higher; non-officers (enlisted) = respondents with pay grade below O1.

As in the case of the questions relating to support companies, women soldiers were more optimistic than men about the inclusion of females in combat companies. For instance, 58 percent of the male soldiers, compared with 36 percent of the female soldiers thought that discipline would go down (MC form). Once again, male officers were more pessimistic than male enlisted personnel, while rank differences among the females tended to be unimportant. As an example, 41 percent of the male non-officers compared with 56 percent of the male officers (MC form) thought that teamwork would decline if combat companies included women.

Part B

The second section of the qeustionnaire provided respondents with a list of various Army tasks, such as driving a jeep, carrying a full field pack, using an M-16 rifle to attack an enemy position and so forth. The soldiers were asked their opinions about the ability of enlisted men and enlisted women to perform each of these 20 tasks.

Overall, respondents expressed the view that a substantially greater percentage of men than women would be capable of performing the various tasks. For example, 61 percent of the MC respondents thought that almost all enlisted men would be able to handle guard-duty alone in an isolated place, as opposed to 24 percent who believed that almost all enlisted women could do so. Similarly, 70 percent of the MC respondents felt almost all men could carry a full field pack, compared with 14 percent who thought that almost all women could perform this task. The tasks for which there was the greatest perceived male/female discrepancies, in addition to these two, were the following: able to go for a week without a chance to shower, able to live in the field for two weeks, able to use an M-16 rifle to attack an enemy position, able to fire at an attacking enemy soldier, and able to carry and use a machine gun.

Despite large differences in the perceived abilities of enlisted men and women, a sizable number of respondents felt that many, if not all, women could perform the majority of listed tasks. For instance, 83.2 percent of the MC respondents thought that about half or more of all enlisted women could dig a foxhole; 64.4 percent thought half or more could keep going after a fellow soldier had been killed; 66.1 percent believed half or more could fire at an unsuspecting enemy soldier if the situation called for it; and 68.1 percent thought that half or more enlisted women could shoot to kill.

Sex differences in the perceived capabilities of male and female soldiers were considerable. With respect to the task performance of males, there were often no differences, but existing differences show that males thought men more capable than women thought they were. On the other hand, when the perceived abilities of women soldiers are examined, women respondents invariably felt that women soldiers are more capable than male respondents believed them to be. For example, 49 percent of the women MC respondents, compared with only 19 percent of the men MC respondents, thought that almost all enlisted women could use an M-16 rifle to attack an enemy position. By and large, women respondents indicated their opinion that fewer enlisted women than men could perform the tasks listed, but they were not nearly as pessimistic as the male respondents in this regard.

Differences associated with the rank of the respondents were most apparent among the women's perceptions of the abilities of enlisted women. On the whole, female officers thought that women soldiers would perform better than female enlisted personnel thought they would. For example, 71 percent of the female officers, compared with 54 percent of the enlisted women strongly agreed that almost all women would be able to dig a foxhole; 51 percent of the women officers versus 29 percent of the women enlistees strongly agreed that women could go for a week without a chance to shower (Likert form). Male respondents tended not to differentiate themselves in terms of rank with respect to the perceived abilities of either men or women.

Part C

Part C consisted of two major types of questions. One type solicited opinions concerning what policies the Army should adopt in utilizing women, such as policies concerning the draft, assignments and so forth. The second item type dealt with the respondents' reactions to sex-role stereotypes.

Most respondents felt that women had an important role to play in the Army. For example, 85 percent of the Likert respondents agreed that women should be used in support units the same way men are used. A majority of the Likert respondents agreed that if men are drafted, women should be, too (65 percent); that women, like men, should be used in guard-duty assignments (66 percent); and that women should be included in space missions (89 percent). However, there was much less agreement with respect to the use of women in combat roles. About half of the MC respondents (47.6 percent) felt that women should not be assigned to combat jobs under any circumstances -- not even if a shooting war breaks out. The majority of respondents (MC form) thought that the Army would become less effective if women were assigned to combat units. Still, a sizable number (42.3 percent) thought the Army would be just as or more effective with women in combat jobs.

With regard to sex-role stereotypes, the sample as a whole tended to endorse the view that the characteristics of men and women are distinctly different, along traditional sex-role lines. For instance, more than half of the respondents taking the Likert form agreed that men usually make better commanders than women (58 percent); that men can usually endure extreme weather conditions better than women (59 percent); and that men can usually endure the rigors of outdoor living better than women (75 percent). On the other hand, several stereotypes were rejected by the majority of respondents: 56 percent disagreed that women don't make good bosses; 81 percent disagreed that men have more common sense than women; and 58 percent agreed that female commanders get as much respect as male commanders.

The questions in Part C elicited very substantial sex differences. Female respondents were more likely than men to encourage fuller participation of women in the Army and to reject traditional sex-role stereotypes. For example, 66 percent of the males compared with 46 percent of the females endorsed the statement that women should not be assigned to combat jobs at all (Likert form); 39 percent of the male respondents, as opposed to 13 percent of the females, agreed that the Army's mission is best carried out by men.

When we look at the stereotype questions, it was found that, for instance, 77 percent of the men and 32 percent of the women agreed that men usually make better commanders than women. Whereas 73 percent of the male respondents felt that men can better endure the weather extremes than women, only 39 percent of the women agreed that this was true.

In many cases, sex differences were often affected by a conspicuous sex and rank interaction. Male officers often expressed the most negative view of women in the Army, while female officers expressed the most favorable opinion. For instance, the breakdown of "agree" responses to the statement "Women should not be assigned to combat jobs at all" is as follows: male enlistees - 57 percent; male officers - 76 percent; female enlistees - 55 percent; and female officers - 35 percent.

Part D

In Part D of the questionnaire, respondents were asked to indicate what they felt a male soldier (Pfc. John Jones) and a female soldier (Pfc. Mary Jones) would do in four different situations.

In each case, more people thought that John Jones rather than Mary Jones would act appropriately. For example, in the first situation in which the soldier is in a foxhole, under small arms fire from an enemy element 300 meters to the front, 72.3 percent of the Multiple Choice respondents said that Pfc. John Jones would probably keep down and fire at enemy soldiers, while only 45.4 percent thought that Pfc. Mary Jones would do this. On the other hand, there were some situations in which perceived differences were of considerably smaller magnitude. For instance, in the third situation the soldier has been assigned to perimeter defense and has been on this assignment for 36 hours. When asked to agree or disagree that Pfc. Jones would probably stay awake and alert, 90.1 percent of the Likert respondents agreed that John would do so and 84.3 percent thought that Mary would. While for each situation the male soldier was more often perceived to take appropriate action than the female soldier, a very large percentage of respondents indicated their belief that Pfc. Mary Jones could perform effectively.

In general, female respondents were more likely than male respondents to think that the female soldier would react suitably in the described situation. Female officers had the highest opinion of Pfc. Mary Jones' ability to handle the situation of any of the sex/rank combinations. For example, in the fourth situation, Pfc. Jones has caught some schrapnel in the left arm and shoulder, and the enemy is advancing with small enemy fire. Only 25.5 percent of the male officers (MC form) thought that Mary would continue to fire at the enemy despite the wound, while 56.9 percent of the female officers gave this opinion.

The results for Section D of the MC form are summarized in Table 4.1.

TABLE 4.1

SUMMARY OF RESULTS, PART D, OF MULTIPLE CHOICE QUESTIONNAIRE

		Percent of Multiple Choice Respondents Expressing View That Soldier Would Act Appropriately				
		Male Respondents		Female Respondents		All Respondents
		Enlisted	Officer	Enlisted	Officer	
V81	John would keep down, fire	73.0	78.6	59.1	82.6	73.1
V82	Mary would keep down, fire	36.5	44.8	42.4	67.6	46.0
V83	John would bring you back	79.3	89.0	80.2	83.5	82.7
V84	Mary would bring you back	43.0	48.3	59.7	65.7	52.6
V85	John would stay awake and alert	51.1	37.9	65.2	49.5	50.7
V86	Mary would stay awake and alert	39.7	33.1	63.6	54.6	46.5
V87	John would continue to fire	70.2	60.0	64.4	68.8	65.9
V88	Mary would continue to fire	35.2	25.5	40.9	56.9	38.1

Part E

In Part E, respondents were asked whether they thought enlisted men have enought strength, stamina and guts to be a combat soldier. The same questions were asked with respect to enlisted women.

Overall, respondents felt that male soldiers would be considerably more likely than women soldiers to possess these combat-related characteristics. For example, 83 percent of the MC respondents thought that most* men have enough stamina to be a combat soldier, while only 34 percent of the MC respondents thought this would be true for most* women. The statistics for the other two characteristics are as follows: Strength - most males, 89 percent, most females, 27 percent; Guts - most males, 66 percent, most females, 33 percent.

As in other parts of the survey, male and female respondents differed considerably in their views, particularly with regard to the abilities of women. Forty-nine percent of the males, compared with 70 percent of the females, agreed (Likert form) that almost all enlisted women have enough stamina to be a combat soldier. A summary for each characteristic, broken down by respondent group, is shown in Table 4.2.

This table reveals that, in addition to sex differences, there also exist differences of opinion between enlisted men and male officers. A

*"Almost all" or "More than half".

greater percentage of male officers than male enlistees thought that most men have enough guts to be a combat soldier. However, a smaller percentage of male officers than male enlisted personnel agreed that most women have enough strength and stamina to be combat soldiers. This tendency for male officers to be most pessimistic about the abilities and characteristics of women for combat roles is consistent with other sections of the questionnaire.

TABLE 4.2

PERCENTAGE OF RESPONDENTS AGREEING TO QUESTIONS IN PART E, LIKERT FORM

		Total	Enlisted Men	Officers Men	All Men	Enlisted Women	Officers Women	All Women
V89	MEN - strength	93%	94%	95%	94%	94%	86%	90%
V90	MEN - stamina	91	91	94	92	93	83	88
V91	MEN - guts	85	83	93	87	83	79	81
V92	WOMEN - strength	46	48	29	39	58	57	57
V93	WOMEN - stamina	58	56	40	49	71	69	70
V94	WOMEN - guts	52	43	44	43	59	72	65

Part G

In Part G, the same 12 questions appeared in all versions of the questionnaire. Nine of the 12 questions asked respondents to make a decision concerning company strength reduction versus the inclusion of a certain percentage of women, in three different types of company: light truck, military police and infantry. In all cases, the majority of respondents thought that the company could do a better job when the company was at full strength--with women--than when the company was below authorized strength without women. This was particularly true for the light truck and military police companies. The percentage of respondents opting for full strength dropped in the case of the infantry company, but nevertheless, about 60 percent preferred an infantry company with 10 percent, 30 percent and 50 percent women to a corresponding reduction in strength.

Sex differences in the responses were small for the questions dealing with the light truck and military police companies. This lack of differentiation is due largely to the fact that there was little overall variability in the responses - about 90 percent felt a company at full strength would be better than a company at reduced strength without women. On the other hand, women were considerably more likely than men to prefer a full strength infantry company with women in it. A breakdown of those responses by respondent group is presented in Table 4.3.

TABLE 4.3

PERCENTAGE OF RESPONDENTS PREFERRING FULL-STRENGTH COMPANY
(PART G, ALL FORMS)

		Total	Enlisted Men	Officers Men	All Men	Enlisted Women	Officers Women	All Women
V103 Light Truck	10% Women	88%	81%	87%	84%	91%	98%	94%
V104 Light Truck	30% Women	91	83	95	89	90	98	94
V105 Light Truck	50% Women	90	84	92	88	88	97	92
V106 MP	10% Women	88	82	86	84	93	97	94
V107 MP	30% Women	90	84	91	87	90	97	93
V108 MP	50% Women	87	83	87	85	85	94	89
V109 Infantry	10% Women	61	56	46	52	71	78	74
V110 Infantry	30% Women	58	59	43	52	60	74	66
V111 Infantry	50% Women	61	59	56	58	58	77	66

2. Influence of Demographic Variables

The scales derived through the factor analytic procedures described in Chapter 3 tap various dimensions of an individual's attitudes toward women and their roles in the Army. In this section, we present the mean scores on a number of scales, broken down by a number of demographic characteristics such as educational background, prior experience with women in the Army, Vietnam experience and so on. It should be noted that a breakdown of the scales by sex and rank is not presented here, inasmuch as these results were presented in the previous chapter.

Tables 4.4 through 4.19 present the relevant results on the Multiple Choice scales dealing with attitudes toward women (the scales dealing with men are omitted) and the scales from Section G which all respondents completed. In all cases, the higher the score, the more positive the attitude. For a description of the dimension which the scale is measuring, the reader is referred to Tables 3.24 and 3.25 in the preceding chapter.

Briefly, the results can be summarized as follows. Soldiers who had been assigned to a unit with a woman company commander were consistently more favorable in their attitudes than soldiers who had never been assigned to such a unit (Table 4.4). This result probably reflects a high correlation between the subject's own sex and his exposure to a woman commander*. That

*In order to shed light on possible sex interactions, Appendix G presents tables for a few scales, broken down by sex and questions 116-122.

is, women (whose attitudes toward women in Army roles is more favorable) are more likely than males to have had a female commander. In Table 4.5, it can be seen that soldiers who had been in a unit with men and women soldiers were also somewhat more positive in their attitudes than those soldiers who hadn't been in a mixed-sex unit. Similar differences were obtained on several scales between soldiers who had or had not been assigned to a mixed-sex, small unit such as a platoon (Table 4.6).

With regard to supervisory experience, a few significant differences were obtained (Table 4.7). Those respondents who had had experience supervising only male soldiers had somewhat more unfavorable attitudes than any other group, including those with no supervisory experience. Individuals who had experience supervising women soldiers only (presumably these were women themselves) had the most favorable attitudes. Table 4.8 shows the powerful effects of having had a supervisor of the opposite sex on the respondents' attitudes: those who had had a supervisor of the opposite sex (again, these are probably largely women) had consistently more positive attitudes toward women in the Army than those who had not. Those who had never had a supervisor of the same sex (Table 4.9) had more favorable attitudes than those who had. Again, this result undoubtedly reflects an effect of the respondent's sex. In Table 4.10, it can be seen that the respondents' experience with a mixed sex group in a field training exercise was unrelated to their attitudes.

The respondent's educational background appeared to be only modestly and inconsistently related to their attitudinal responses (Tables 4.11 and 4.12). On some scales, the least educated individuals had the most positive attitudes (e.g., Scales AMC1 and AMC2), while on other scales the most favorable opinions were expressed by those with the highest educational attainment (e.g., Scales GALL2, CMC5).

Table 4.13 presents a breakdown of the attitude scale scores by the respondents' career branch category (respondents who said they did not know what their career branch category is are omitted from the table). The most negative attitudes were consistently expressed by those in a combat career branch. Those in a combat support or combat service support branch had quite similar mean attitude scores.

With regard to length of time in the Army, there was a consistent tendency for the least favorable attitudes to be expressed by the respondents with the most number of years of service in the Army (Table 4.14). Soldiers with less than three years of Army service were the most positive in their attitudes. Future Army plans were not highly correlated with any of the attitude scale scores (Table 4.15). On two scales, those who thought they would be in the Army five years from now had significantly more negative attitudes than those in other response categories. Table 4.16 shows that whether respondents had friends in or out of the Army had virtually no effect on their attitudes.

The attitudes of whites and non-whites are contrasted in Table 4.17. Although there were a number of significant differences by race, the results were inconsistent. On the majority of scales, the white respondents were more positive in their attitudes toward women's roles than non-whites, but on two scales this relationship was reversed. It is not immediately clear why this inconsistency emerged.

The respondents' experience with regard to Vietnam was very strongly related to their attitudes (Table 4.18). Soldiers who had served a tour in Vietnam were significantly more negative in their views than those who had not served in Vietnam. A further analysis, not shown in tables, revealed that the type of experience a soldier had in Vietnam (i.e., in a combat unit, combat support unit, etc.) was not as important an influence on attitudes as whether the soldier had been in Vietnam at all.

Finally, we looked at attitudinal differences among the various Army bases at which the questionnaires were administered. For the purpose of this analysis, all of the European data were grouped, rather than showing a breakdown for the four European bases. As Table 4.19 shows, there were significant differences on several scales. The respondents from Europe tended to have the most favorable attitudes toward women in non-traditional Army roles, while respondents from Fort Bragg had the least positive attitudes.

In order to better understand the dynamics of perceived differences between male and female soldiers, one further analysis was performed. Scores from the scales from Sections B, D and E of the Multiple Choice questionnaire which related to perceived combat-related abilities and behaviors of men were contrasted with the parallel scale scores for women. The results are presented in Table 4.20, separately by the sex of the respondent. Both male and female respondents perceived the male soldier as being more competent in the combat role than a female soldier. However, male respondents were particularly likely to perceive strong sex differences with respect to competencies in combat.

TABLE 4.4

MEAN ATTITUDE SCALE SCORES[°] BY WHETHER OR NOT ASSIGNED TO UNIT WITH WOMAN COMPANY COMMANDER

	Not Assigned Unit With Woman Company Commander	Assigned to Unit With Woman Company Commander	P
AMC1	20.8	23.1	****
AMC2	23.8	25.6	****
AMC3	6.2	6.3	NS
BMCW1	44.3	49.3	***
BMCW2	19.3	20.5	**
BMCW3	15.6	17.7	***
CMC1	12.4	14.5	****
CMC2	14.9	15.6	NS
CMC3	4.5	4.7	NS
CMC4	5.8	6.4	***
CMC5	12.0	13.2	****
DMC2	12.2	12.9	*
EMC1	11.1	12.0	**
GALL1	9.3	9.7	***
GALL2	7.6	7.6	NS
GALL3	3.7	3.8	*
Approximate N for Multiple Choice Scales	401	169	
Approximate N for G Scales	777	326	

*p<.05
**p<.01
***p<.001
****p<.0001

°Higher scores reflect more positive attitudes.

TABLE 4.5

MEAN ATTITUDE SCALE, BY WHETHER OR NOT ASSIGNED TO UNIT WITH MEN AND WOMEN SOLDIERS

	Not Assigned to Unit With Men & Women Soldiers	Assigned to Unit With Men & Women Soldiers	P
AMC1	20.5	21.7	*
AMC2	23.8	24.5	NS
AMC3	6.2	6.2	NS
BMCW1	42.8	46.7	*
BMCW2	19.2	19.8	NS
BMCW3	14.9	16.6	**
CMC1	12.0	13.3	***
CMC2	14.8	15.2	NS
CMC3	4.5	5.6	NS
CMC4	5.6	6.1	**
CMC5	11.2	12.7	****
DMC2	12.2	12.5	NS
EMC1	11.5	11.4	NS
GALL1	9.2	9.5	NS
GALL2	7.5	7.6	NS
GALL3	3.7	3.8	**
Approximate N for Multiple Choice Scales	118	451	
Approximate N for G Scales	214	886	

*p<.05
**p<.01
***p<.001
****p<.0001

TABLE 4.6

MEAN ATTITUDE SCALE SCORE, BY WHETHER OR NOT ASSIGNED TO SMALL UNIT WITH MEN AND WOMEN SOLDIERS

	Not Assigned to Small Unit With Men & Women Soldiers	Assigned to Small Unit With Men & Women Soldiers	P
AMC1	20.5	22.0	**
AMC2	23.7	24.7	*
AMC3	6.1	6.2	NS
BMCW1	43.4	47.2	**
BMCW2	19.1	19.9	*
BMCW3	15.3	16.8	**
CMC1	12.2	13.5	****
CMC2	14.4	15.6	***
CMC3	4.3	4.7	*
CMC4	5.6	6.2	****
CMC5	11.8	12.7	****
DMC2	12.3	12.5	NS
EMC1	11.2	11.5	NS
GALL1	9.2	9.6	**
GALL2	7.5	7.6	NS
GALL3	3.8	3.8	NS
Approximate N for Mulitple Choice Scales	193	369	
Approximate N for G Scales	371	717	

*p<.05
**p<.01
***p<.001
****p<.0001

TABLE 4.7

MEAN ATTITUDE SCALE SCORES, BY SUPERVISORY EXPERIENCE

	Supervisory No Experience	Experience Supervising Men & Women	Experience Supervising Men Only	Experience Supervising Women Only	P
AMC1	22.7	21.2	21.3	24.1	NS
AMC2	25.6	24.2	23.5	28.3	***
AMC3	6.7	6.0	6.6	6.7	**
BMCW1	45.1	46.4	43.9	51.1	NS
BMCW2	19.5	19.7	19.3	21.5	NS
BMCW3	16.4	16.5	14.9	18.3	NS
CMC1	13.6	13.2	11.9	14.8	**
CMC2	15.0	15.2	15.2	14.5	NS
CMC3	4.9	4.5	4.5	5.4	NS
CMC4	6.0	6.1	5.5	6.2	*
CMC5	12.4	12.5	11.8	14.0	**
DMC2	12.4	12.4	12.3	12.7	NS
EMC1	11.7	11.3	11.3	13.2	NS
GALL1	9.3	9.5	9.2	9.5	NS
GALL2	7.4	7.6	7.5	7.6	**
GALL3	3.7	3.8	3.7	3.9	NS
Approximate N for Multiple Choice Scales	80	365	109	12	
Approximate N for G Scales	150	717	206	23	

*p<.05
**p<.01
***p<.001
****p<.0001

TABLE 4.8

MEAN ATTITUDE SCALE SCORES, BY EXPERIENCE WITH OPPOSITE SEX SUPERVISION

	Never Had Supervision of Opposite Sex	Had Supervision of Opposite Sex	P
AMC1	19.9	22.8	****
AMC2	23.1	25.4	****
AMC3	5.8	6.5	***
BMCW1	41.9	48.9	****
BMCW2	18.5	20.5	****
BMCW3	14.4	17.7	****
CMC1	11.4	14.4	****
CMC2	14.7	15.5	**
CMC3	4.1	4.9	****
CMC4	5.6	6.4	****
CMC5	11.3	13.3	****
DMC2	11.8	12.9	****
EMC1	10.9	11.8	**
GALL1	9.0	9.8	****
GALL2	7.5	7.6	*
GALL3	3.7	3.9	****
Approximate N for Multiple Choice Scales	258	311	
Approximate N for G Scales	513	587	

*p<.05
**p<.01
***p<.001
****p<.0001

TABLE 4.9

MEAN ATTITUDE SCALE SCORE, BY EXPERIENCE WITH SAME SEX SUPERVISOR

	Never Had Supervisor of Same Sex	Had Supervisor of Same Sex	P
AMC1	23.6	20.9	****
AMC2	26.2	23.9	****
AMC3	6.6	6.1	*
BMCW1	49.6	44.8	**
BMCW2	20.8	19.3	**
BMCW3	17.9	15.8	**
CMC1	14.8	12.6	****
CMC2	15.5	15.1	NS
CMC3	5.2	4.4	****
CMC4	6.5	5.9	***
CMC5	13.6	12.1	****
DMC2	13.3	12.2	**
EMC1	12.1	11.2	*
GALL1	9.7	9.3	*
GALL2	7.6	7.6	NS
GALL3	3.8	3.8	NS
Approximate N for Multiple Choice Scales	118	451	
Approximate N for G Scales	212	890	

*p<.05
**p<.01
***p<.001
****p<.0001

TABLE 4.10

MEAN ATTITUDE SCALE SCORES, BY EXPERIENCE IN FIELD TRAINING EXERCISE

	No Experience With Men & Women Soldiers in a Field Training Exercise	Had Experience with Men & Women Soldiers in a Field Training Exercise	P
AMC1	21.4	21.5	NS
AMC2	24.3	24.4	NS
AMC3	6.4	6.1	NS
BMCW1	45.5	46.0	NS
BMCW2	19.7	19.6	NS
BMCW3	16.2	16.3	NS
CMC1	12.8	13.2	NS
CMC2	15.4	15.0	NS
CMC3	4.7	4.5	NS
CMC4	6.1	6.0	NS
CMC5	12.2	12.5	NS
DMC2	12.2	12.5	NS
EMC1	11.7	11.2	NS
GALL1	9.5	9.4	NS
GALL2	7.6	7.6	NS
GALL3	3.8	3.8	NS
Approximate N for Multiple Choice Scales	193	375	
Approximate N for G Scales	385	714	

*p<.05
**p<.01
***p<.001
****p<.0001

TABLE 4.11

MEAN ATTITUDE SCALE SCORES, BY YEARS OF SCHOOLING

	12 Years or Less	13 to 15 Years	16 Years	17 Years or More	P
AMC1	22.9	21.5	20.7	20.4	**
AMC2	25.3	24.1	24.2	23.7	*
AMC3	6.5	6.1	6.2	5.9	NS
BMCW1	43.5	43.5	48.8	48.2	**
BMCW2	19.3	18.9	20.5	20.0	**
BMCW3	15.9	15.4	17.0	16.6	NS
CMC1	13.2	12.5	13.4	13.1	NS
CMC2	14.8	15.1	15.2	15.6	NS
CMC3	4.8	4.4	4.4	4.5	NS
CMC4	5.8	5.8	6.1	6.4	*
CMC5	12.5	11.8	12.5	12.7	*
DMC2	12.3	11.8	12.7	12.8	NS
EMC1	11.3	11.2	11.5	11.7	NS
GALL1	9.2	9.6	9.5	9.5	NS
GALL2	7.4	7.5	7.7	7.8	****
GALL3	3.7	3.7	3.8	3.9	**
Approximate N for Multiple Choice Scales	172	136	132	128	
Approximate N for G Scales	326	265	265	244	

*p<.05
**p<.01
***p<.001
****p<.0001

TABLE 4.12

MEAN ATTITUDE SCALE SCORES, BY HIGHEST EDUCATIONAL DIPLOMA OR DEGREE

	None	GED	High-School Diploma	Associates Degree	Bachelors Degree	Graduate Degree	P
AMC1	24.3	22.8	22.8	20.4	20.5	20.0	****
AMC2	26.5	23.8	25.3	23.7	23.9	23.3	**
AMC3	6.2	6.7	6.5	5.9	6.1	5.6	NS
BMCW1	50.2	43.6	43.6	40.7	49.2	46.3	***
BMCW2	19.8	20.7	19.1	18.3	20.4	19.6	**
BMCW3	16.9	16.2	15.8	14.2	17.2	15.9	*
CMC1	13.1	13.1	13.2	11.6	13.2	13.1	NS
CMC2	15.4	15.0	15.0	14.5	15.4	15.2	NS
CMC3	6.0	4.3	4.7	4.0	4.5	4.4	**
CMC4	5.8	5.9	5.9	5.5	6.2	6.4	*
CMC5	11.8	12.3	12.5	11.2	12.5	12.6	*
DMC2	12.6	11.4	12.4	11.5	12.7	12.5	NS
EMC1	12.5	11.0	11.4	10.7	11.5	11.5	NS
GALL1	9.3	9.1	9.4	9.3	9.5	9.5	NS
GALL2	7.4	7.6	7.4	7.5	7.7	7.8	****
GALL3	3.7	3.7	3.7	3.7	3.8	3.8	NS
Approximate N for Multiple Choice Scales	12	28	205	57	194	71	
Approximate N for G Scales	21	65	405	96	390	121	

*p<.01
**p<.05
***p<.001
****p<.0001

TABLE 4.13

MEAN ATTITUDE SCALE SCORE, BY CAREER BRANCH CATEGORY

	Combat	Combat Support	Combat Service Support	P
AMC1	19.5	21.7	22.0	***
AMC2	22.8	24.1	25.1	****
AMC3	5.8	6.7	6.1	*
BMCW1	15.5	14.9	15.4	****
BMCW2	18.5	20.0	20.0	***
BMCW3	13.6	16.7	17.0	****
CMC1	11.1	13.3	13.7	****
CMC2	14.2	15.1	15.4	**
CMC3	3.9	4.7	4.7	****
CMC4	5.3	6.1	6.3	****
CMC5	11.0	12.7	12.8	****
DMC2	12.0	12.8	12.4	NS
EMC1	10.9	11.3	11.6	NS
GALL1	8.9	9.3	9.6	***
GALL2	7.5	7.6	7.6	*
GALL3	3.6	3.8	3.8	****
Approximate N for Multiple Choice Scales	119	119	308	
Approximate N for G Scales	226	229	613	

*p<.01
**p<.05
***p<.001
****p<.0001

TABLE 4.14

MEAN ATTITUDE SCALE SCORE, BY LENGTH OF TIME IN ARMY

	Less Than 1 Year	1-3 Years	4-6 Years	7-10 Years	More Than 10 Years	P
AMC1	22.5	22.7	21.3	20.9	19.0	****
AMC2	26.2	25.3	23.9	23.6	22.4	****
AMC3	6.4	6.5	6.2	5.5	5.8	**
BMCW1	45.9	47.5	46.3	44.3	42.4	NS
BMCW2	19.5	20.1	19.4	19.7	18.7	NS
BMCW3	16.8	17.0	16.3	15.5	14.5	**
CMC1	13.0	13.9	12.6	12.3	12.0	****
CMC2	14.8	15.4	14.9	15.5	14.6	NS
CMC3	4.5	5.0	4.2	4.2	4.1	***
CMC4	5.9	6.3	6.0	5.7	5.6	**
CMC5	12.5	13.0	12.0	12.0	11.5	****
DMC2	12.1	12.8	12.3	12.4	11.7	NS
EMC1	11.4	11.9	10.6	11.2	11.1	*
GALL1	9.2	9.6	9.3	9.3	9.2	NS
GALL2	7.3	7.6	7.5	7.6	7.6	NS
GALL3	3.7	3.8	3.8	3.7	3.7	*
Approximate N for Multiple Choice Scale	44	240	107	69	108	
Approximate N for G Scales	87	480	193	119	221	

*p<.01
**p<.05
***p<.001
****p<.0001

TABLE 4.15

MEAN ATTITUDE SCALE SCORES, BY RESPONSES TO QUESTION
"DO YOU THINK YOU WILL BE IN THE ARMY 5 YEARS FROM NOW?"

	"Yes I Think so"	"Not Sure But Probably"	"Not Sure-But Probably Not"	"No I Don't Think So"	"No Idea"	P
AMC1	20.6	22.1	21.3	21.6	23.4	NS
AMC2	24.2	24.0	24.5	24.4	25.3	NS
AMC3	6.0	6.4	6.4	6.1	6.8	NS
BMCW1	44.3	47.0	46.0	46.0	47.8	NS
BMCW2	19.5	20.1	19.7	19.5	19.1	NS
BMCW3	15.5	16.7	16.2	16.1	18.3	NS
CMC1	12.4	13.2	13.9	13.1	13.6	*
CMC2	14.9	15.6	15.2	15.1	14.8	NS
CMC3	4.4	4.6	4.8	4.5	4.9	NS
CMC4	5.8	6.1	6.1	6.1	5.9	NS
CMC5	11.7	12.6	12.7	12.6	12.8	*
DMC2	12.3	12.6	12.3	12.4	12.5	NS
EMC1	11.3	11.2	11.7	11.3	12.0	NS
GALL1	9.5	9.6	9.4	9.3	9.8	NS
GALL2	7.6	7.6	7.7	7.5	7.2	**
GALL3	3.8	3.8	3.8	3.8	3.8	NS
Approximate N for Multiple Choice Scales	155	96	81	204	32	
Approximate N for G Scales	330	196	148	364	61	

*p<.01
**p<.05
***p<.001
****p<.0001

TABLE 4.16

MEAN ATTITUDE SCALE SCORE, BY TYPE OF FRIENDS

	Most in the Army	About Half and Half	Most Outside the Army	P
AMC1	21.0	21.6	22.3	NS
AMC2	24.0	24.5	24.9	NS
AMC3	6.0	6.3	6.5	NS
BMCW1	45.7	46.4	44.3	NS
BMCW2	19.6	19.7	19.7	NS
BMCW3	15.9	16.4	16.3	NS
CMC1	12.7	13.3	13.2	NS
CMC2	14.8	15.3	15.5	NS
CMC3	4.4	4.6	4.8	NS
CMC4	6.0	6.1	5.9	NS
CMC5	12.2	12.5	12.4	NS
DMC2	12.5	12.6	11.6	*
EMC1	11.1	11.6	17.4	NS
GALL1	9.4	9.4	9.4	NS
GALL2	7.6	7.6	7.5	NS
GALL3	3.8	3.8	3.7	NS
Approximate N for Multiple Choice Scales	212	247	104	
Approximate N for G Scales	373	503	207	

*p<.01
**p<.05
***p<.001
****p<.0001

TABLE 4.17

MEAN ATTITUDE SCALE SCORES, BY RACE

	White	Non-White	P
AMC1	21.1	22.7	**
AMC2	24.0	25.6	***
AMC3	6.1	6.4	NS
BMCW1	46.6	42.8	*
BMCW2	19.9	18.7	**
BMCW3	16.3	15.7	NS
CMC1	13.0	13.2	NS
CMC2	15.2	14.8	NS
CMC3	4.5	4.8	NS
CMC4	6.1	5.7	*
CMC5	12.4	12.3	NS
DMC2	12.7	11.7	**
EMC1	11.4	11.5	NS
GALL1	9.4	9.4	NS
GALL2	7.6	7.4	****
GALL3	9.4	9.4	NS
Approximate N for Multiple Choice Scales	430	126	
Approximate N for G Scales	830	260	

*p<.01
**p<.05
***p<.001
****p<.0001

TABLE 4.18

MEAN ATTITUDE SCALE SCORES, BY VIETNAM EXPERIENCE

	Served a Tour In Vietnam	Did Not Serve a Tour in Vietnam	P
AMC1	19.7	22.2	****
AMC2	22.7	25.0	****
AMC3	5.5	6.4	****
BMCW1	41.9	47.3	***
BMCW2	18.6	20.0	***
BMCW3	14.2	16.9	****
CMC1	11.5	13.6	****
CMC2	14.6	15.4	*
CMC3	4.1	4.7	***
CMC4	5.5	6.2	****
CMC5	11.3	12.7	****
DMC2	12.1	12.7	NS
EMC1	10.9	11.6	*
GALL1	9.1	9.5	**
GALL2	7.5	7.6	*
GALL3	3.7	3.8	****
Approximate N for Multiple Choice Scales	143	416	
Approximate N for G Scales	272	814	

*p<.01
**p<.05
***p<.001
****p<.0001

TABLE 4.19

MEAN ATTITUDE SCALE SCORE, BY ADMINISTRATION BASE

	Fort Lewis	Fort L.Wood	Fort Polk	Fort Bragg	Europe	P
AMC1	21.2	21.3	21.5	20.9	22.2	NS
AMC2	24.3	24.3	24.6	23.4	24.9	NS
AMC3	6.2	6.5	5.9	6.3	6.2	NS
BMCW1	45.0	45.1	45.9	42.8	48.9	*
BMCW2	20.1	19.3	19.2	18.8	20.3	NS
BMCW3	15.8	16.0	16.3	14.9	17.6	*
CMC1	12.7	13.1	12.8	12.4	14.1	**
CMC2	14.4	15.4	15.4	14.4	15.5	NS
CMC3	4.2	4.6	4.7	4.2	4.9	*
CMC4	6.1	5.9	6.3	5.9	6.2	NS
CMC5	12.3	12.1	12.5	12.2	12.8	NS
DMC2	12.1	12.4	12.2	11.7	12.8	NS
EMC1	11.0	11.0	11.6	11.0	11.8	NS
GALL1	9.3	9.3	9.4	9.1	9.9	***
GALL2	7.5	7.6	7.6	7.4	7.7	**
GALL3	3.8	3.8	3.8	3.7	3.8	NS
Approximate N for Multiple Choice Scales	100	115	105	111	138	
Approximate N for G Scales	197	227	207	222	269	

*p <.01
**p <.05
***p <.001
****p <.0001

TABLE 4.20

PERCEPTIONS OF MEN'S ABILITIES VS. WOMEN'S ABILITIES
(Mean of 6 Scales from Parts B, D and E)

Scale	Perceptions of Men's Abilities & Behaviors		Perceptions of Women's Abilities & Behaviors	
	Male Respondents	Female Respondents	Male Respondents	Female Respondents
1) Combat-related abilities (BMCM1/BMCW4)	34.4	33.9	22.4	27.9
2) Non-combat related abilities (BMCM2/BMCW5)	23.6	23.7	18.4	20.9
3) Adjustment/ adaptation to Army (BMCM3/BMCW6)	13.6	13.2	9.3	10.8
4) Leadership Ability (BMCM4/BMCW7)	7.2	7.5	5.0	6.6
5) Appropriateness of Behavior in Specific Situations (DMC1/DMC2)	14.4	14.4	12.2	13.4
6) Strength, Guts and Stamina (EMC1/EMC2)	15.5	15.0	11.1	12.3

C. COMMENTS AND DISCUSSION

Although the central reason for discussion sessions and the comments section on questionnaires was to learn which forms were favored and where improvement in format was needed, substantive issues concerning women in the Army were also addressed in these components of the survey. In fact, the majority of written comments and the majority of time spent in discussion groups dealt with the topic of the survey. This tendency was not discouraged by discussion leaders nor by those administering questionnaires. We felt that it was important to gain additional insights concerning the way soldiers reacted toward the issues raised and we also felt that soldiers would be left with a positive attitude about the survey if they saw that their opinions were being solicited and thought to be of value. We were careful not to give the impression that our only interest was in comparing questionnaire forms and item types even though that was the central focus of the study. We looked upon the discussion groups and written comments as a good opportunity to gain a wide range of information which could affect all aspects of survey development, and our efforts were rewarded.

One of the complaints made concerning the questionnaire was that it was hard to answer questions about men and women in general since performance depends on the individual involved. This reaction shows evidence of a realization among soldiers that there are both men and women who can do certain jobs, just as there are men and women who cannot do some jobs. One woman felt that the survey was insulting because it forced people to generalize about all women. It was also noted that the personalities of the individuals, not their sexes, determine what their reactions will be in combat. Along the same line were complaints that some of the questions were difficult because it is impossible to predict what any individual can do under stress.

Another point of view expressed also allowed for individual differences but qualified that position with the opinion that only a few women would be able to succeed in combat units. Motivation was cited as one of the prime considerations determining if a woman could "make it" in combat. Some of the soldiers stated that the small number of women who want to be in combat and are physically capable should be permitted to be in combat and combat related companies. These soldiers said that their responses to the questionnaire would be different depending on whether women in specific units would be there voluntarily or not. It was felt that an important aspect of allowing women in combat units would involve proper evaluation so that those who could not handle their jobs could be screened out.

There was a great deal of awareness of societal influences on attitudes manifest in the discussion groups. Some people said that our society does not bring up women to be in combat. It was mentioned that if society changed and women went through the same socialization processes as men then perhaps they could be in combat. Most of the soldiers noting societal influences maintained a position against having women in combat. One man said he would answer questions one way if he was being objective and another

if based on his moral philosophy. An officer stated that he had seen some women perform as well as men in training but he still didn't think women should be in combat. There were a few other officers who reached the opposite conclusion and said that after working with women they now saw that women could be in any career branch. Some men attributed their attitudes to their upbringing and stated that they had different expectations for men and women and could never learn to treat a woman just like a man. Many more people were willing to accept women in combat support than in combat.

Many of the reasons offered for excluding women from combat had to do with the reactions of men. Some said that men would not be able to stand seeing women shot and killed and this would hurt morale. It was also felt that having women in the field would affect the reactions of men and many men would feel they had to protect the women. Usually women were the ones to express the feeling that their presence might endanger men and they would feel guilty if a man was hurt trying to help them with a job they could not handle.

Other social influences were mentioned to explain why men were better suited to combat. One soldier believed that men perform in combat due to peer pressure and because they fear that they will be called cowards. He felt that women would not be subject to such pressures and so would be poorer fighters. It was also stated that both men and women tend to obey a man faster and such reactions are important in combat situations. To put the question of women in combat in perspective, it was mentioned a few times that similar arguments had been used against Blacks several years ago.

Physical limitations of females were often offered as reasons why they would not be suited for combat related jobs. It was mentioned that a woman would not be able to pull a man to safety if he were shot. It was also felt by some that women did not have the strength to do heavy jobs such as maintenance on large trucks. One man gave an example of a woman who could not lift her end of a stretcher to demonstrate that women lack the physical strength necessary for combat companies.

Various emotional tendencies which would hinder combat effectiveness were also attributed to women. It was sometimes stated that women would panic more often than men or that they would be more impulsive in battle. Since some soldiers felt that emotions can't be trained out of people, they considered women unfit for battle. One man noted that nurses in Viet Nam were very brave in combat areas and did not tend to break down emotionally. Others said that people act automatically under stress and that females have the same urge for self-preservation as males. Some of the other problems women were seen to have are that they cannot handle being reprimanded as well as men and that they are more subject to morale problems.

Sexual problems arising from having women in the Army were often mentioned. Embarrassment between the sexes and cohabitation in the field were seen as major problems. It was felt that sexual relations decrease effectiveness and that sexual relations within a work group are threatening to the cohesiveness of that group. Some women were worried about privacy,and rape was considered a problem especially when women were alone on guard duty. A few comments were made claiming that women only join the Army to get men and so they are a distraction while men are working. Pregnancy was

considered a problem because it meant that women would be unable to do some jobs and would be taken out of their companies so thay could not be counted on.

Since some of the questions in the survey were asked based on the assumption that the person involved had the proper training and experience, the issue of training was often dealt with in discussion groups. There is an assumption in the military that people can by definition do a job if they have the training. Hence, some people felt conflicted when asked to assume that women could pass training for some jobs. There was some evidence of feelings that women are pushed through training without meeting the same requirements placed on men. In the current situation, where women go through different training than men, there is hesitation to presume what would happen if women had the same training as men. Still, the sentiment was often expressed that if a soldier is trained to do something then he or she does it.

Resentment against women in the Army was expressed occasionally by men in the discussion groups. Some felt that women should not get the same pay as men if they don't do the same heavy labor. They said that career progression is different for men and women, with women getting better jobs. To some extent this was blamed on the pressure to fill quotas which resulted in women getting promotions more quickly than men. It was mentioned that it is easier for women to get on sick call and that a higher ratio of females are getting early discharges. The men felt that it is unfair that women have ways out of unpleasant situations which are unavailable to them. There were also some men who claimed that men take over the work of women in their units while the women try to get away with doing as little work as possible. An argument against this position was that because there are fewer women in the Army they are more noticeable. Thus, when a woman shirks her duty or does a poor job she stands out and generalizations are made on the basis of a minority of women who are not performing adequately. Another cause of resentment against women is the current situation in which women are not used in combat. Some soldiers felt that there was no point in having women in a unit if they will not be available to do their job if a combat situation should arise and they are needed most.

There was a strong sentiment conveyed in the discussions that many of the problems of women in the Army were not due to the women themselves. To some extent existing problems were attributed to officers in command. It was often stated that if officers dealt well with women under their command, many potential problems could be avoided. Unfortunately, there are no training programs to help officers deal with women and many officers are not familiar with regulations concerning women soldiers. Most officers cannot fall back on their own experiences since there have not been great numbers of women in the Army in the past. Consequently, inadequate leadership is often aggravating problems rather than alleviating them. Army policies are blamed for problems in some cases. One mistake mentioned was putting women in positions too soon without them having the proper training. Another error was detected in the failure to prepare soldiers on the job before introducing women into their units. It was also stated a few times that recruiting should be more honest so that women get realistic job descriptions and understand what they are really going to be doing in a particular occupational specialty.

When discussants were asked to talk about questions that dealt with how such things as morale, confidence, and seriousness would be affected by women entering companies where they had never before been permitted, a common opinion was that there might be problems initially but eventually difficulties would be overcome and things would get back to normal. Some people thought that women were basically good for morale because when they were around, general conditions were improved for their sake and everyone benefitted. One soldier said that the responses should be considered within a given time frame and that many changes in attitude will certainly take place over the next five years.

V. SUMMARY AND CONCLUSIONS

The U.S. Army Research Institute (ARI) in planning an Army-wide sample survey of soldiers' attitudes toward the role of women in the Army, has been confronted with a number of technical questions relating to item types, formatting, wording of items and so on. The present study represents a pilot survey designed to assist ARI in making various methodological decisions. In addition, the pilot effort was designed to yield preliminary data bearing on substantive attitudinal questions.

In this project two possible item types were tested. The Likert item style presents respondents with an assertion with which they are asked to agree or disagree with varying intensity. The Multiple Choice item style presents respondents with a question to be answered by choosing from among four or five alternatives.

Two methods of marking responses were tested in this study. In the first or traditional method, respondents were instructed to mark their answers on their questionnaire booklets by circling the desired response alternative. The second method involves the use of OPSCAN answer sheets. Respondents receive both questionnaire booklets and separate answer sheets and are instructed to mark their answers on the answer sheet only.

The questions were arranged in the questionnaire booklets according to two designs. The compact version of the questionnaire made the most efficient use of space possible in order to simulate the layout for an OPSCAN booklet, the expense of which requires an effort to conserve space. In the dispersed version of the questionnaire, the items are more loosely spaced.

Certain sections of the questionnaire asked respondents to give their opinions and impressions about men and women soldiers. On half of the questionnaires, respondents were asked about men first, followed by women. On the remaining half, the order of presentation differed and the questions asked about women first and then about men.

The central purpose of this study was to compare and contrast selected questionnaire types to discover the style of format which would be most effective for an Army-wide survey concerning attitudes toward the roles of women. The knowledge gained about these methodological issues should also be relevant for other attitude research, particularly in an Army setting. At the same time, we were pre-testing a questionnaire relating to women in the Army and gathering some preliminary information on the topic.

The questionnaire as a whole was considered at least somewhat valuable by most of the respondents and most agreed that there should be more surveys like this one. People were generally very cooperative in discussion groups and both officers and enlisted personnel seemed anxious to share their ideas on the topic of women's role in the Army. A slight majority agreed that they had a chance to express their true views through the questionnaire but 42 percent disagreed. Many soldiers made suggestions for specific wording changes for certain items and a number of those commenting on the questionnaire criticized the alternatives offered in both the Likert and Multiple Choice forms.

On an average, the questionnaire took about thirty minutes to complete and there were generally very few missing items for any group of respondents.

Each section of the questionnaire was factor analyzed for both the Multiple Choice and Likert forms. Factors obtained from both forms were meaningful in the context of this survey and provided the basis for scale scores to be calculated and the scale scores were used in subsequent analyses. The identified factors dealt with areas such as the effects of women in combat units and support units, women's combat abilities and women's competencies in sex-stereotyped roles.

Multiple regression analyses were performed and demographic variables were used to predict scores on the scales concerning attitudes toward women. In the stepwise regression analyses, sex was fairly consistently the first variable entered into the equation when predicting values for these scales. The proportion of variance accounted for was quite low for both Multiple Choice and Likert scales and experimental manipulations had little, if any, effect on the level of predictability. It is likely that the attitudes of soldiers toward women in combat and other Army roles are related to variables which were not examined in this study. It might be expected that if more extensive background data or psychological measures had been obtained, prediction could have been improved. In future studies, it might be worthwhile to gather more personal data with this goal in mind.

Generally, high internal reliabilities were obtained for the attitude scales regardless of the questionnaire format. The scales focusing on attitudes toward women correlated quite highly with the criterion scales, especially the first scale based on six items concerned with the utilization of women in combat.

The validity of the questionnaire was certainly supported by findings dealing with the "known groups" approach. Females consistently had more positive attitudes than males. Female officers showed the most positive attitudes of all the groups studied and male officers had the lowest average scale scores with low scores indicating unfavorable attitudes toward women. The "known groups" approach to validity upheld the general validity of the questionnaire regardless of format.

There was not a strong tendency for any particular questionnaire format to emerge as clearly superior to the others. Still, there were a number of differences which allow comparisons in specific areas. The advantages of the Likert questionnaire format are that those answering Likert questions thought that the survey was more valuable than did those answering Multiple Choice questions. Also, the factoring of the Likert version consistently yielded factors which accounted for a higher proportion of variance than the Multiple Choice version, but differences tended to be very small. On the other hand, Multiple Choice scales fared better in the multiple regression analyses and were easier to predict than Likert scales using the available demographic variables.

The comparison of OPSCAN and Traditional answer modes was not complicated by difficulty using the OPSCAN sheets as had been expected. Respondents were very familiar with the OPSCAN method of answering and it was equally simple to use for both officers and enlisted personnel. The advantages of the OPSCAN

sheets were that they resulted in slightly less missing data and they took less time to prepare for analysis. These benefits were balanced by the facts that the Traditional questionnaires took less time to prepare for administration and were cheaper to print. The questionnaires using the Traditional answer format took an average of five minutes per person less to complete. When this is multiplied by the total number of respondents, it can be seen that this results in a substantial saving of time. This is even more impressive when considering that 49 percent of "Traditional" respondents wrote comments on their questionnaires whereas only 23 percent of those using OPSCAN answer sheets wrote down comments. For the purposes of this study, encouraging written comments is a positive characteristic of a questionnaire but it is particularly important to note that the calculated times for completion of the survey favored the Traditional answer mode to such a great extent even though the time it took to write these extra comments was included. Since there are certain benefits to both of the answer formats, any decision about which is better would depend on the requirements of specific circumstances. The main point to consider would be whether it is most important to save time and effort at the stage of preparation, administration or analysis.

There is no basis for claiming that the quality of data obtained with the Dispersed forms is better than with the Compact forms of the questionnaire or vice versa. Thus, practical considerations become of central concern and they clearly favor the Compact version. Compact Traditional forms take less time to prepare for computer analysis and also take less time for respondents to complete. There is no evidence that this aspect of layout interacts with rank so that apparently enlisted personnel can deal with compact forms as well as officers. The Compact form should not be judged only as a simulation of an OPSCAN booklet for the purposes of this study. It has the inherent benefits of being cheaper to print and basically more efficient regardless of the question type or answer mode used.

Although no differences between the "Men First" and "Women First" forms were expected, some did emerge. Those forms which addressed questions about women first resulted in scales with higher average reliabilities and respondents who enjoyed the survey more than those who had the opposite ordering. Also, those who received "Women First" forms found it easier to decide on an answer. The only finding favoring the "Men First" order is that less missing data appeared. Since ordering is such a subtle treatment, it is hard to explain why it had an effect in areas where item type and answer format did not. Perhaps this suggests that more attention should be focused on psychological factors (such as ordering) rather than the mechanical aspects of layout and answering mode.

The substantive information gained from this survey is very promising concerning the role of women in the Army. The presence of women in support companies was seen to have no adverse effects by most respondents and many even thought it would have positive effects. When questions referred to combat companies, the opinions became considerably more negative. Still, a substantial number of soldiers felt that women would not adversely affect combat company functioning. For example, 59.4 percent thought there would be as much teamwork as before.

Most respondents felt that women had an important role to play in the Army. However, more than half felt the Army would be less effective with women in combat units. That still leaves a sizable number (42.3 percent) who thought that the Army would be just as effective or more effective with women in combat jobs. In all cases, the majority of respondents thought that a company could do a better job at full strength, with women than when the company was below authorized strength without women.

Female respondents were more likely than males to encourage fuller participation of women in the Army and to reject traditional sex-role stereotypes. Women were more likely than men to have a favorable opinion of including women in support companies and male officers were most likely to think that functioning would be harmed. The combat career branch had more negative attitudes toward women than the combat support or combat service support and those soldiers who had been in the Army the longest had the least favorable attitudes.

Although many physical and societal reasons were offered to explain why women should not be in combat, there was often an acceptance of the idea that some women were capable of performing in combat. There was also a recognition of the fact that some problems of women in the Army are due to officers who do not know how to handle the situation or Army policies which do not insure competency before placing a soldier in a job and do not provide preparation for units before introducing women for the first time. The general opinion seemed to be that there are currently many problems with utilizing women effectively in the Army but that a substantial number of these can be overcome.

People appeared to enjoy the survey as a whole although there was a great deal of skepticism about its usefulness. Soldiers were glad to have an opportunity to express their ideas in discussion groups and through written comments. The discussion group leaders and survey administrators could discern no differences in the reactions of respondents that could be attributed to the format of the questionnaire to which they were exposed.

It is important to note how little difference format makes in the various components of this survey. This finding allows researchers the freedom to use formats with which they are comfortable and which seem most appropriate for a given situation. Practically, it is most helpful to know that decision makers can consider economic concerns and convenience without feeling that such calculations will jeopardize the quality of data. It is also valuable to know that minor manipulations of format and style do not have a great influence on the way people respond to questions so that attention can be focused on matters of content and meaning.