

AD-A189 481

MODELING THE INDIVIDUAL ENLISTMENT DECISION.  
PHASE I. FINAL REPORT

Mary M. Kralj,\* Leonard Adelman,\*  
Michael Wilson,# Robert J. McTeigue,\*  
and Deborah A. Zirk,\*

PAR Government Systems Corporation\*  
(Subcontractor: WESTAT, Inc.#)

for

Contracting Officer's Representative  
Rebecca M. Pliske

Manpower and Personnel Policy Research Group  
Curtis Gilroy, Chief

MANPOWER AND PERSONNEL RESEARCH LABORATORY  
Newell K. Eaton, Director



DTIC  
ELECTE  
DEC 28 1987  
S D  
H

U. S. Army

Research Institute for the Behavioral and Social Sciences

November 1987

# U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the  
Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON  
Technical Director

WM. DARRYL HENDERSON  
COL, IN  
Commanding

Research accomplished under contract  
for the Department of the Army

PAR Government Systems Corporation

Technical review by

Rebecca M. Pliske



Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

This report, as submitted by the contractor, has been cleared for release to Defense Technical Information Center (DTIC) to comply with regulatory requirements. It has been given no primary distribution other than to DTIC and will be available only through DTIC or other reference services such as the National Technical Information Service (NTIS). The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other official documentation.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ARI Research Note 87-61	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Modeling the Individual Enlistment Decision: Phase I Final Report	5. TYPE OF REPORT & PERIOD COVERED Interim Report September 85 - September 86	
	6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) Mary M. Kralj,* Leonard Adelman,* Michael Wilson,# Robert J. McTeigue,* Deborah A. Zirk* #Westat *PAR Government Systems Corporation	8. CONTRACT OR GRANT NUMBER(s) MDA903-85-C-0476	
9. PERFORMING ORGANIZATION NAME AND ADDRESS PAR Government Systems Corporation 1840 Michael Faraday Drive, Suite 300 Reston, VA 22090	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 20162722A791 2.2.1.C.1	
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600	12. REPORT DATE November 1987	
	13. NUMBER OF PAGES 87	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) --	15. SECURITY CLASS. (of this report) Unclassified	
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE n/a	
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)  --		
18. SUPPLEMENTARY NOTES Rebecca M. Pliske, contracting officer's representative Westat, Inc. 1650 Research Boulevard, Rockville, MD 20850, subcontractor to the performing organization.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Army Recruiting, Enlistment Motivation, Decision Models.		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) ➤ This research note reviews the findings of PAR's effort in modeling phase one of the enlistment decision. The note includes a brief review of Tasks One and Two (a literature review of decision models applicable to the individual enlistment decision, and the empirical assessment of pre-decisional processes involved in the enlistment decision, respectively). The design and develop- ment of new quantitative measurement instruments is discussed in detail. These last include: 1) a summary of a reliability assessment of an expectancy (OVER)		

ARI RESEARCH NOTE 87-6120. Abstract (continued)

model derived scale conducted on data from the 1984 New Recruit Survey; 2) a discussion of the development of two measures, one derived from the Fishbein and Ajzen model (a Likert scale), and a decompositional approach using a paired choice format; and 3) the methodology and results of a pilot test of the 2 new measures. The results of these efforts are discussed in terms of their implications for the Phase II data collection stage of the contract. Finally, copies of all measures developed are appended, as well as the respondents' answers to a set of demographic questions included in the pilot instruments that can be used to estimate respondents' performance on the Armed Forces Qualification Test composite on the Armed Forces Vocational Aptitudes Battery.

Key  
L  
FLA

## FOREWORD

---

This report documents work completed during the first phase of a three phase project undertaken by ARI in support of the Office of the Deputy Chief of Staff for Personnel and the U.S. Army Recruiting Command. ARI was commissioned by the Deputy Chief of Staff for Personnel in 1982 to identify the motives underlying the enlistment decision. ARI's initial efforts concentrated on enlistment motives of new recruits--the New Recruit Surveys (NRS). Concurrent with the advanced development of the NRS, ARI has been working on exploratory development of new quantitative instruments for measuring the factors involved in the career decision process of prospective recruits. The project was designed as a three phase effort. In the first phase of the project, new instruments were developed and pilot tested. The second phase will involve a nationwide data collection to validate the new instruments. If the instruments prove to be predictive of enlistment behavior, then they will be adapted for use as a decision aid during the third phase of the project.

# MODELING THE INDIVIDUAL ENLISTMENT DECISION: PHASE I FINAL REPORT

## EXECUTIVE SUMMARY

---

### Requirement:

To develop new quantitative instruments to measure the social and psychological factors influencing young adults' enlistment decisions.

### Procedure:

This report summarizes the work completed during the first phase of a three phase project that is developing new quantitative instruments to measure the factors involved in the career decision making process of prospective Army recruits. In the first phase of the project, new instruments were developed and pilot tested. The second phase will involve a nationwide data collection to validate the new instruments. If the instruments prove to be predictive of enlistment behavior, then they will be adapted for use as a decision aid during the third phase of the project.

Phase I of the project involved three tasks. The first task consisted of a literature review of decision models relevant to the individual enlistment decision process. The second task involved the collection and analysis of empirical data to assess the predecisional processes that take place prior to the enlistment decision. The third task required the development of quantitative measurement instruments to assess the individual enlistment decision process.

### Findings:

The literature review of decision models indicates that an expectancy theory approach based on the Fishbein and Ajzen model is most appropriate to understanding the individual enlistment decision process. This finding was further supported by the empirical data collected in Task 2 to assess predecisional processes. Both monetary and non-monetary considerations, as well as previous course work and knowledge of parental career experience contribute to the prospect's enlistment decision. During Task 3 two quantitative measurement instruments were developed, a Likert scale version of the Fishbein and Ajzen model and a decompositional paired choice measure. Both demonstrate adequate reliability and are recommended for use in the next Phase of the effort.

## EXECUTIVE SUMMARY

---

### Utilization:

The results of this project will provide Army policy makers with quantitative information about the factors that motivate enlistment behavior. A decision aid will be developed to provide recruiters with precise information about the psychological and sociological factors influencing prospects' career choice so they will be better able to tailor their sales presentations to the prospects' needs and interests.

MODELING THE INDIVIDUAL ENLISTMENT DECISION:  
PHASE I FINAL REPORT

TABLE OF CONTENTS

---

	Page
INTRODUCTION . . . . .	1
Task 1: Literature Review of Decision Models . . . . .	1
Task 2: Collection and Analysis of Empirical Data to Assess the Predecisional Processes Involved in the Enlistment Decision . . . . .	2
Task 3: Design, Development, and Delivery of New Quantitative Measurement Instruments . . . . .	3
The New Recruit Survey Reliability Assessment . . . . .	4
The Likert Scale Fishbein and Ajzen Instrument . . . . .	10
The Paired Choice Decompositional Instrument . . . . .	20
The Pilot Test . . . . .	22
DISCUSSION . . . . .	32
REFERENCES . . . . .	36
APPENDIX A: THE LIKERT SCALE FISHBEIN AND AJZEN INSTRUMENT . . . . .	A-1
APPENDIX B: THE PAIRED CHOICE DECOMPOSITIONAL INSTRUMENT . . . . .	B-1
APPENDIX C: THE NINE FACTOR RELATIVE WEIGHTS SCALE . . . . .	C-1
APPENDIX D: THE THREE FACTOR RELATIVE WEIGHTS SCALE . . . . .	D-1
APPENDIX E: THE TWELVE FACTOR RELATIVE WEIGHTS SCALE . . . . .	E-1
APPENDIX F: THE DEMOGRAPHIC QUESTIONS . . . . .	F-1
APPENDIX G: RESPONSES TO THE DEMOGRAPHIC QUESTIONS . . . . .	G-1

CONTENTS (Continued)

---

LIST OF FIGURES

Figure	Page
1. Example of the Questions and Scales Used to Measure the Parameters in Attitudinal and Normative Components of the Fishbein and Ajzen Model . . . . .	14
2. Sample of Semantic Differential Questionnaire Applied to the Army Career Choice . . . . .	15

LIST OF TABLES

Table	Page
1. Expectancy-Value Questions from the Summer 1984 NRS . . .	5
2. Summer 1984 NRS Responses: Rank Ordering of Most Important Reason for Enlisting . . . . .	8
3. Correspondence Between Belief Strength and Importance Strength . . . . .	9
4. Summary of Factor Analysis Results: Eleven Expectancy-Value Judgments Input . . . . .	11
5. Reliability Analysis of Attitude Toward the Army Expectancy-Value Scale . . . . .	12
6. Response Format Used for Eliciting Hypothetical Career Choice . . . . .	21
7. Time to Complete Instruments During Pilot Test . . . . .	24
8. Degree of Difficulty Ratings for Instruments Used in Pilot Test . . . . .	25
9. Three Factor Weighting Scale Weights for the Pilot Sample . . . . .	26
10. Example of Respondent Choices Among Paired Associates . .	29
11. Conjoint Utility Score Matrix . . . . .	31

MODELING THE  
INDIVIDUAL ENLISTMENT DECISION:  
PHASE I FINAL REPORT

INTRODUCTION

This research note constitutes the Final Report for Phase I of Contract MDA903-85-C-0476, Modeling the Individual Enlistment Decision from the Army Research Institute for the Behavioral and Social Sciences (ARI) to PAR Government Systems Corporation as prime contractor and Westat Corporation as subcontractor. The primary objective of the contract is to develop and validate a model of the individual's enlistment decision process which includes the influence of economic, psychological, and sociological factors. The goals for Phase I were to develop a tentative model of the enlistment decision process that incorporates economic, psychological and sociological factors, and to construct measurement instruments to assess the relative importance of these factors. During Phase II, data will be obtained from a nationally representative sample of prospective enlistees to validate the enlistment decision model and measurement instruments developed in Phase I. In Phase III, the measurement instruments will be adapted for use as a decision aid which recruiters can use with individuals who are considering Army enlistment.

To date, Phase I has been completed and the results are summarized herein. Specifically, this first phase was comprised of three tasks: (a) A literature review on Decision Models relevant to the individual enlistment decision process was completed; (b) empirical data was collected and analyzed to assess the pre-decisional processes involved in the enlistment decision; and (c) quantitative measurement instruments for use in the assessment of the individual enlistment decision process were developed. This report summarizes each task in turn and concludes with a discussion of what was learned during the Phase I efforts and how this knowledge has been incorporated into the measurement instruments. A copy of the actual measurement instrument is appended.

Task 1: Literature Review of Decision Models

Task 1 of Phase I involved review of the scientific literature pertaining to various decision models that may be applicable to modeling the individual enlistment decision. The models considered included rational decision theoretic approaches as well as approaches that incorporated affective, social and cognitive factors. The specific decision theories/models reviewed included Decision Theory, Social Judgment Theory, Information Integration Theory, Conjoint Measurement/Unfolding Theory, Cognitive Process Models, Affective Models, Cognitive Style Models, Conflict Decision Theory and Expectancy Theory. In addition, research was

reviewed in the areas of career decision making and consumer decision making to assess the types of decision models used in these areas and their potential relevance to the individual enlistment decision process.

Based on the review of the literature, the extended Fishbein and Ajzen (1975) expectancy theory model was recommended for modeling the individual enlistment decision for several reasons. First, the model's explicit dependent variable is behavioral (intent and/or actual behavior), rather than just utility. Second, the model contains a social component for determining the effect of normative influencers on one's decisions in addition to a cognitive component for evaluating career options on specified belief attributes. Third, the model incorporates affect in the form of the "evaluation" associated with each belief. Furthermore, the extended Fishbein and Ajzen expectancy theory also has a broad conceptual framework which allows for the inclusion of a separate and more general affective component. Fourth, the Fishbein and Ajzen expectancy theory model facilitates the use of a multi-method measurement approach for triangulating on components of the decision model.

The complete literature review, including critical evaluations of relevant studies and detailed rationale for the conclusions reached is contained in the ARI technical report entitled Alternative Approaches to Modeling the Individual Enlistment Decision: A Literature Review. The literature review was prepared as an interim report and is available from ARI. Readers are referred to the document for a comprehensive treatment of the issues summarized above.

#### Task 2: Collection and Analysis of Empirical Data to Assess the Predecisional Processes Involved in the Enlistment Decision

The second task of Phase I involved the empirical investigation of the predecisional processes related to the enlistment decision. The goal of this effort was to identify the critical factors that influence a prospect's enlistment decision. To accomplish this, the PAR Government Systems Corporation (PGSC)/Westat Team conducted focus group interviews in five major metropolitan areas (Columbus, Ohio; Baltimore, Maryland; Boston, Massachusetts; Kansas City, Kansas; and Atlanta, Georgia).

A total of 49 individuals, aged 17 to 20, participated in the focus groups. Each focus group discussion was video- and audio-taped. The tapes were then transcribed and analyzed to identify the critical factors that influence the prospect's enlistment decision.

The results indicated that respondents considered both monetary and non-monetary factors. The "monetary" factors that participants considered were salary, benefits, college funding and training. The non-monetary factors considered included job satisfaction, amount of responsibility, adventure and personal growth.

The focus group discussions also uncovered two major influences that were salient to the decision process: Positive coursework experiences in school and knowledge about their parents' career histories.

Recruiters were cited as the major sources of career-choice information about the Army. In addition, geographically correlated differences in attitudes were noted. Implications of the findings for refinement of a model of the individual enlistment decision that recognizes the salience of school experiences and parental example to the predecisional process were discussed.

A more detailed treatment of these results, including specifications for the methodology used and copies of the focus group transcripts, is contained in the ARI research note titled Pre-decisional Processes Involved in the Enlistment Decision, which was submitted to ARI as an interim report. The actual video and audio tapes were also delivered to ARI. Readers are referred to this document for a more comprehensive treatment of the findings.

### Task 3: Design, Development and Delivery of New Quantitative Measurement Instruments

The purpose of Task 3 was to develop reliable and valid quantitative measurement instruments to assess the relative importance of the critical factors influencing the individual enlistment decision. Based on the work completed in Task 1, the PGSC/Westat Team selected the Fishbein and Ajzen expectancy theory of attitude formation and behavioral intent as the most appropriate model from which to develop one of the quantitative measurement instruments. A series of three subtasks were performed as part of the instrumentation process.

First, prior to designing the actual instrument, the PGSC/Westat Team conducted a preliminary assessment of the reliability characteristics of an expectancy-value scale as applied to attitudes towards the Army. To accomplish this, the team conducted a reliability assessment for data previously collected from the Summer 1984 New Recruit Survey. Once an expectancy theory model was found to have an appropriate level of reliability, the second subtask consisted of constructing a pilot instrument using a Likert scaling approach to the Fishbein and Ajzen model, developing a simple instrument to measure the relative weights of the decision factors comprising Fishbein and Ajzen attitudinal component, and developing a semantic differential instrument to measure affect. These instruments were then pilot tested. Finally, the third subtask consisted of developing a paired choice format for a decompositional approach to attitude assessment that would compliment the Likert scale version and provide a multi-method assessment of the individual enlistment decision process. Each of these three subtasks are described, in turn.

## The New Recruit Survey Reliability Assessment

One of the central features distinguishing the present project from previous Army enlistment survey studies is the adoption of theoretical models explicitly representing the individual decision making process. Among the models considered is the Fishbein and Ajzen (1975) expectancy theory model of attitude formation and behavioral intent. This is a particularly attractive framework for considering the enlistment decision as it contains cognitive, affective, and normative components.

Though this model has been widely applied in a variety of settings over the past decade, it has not to our knowledge, been applied to military enlistment decisions. For this reason, it was felt that some evidence must be assembled regarding the applicability of the model prior to initiation of the full-scale survey effort. This note discusses one psychometric characteristic--reliability--of an expectancy-value scale of attitudes toward the Army. The scale was constructed from responses obtained in the Summer 1984 New Recruit Survey (NRS). The attitude scale proved to be highly reliable (Cronbach's  $\alpha = 0.911$ ).<sup>1</sup>

The data used for scale construction were taken from the Summer 1984 NRS. This was a survey administered to new Army recruits during their initial processing at Army Reception Stations.<sup>2</sup> Among the items in the questionnaire was a bank of questions designed to elicit expectancy-value judgments regarding both the Army and civilian life. We confined our attention to judgments about the Army.

Table 1 reproduces the attributes presented and the response categories offered. From an expectancy theory perspective, importance ratings (ranging here from not important to most important) constitute a personal evaluation or disposition toward an attribute (e.g., a most important rating on personal freedom implies a positive evaluation of this attribute). Satisfaction ratings, on the other hand, measure the degree to which a person believes the Army possesses a particular attribute (e.g., a very unsatisfied rating for personal freedom implies that this individual doesn't believe the Army allows much, if any, personal freedom).<sup>3</sup>

1. The attitudinal scale was constructed using the following combinatorial rule:

$A_a = \sum b_i e_i$

where  $A_a$  is an individual's attitude toward the Army,  
 $b_i$  measures the strength of an individual's belief that an object has a particular ( $i^{\text{th}}$ ) attribute, and  
 $e_i$  is an individual's evaluation (positive or negative) of the  $i^{\text{th}}$  attribute.

2. For additional discussion of the Summer 1984 NRS, see Westat, 1986.

3. Note that, unlike the strict Fishbein and Ajzen model, the NRS measured potential satisfaction and importance. In this preliminary analysis we assume that satisfaction and importance correspond to Fishbein and Ajzen's belief and evaluation measures.

TABLE 1

Expectancy-Value Questions from  
the Summer 1984 NRS

RECRUIT RESPONSE CATEGORIES

JOB FACTORS	ARMY SATISFACTION RATING	very unsatisfied	very satisfied
	IMPORTANCE RATING	not important	most important

1. Chance for adventure and a variety of duties	A	B	C	D	E
2. Opportunities for promotion, advancement	A	B	C	D	E
3. Good supervisors	A	B	C	D	E
4. Provides money for education	A	B	C	D	E
5. Opportunity for stable home life and involvement in the community	A	B	C	D	E
6. Amount of personal freedom in expression of opinions on and off the job	A	B	C	D	E
7. Opportunities for continued self improvement and development	A	B	C	D	E
8. Recreation opportunities	A	B	C	D	E
9. Travel opportunities	A	B	C	D	E
10. Physical training and challenge	A	B	C	D	E
11. Chance to be away from home	A	B	C	D	E
12. Having the respect of other people	A	B	C	D	E
13. Doing something for your country	A	B	C	D	E
14. Teaches you a valuable trade or skill	A	B	C	D	E
15. Job security, such as a steady job	A	B	C	D	E
16. Good income	A	B	C	D	E
17. Good people to work with	A	B	C	D	E
18. Easy work/duties	A	B	C	D	E
19. Challenging or interesting work	A	B	C	D	E
20. Good retirement benefits	A	B	C	D	E

In addition to the items in Table 1, another question was drawn from the Summer 1984 NRS for analysis purposes. The question, "Which of these reasons is your most important reason for enlisting?" was used. This question was asked twice of all recruits. The distinction between the two appearances of the question lies in the response category offered. Ten categories were provided in each case. In the first appearance of the question, "I want to travel" was a valid response category. In the second appearance, this response was replaced with "Chance to better myself." All other categories remained constant.

Expectancy-Value Judgments. The Fishbein and Ajzen (1975, p. 95) model of attitude formation uses measurement techniques designed "...to locate an individual on a single bipolar evaluative dimension with respect to some object." This theoretical position has two implications vis a vis the expectancy-value data obtained from the Summer 1984 NRS. First, both belief and importance evaluations should ideally be coded in a bipolar fashion (some theoretical exceptions are allowed in the case of Thurstone and semantic differential scales--see Fishbein and Ajzen, 1975, p. 79). Second, the underlying scale must be unidimensional. The first of these implications is discussed immediately following. The requirement of unidimensionality is discussed later.

In 1984 NRS questionnaire, belief and importance ratings were elicited using a five-point Likert presentation. The particular response categories for importance, unfortunately, were unipolar. As a result, importance responses were scaled from 0 (not at all important) to 1 (most important) in increments of 0.25 (i.e., 0, 0.25, 0.50, 0.75, 1.0). Satisfaction ratings were bipolar and coded to have a range from -2.0 to 2.0 in 1.0 increments. The magnitudes and increments assigned for the importance and satisfaction components of attitude correspond with the recommendations of Fishbein and Ajzen (1975).

The fact that the evaluation component of attitude (importance) was measured in a unipolar fashion implies that we may only partially test the expectancy theory model of attitude formation. Though unfortunate, this is not as great a handicap as might be assumed. We are, in this test, able to assess positive evaluations of the Army. This might even be the most relevant type of evaluation to consider given that the NRS was administered to new Army recruits.

Identification of Salient Beliefs. Drawing on the research findings of others, Fishbein and Ajzen contend ". . . that a person's attitude toward an object is primarily determined by no more than five to nine beliefs about the object; these are the beliefs that are salient at the time." (1975, p. 218). In the NRS, respondents rated twenty items. Obviously, from an expectancy-value perspective, it was necessary to eliminate all but the salient beliefs for modeling purposes.

The identification of salient beliefs was accomplished through examination of responses gathered by the NRS. First, responses to the question "Which of these reasons is your most important reason for enlisting?" were reviewed. Second, the strength (i.e., the absolute magnitude) of beliefs elicited for each of the twenty items in questions were examined.

Table 2 presents a rank ordering of responses regarding the most important reason for enlisting. In the left column is the rank ordering of reasons chosen in the first presentation of the question (the unique category, "I want to travel," is ranked but the order is unnumbered). In the right column responses are also ranked but the numbering corresponds to the ranking obtained in the first presentation of the question. The two middle columns report the percentage of respondents choosing the corresponding reason as most important for enlisting.

As would be expected, the two rankings are very similar. In the two listings, only "To be away from home on my own" and "Earn more money" do not rank the same and these reverse their relative positions. From these rankings we can see that bettering one's self and skill training are the most important reasons overall for enlisting. Money for college, patriotism, and proving one's self are also important reasons. Least frequently reported as most important were getting away from personal problems and a family tradition to serve. This listing provides a first indication of those reasons most salient for enlisting in the Army.

Turning to Table 3, more direct measures of belief salience are presented. In this table the percentage of individuals responding with extreme values on either belief (satisfaction) or evaluation (importance) are presented (i.e., either -2 or 2 on belief and +1.0 on evaluation). In the case of evaluation, the percentage presented is of persons reporting most important while for belief the percentage is of individuals responding either very unsatisfied or very satisfied. This table was constructed because the literature on belief salience that belief strength may be correlated with salience (Kaplan & Fishbein, 1969).

As Table 3 shows, there are ten items among the twenty offered recruits that elicited strong beliefs in over 40% of the cases. These items also tended to elicit extreme evaluation ratings as well. Indeed, the comparison of belief and evaluation responses led to the inclusion of the good income item in the list as it was only slightly weaker than the others on belief but was quite strongly evaluated.

All eleven items identified as strong beliefs were employed in the construction of the attitude scale because of the correspondence of strong belief items in Table 3 with the rank ordering of reasons for enlisting listed in Table 2.

A factor analysis was performed on the expectancy-value composition of the eleven belief ( $b_i$ ) and evaluation ( $e_i$ ) items

TABLE 2

Summer 1984 NRS Responses:  
Rank Ordering of Most Important  
Reason for Enlisting\*

Which of these reasons is your  
MOST IMPORTANT REASON  
for enlisting?

	Percent Responding	Percent Responding	
1. To get trained in a skill	23.3%	25.6%	<u>Chance to better myself</u>
2. Money for a college education	17.4%	16.4%	1. To get trained in a skill
3. To serve my country	13.2%	14.5%	2. Money for a college education
4. To prove that I can make it	10.1%	9.2%	3. To serve my country
5. To be away from home on my own	6.8%	6.8%	4. To prove that I can make it
6. I was unemployed	6.6%	6.4%	7. Earn more money
7. Earn more money	4.9%	6.2%	6. I was unemployed
<u>I want to travel*</u>	4.9%	5.2%	5. To be away from home on my own
8. To get away from a personal problem	2.7%	2.2%	8. To get away from a personal problem
9. Family tradition to serve	2.2%	1.9%	9. Family tradition to serve

\*Note--two response formats were used to answer the question, "Which of these reasons is your MOST IMPORTANT REASON for enlisting?" The first format included the response "I want to travel." In the second format this response was dropped and "Chance to better myself" included instead.

TABLE 3

Correspondence Between Belief Strength  
and Importance Strength

EVALUATION Percentage Responding Most Important		BELIEF Percentage Responding Very Satisfied or Very Unsatisfied
43.2%	Opportunities for promotion/advancement	40.1%
49.6%	Provides money for education	49.5%
45.7%	Opportunities for self improvement/development	45.8%
*	Travel opportunities	42.4%
*	Physical training and challenge	44.9%
*	Doing something for your country	45.9%
44.8%	Teaches a valuable skill or trade	47.5%
47.0%	Job security, a steady job	50.6%
44.8%	Good income	*
40.5%	Challenging or interesting work	42.8%
47.7%	Good retirement benefits	52.1%

\*Belief or importance strength less than 40%.

(i.e.,  $b_i * e_i$ ) as a final check of this strategy. The eigenvalues indicate that the scale is, indeed, unidimensional, as required. The first eigenvalue obviously accounts for nearly all the variation among scale items with the second and succeeding eigenvalues accounting for relatively little of the variation. The factor pattern also reinforces the impression of a unidimensional scale. All but one loading is greater than 0.50 and the magnitudes are roughly similar. The only possible exception to these conclusions is the item "education money." This item has the lowest loading, and it might constitute a discontinuity in the scale. Nonetheless, a decision to retain this item was made on the strength of the evidence presented in Tables 2 and 3. These tables reveal "education money" to be a salient enlistment decision attribute; therefore, it was retained in the scale.

Assessing the Reliability of the Expectancy-Value Scale. The steps followed to this point have constructed expectancy-value judgments from survey items and assessed the salience of items and tested the unidimensionally assumption using the eleven items chosen to comprise the attitudinal scale. In this final step the reliability of the constructed scale is evaluated.

Table 5 presents the findings from the reliability analysis conducted on the eleven item attitudes toward the Army scale. As this table demonstrates, the expectancy-value scale is highly reliable. Among the eleven variables, only "education money" shows any departure from the general pattern of high inter-correlations. The finding that this item is less tightly bound within the scale is not unexpected, however. In the factor analysis this item yielded the lowest pattern score. The split-half reliability of the scale proved to be more than adequate, as well (the lower alpha for Part 1 is due to the fact that "education money" is in this half). In all, this preliminary scale construction exercise using the expectancy theory model proved very successful.

#### The Likert Scale Fishbein and Ajzen Instrument

Instrument Development. Due to time constraints, the development of the Fishbein and Ajzen instrument occurred concurrent with the analysis of the New Recruit Survey. Although both the New Recruit Survey analyses and the Fishbein and Ajzen measure employed Likert type rating procedures, for the sake of clarity we will henceforth refer to the Fishbein and Ajzen instrument as a Likert scale to differentiate it from the paired comparison measure based on a decompositional model.

The Likert scale version of the Fishbein and Ajzen instrument underwent several stages of development prior to pilot testing. The first stage consisted of constructing a series of questions that correspond to the parameters of the Fishbein and Ajzen model. These parameters included behavioral intent, attitudinal belief, attitudinal evaluation; normative belief and motivation to comply. Separate questions were constructed for each parameter for each of

TABLE 4

Summary of Factor Analysis Results:  
Eleven Expectancy-Value Judgments Input

Factor Method: Maximum Likelihood

Eigenvalues:

	1	2	3	4	5	6
Eigenvalue	6.261482	0.344284	0.230670	0.072211	-0.014138	-0.075331
Difference	5.917199	0.113613	0.158759	0.086350	0.061193	0.024435
Proportion	1.075500	0.059100	0.039600	0.012400	-0.002400	-0.012900
Cumulative	1.075500	1.134600	1.174200	1.186600	1.184200	1.171200

	7	8	9	10	11
Eigenvalue	-0.099766	-0.182561	-0.203908	-0.240516	-0.270283
Difference	0.082795	0.021347	0.036608	0.029767	
Proportion	-0.017100	-0.031400	-0.035000	-0.041300	-0.046400
Cumulative	1.154100	1.122800	1.087700	1.046400	1.000000

Factor Pattern (in descending order of magnitude)

JOB SECURITY	0.70067
TEACHES SKILL/TRADE	0.66110
CHALLENGING WORK	0.65333
GOOD RETIREMENT	0.64304
GOOD INCOME	0.63224
SELF DEVELOPMENT	0.61328
PATRIOTISM	0.60742
PROMOTION/ADVANCEMENT	0.57781
PHYSICAL CHALLENGE	0.57649
TRAVEL OPPORTUNITIES	0.55624
EDUCATION MONEY	0.38716

TABLE 5

Reliability Analysis of Attitude  
Toward the Army Expectancy-Value Scale

SUMMARY STATISTICS

<u>Statistics for Scale</u>	Mean	Variance	Std. Dev.	Std. Alpha.
	8.78	54.75	7.40	0.911
<u>Item-Total Statistics</u>	Scale Mean If Item Deleted	Item-Total Correlation	Alpha If Item Deleted	
PROMOTION/ADVANCEMENT	8.03	.65	.90	
EDUCATION/MONEY	8.03	.51	.91	
SELF DEVELOPMENT	7.92	.68	.90	
TRAVEL OPPORTUNITIES	8.07	.66	.90	
PHYSICAL CHALLENGE	8.04	.65	.90	
PATRIOTISM	8.00	.66	.90	
TEACHES SKILL/TRADE	7.92	.69	.90	
JOB SECURITY	7.86	.73	.90	
GOOD INCOME	8.06	.64	.90	
CHALLENGING WORK	7.98	.71	.90	
GOOD RETIREMENT	7.85	.68	.90	

SPLIT-HALF RELIABILITY

<u>Statistics for</u>	Mean	Variance	Std. Dev.	Alpha
Part 1 (6 variables)	4.56	16.32	4.04	.835
Part 2 (5 variables)	4.22	14.34	3.79	.859

Gutman Split-Half Reliability=0.816

the three career choices of joining the Army, taking a civilian job and entering college. This yielded a series of questions to which respondents were asked to rate the degree of agreement on a seven point Likert scale. Figure 1 provides a sample of the questions used.

In addition, a simple instrument was developed to obtain the relative weights for the Fishbein and Ajzen attitudinal component. For this section of the instrument, each subject was asked to examine a list of factors important to consider in making a career choice. The respondent was then asked to divide 100 points among the factors to correspond to the relative importance of the factors in reaching their own career decision. (See Appendix C) Finally, in an effort to assess the global affective component of the participant's decision process, a semantic differential questionnaire consisting of seven bipolar adjective pairs was developed (See Figure 2). Each instrument is described, in turn, after the Fishbein and Ajzen model is defined.

The arithmetic representation and parameter definitions of the Fishbein and Ajzen model, with an illustration of how it applies to the individual Army enlistment decision, is presented in equations [1] and [2] below.

$$B \quad BI = (A_B)w_1 + (SN)w_2 \quad [1]$$

$$= \left[ \begin{array}{c} n \\ \sum B_i E_i \\ i=1 \end{array} \right] w_1 + \left[ \begin{array}{c} m \\ \sum NB_i MC_i \\ i=1 \end{array} \right] w_2 \quad [2]$$

where

- B = the particular behavior (e.g., Army enlistment);
- BI = the behavioral intention to perform the behavior (e.g., I do/do not intend to join the Army);
- A<sub>B</sub> = the attitude toward performing behavior B (e.g., after taking all things into consideration, I think joining the Army scores the highest);
- SN = the subjective norm (e.g., after taking all things into consideration, my parents, friends, and teachers have a positive opinion about my decision to enlist/not enlist);
- B<sub>i</sub> = the belief (subjective probability) that performing the behavior will lead to consequence X<sub>i</sub> (e.g., if I join the Army, I am sure to get the money I need for college at the end of my tour of duty);
- E<sub>i</sub> = the evaluation of X<sub>i</sub> (e.g., earning money for college is terribly important to me);
- NB<sub>i</sub> = the perceived expectation of Referent i (e.g., my parents really do/do not want me to enlist);
- MC<sub>i</sub> = the motivation to comply with Referent i (e.g., what my parents expect of me does not matter to me);
- n = the number of salient consequences;

Figure 1

Example of the Questions and Scales Used to Measure the Parameters in Attitudinal and Normative Components of the Fishbein-Ajzen Model

BEHAVIORAL INTENT QUESTION

I INTEND TO ENLIST IN THE ARMY WITHIN FOUR MONTHS AFTER GRADUATING HIGH SCHOOL. (NOTE: IF YOU HAVE GRADUATED HIGH SCHOOL, DO YOU INTEND TO ENLIST IN THE ARMY WITHIN FOUR MONTHS?)

---

1	2	3	4	5	6	7	(pg.1)*
Improbable					Probable		

ATTITUDINAL BELIEF QUESTION

THE ARMY OFFERS THE KIND OF JOB SECURITY I WANT.

---

1	2	3	4	5	6	7	(pg.2)*
False			True				

ATTITUDINAL EVALUATION QUESTION

HAVING THE AMOUNT OF JOB SECURITY I WANT IS IMPORTANT TO ME.

---

1	2	3	4	5	6	7	(pg.1)*
False			True				

NORMATIVE BELIEF QUESTION

MY PARENTS THINK THAT I SHOULD ENLIST IN THE ARMY.

---

1	2	3	4	5	6	7	(pg.1)*
False			True				

MOTIVATION TO COMPLY QUESTION

I INTEND TO FOLLOW THE THINKING OF MY PARENTS.

---

1	2	3	4	5	6	7	(pg.2)*
False			True				

\*Page numbers refer to the actual instrument

Figure 2

Sample of Semantic Differential Questionnaire  
Applied to the Army Career Choice

For each of the following pairs of adjectives, please rate how you feel about enlisting in the Army.

---

1	2	3	4	5	6	7
Dislike						Like

---

1	2	3	4	5	6	7
Unpleasant						Pleasant

---

1	2	3	4	5	6	7
Disagreeable						Agreeable

---

1	2	3	4	5	6	7
Disapprove						Approve

---

1	2	3	4	5	6	7
Unenjoyable						Enjoyable

---

1	2	3	4	5	6	7
Unfavorable						Favorable

---

1	2	3	4	5	6	7
Bad						Good

confidence and least difficulty in using the "divide up 100 points" procedure. For these reasons, as well as the added time and logistical constraints, the "divide up 100 points" procedure was used to obtain explicit relative weights in the study.

The global affective component was operationalized using a semantic differential. The semantic differential, originally developed by Osgood, Suci, and Tannenbaum (1957), uses bipolar adjective rating scales to develop (typically) an affective measure of a given concept. Relying on Fishbein and Ajzen's (1975) overview of attitudinal research using the semantic differential, an instrument was developed for each of the three career choices using seven-point rating scales for the following seven bipolar adjectives: Dislike:like, unpleasant:pleasant, disagreeable:agreeable, disapprove:approve, unenjoyable:enjoyable, unfavorable:favorable, and bad:good.

The first version of this instrument package was administered to students participating in the Kansas City focus group in a 15-minute period preceding the start of the focus group discussion. The PGSC/Westat team chose to administer the initial version of the measure to focus group participants as a cost-saving approach to instrument development. By soliciting the answers of group members, the team was able to incorporate the comments and suggestions of 17-20 year olds at an early stage of the instrumentation process prior to actual pilot testing and without additional expense. Based on the comments of the participants, several minor changes were made in wording to achieve greater clarity. In addition, the original weighting instrument asked the respondent to divide 100 points, among eight career choice factors but students noted that job security was not listed as a factor and suggested that it be included. As a result, the team revised the measure to consist of nine factors, the original eight with the addition of job security.

Following this revision, the team repeated the procedure twice more, seeking input on the instruments from members of the Boston focus group, revising and presenting the measure finally to the Atlanta focus group after which the development stage was complete. Throughout the development procedure, the order of presentation of questions varied to ensure that order effects would not influence the pattern of responding. The final version of the instruments can be found in Appendices A, C, D, and E.

Exploratory Data Analysis and Results. Although the versions of the instrument completed by focus group participants were somewhat different, these differences were primarily format related and did not involve any substantive changes in the model. Therefore, the team pooled the responses and conducted exploratory analyses on the data set. A total of nineteen men and nine women from the ages of 17 to 20 participated in focus groups in Kansas City, Kansas; Boston, Massachusetts; and Atlanta, Georgia during

May 1986. Eighteen of the participants were high school seniors; ten were high school graduates, none of whom were enrolled in a four-year college.

The purpose of the analysis was to determine how well different decision process components, both separately and combined, predicted the career choice with the highest (or, in four cases, tied for the highest) mean behavioral intent for each participant. Successful prediction was operationalized in this manner because Pagel and Davidson (1984) showed it to be more insightful than an across-choice and across-subject criterion, as might be achieved with a multiple regression analysis. The results for different decision process components are presented, in turn.

Attitudinal Component. The attitudinal component was operationalized in two ways: (a) As the sum of the products of the attitudinal belief and evaluation ratings using the Fishbein and Ajzen instruments, and (b) as the sum of the products using the relative weights obtained with the "divide up 100 points" procedure and the belief ratings obtained using the Fishbein and Ajzen instrument. The former measure predicted the option with the highest mean behavioral intent rating for 18 of the 28 participants (i.e., for 64% of the sample); the latter measure predicted the option with the highest mean intent for 17 participants. Three times the attitudinal component using the Fishbein and Ajzen evaluation rating scales accurately predicted a highest behavioral intent option missed by the attitudinal component calculated with the "divide-up 100 points" procedure; two times the opposite happened. In total, both attitudinal component measures failed to predict the option with the highest mean behavioral intent for 8 of the 28 participants. Due to the similarity in the results obtained with the two attitudinal component measures, only the one calculated using both the Fishbein and Ajzen belief and evaluation rating scales was used in the subsequent multicomponent analyses presented below.

Normative Component. This component was operationalized by the sum of the products of the normative belief and evaluation ratings using the Fishbein and Ajzen instrument. The normative component also predicted the option with the highest mean intent for 17 of the 28 participants. The normative component measure predicted the career choice with the highest mean intent for 6 of the 11 participants missed by the attitudinal component. In turn, the attitudinal component predicted 7 of the 11 participants missed by the normative component.

Combined Attitudinal and Normative Component Model. This is the standard Fishbein and Ajzen model. It was developed for each participant by separately summing the attitudinal and normative component scores obtained with the Fishbein and Ajzen instrument. The normative component sum was first multiplied by 3 to make it comparable to the attitudinal component sum, for only three referent groups were used to calculate the normative component's score

while nine attributes were used to calculate the attitudinal component's score. The weights for the attitudinal and normative components (i.e.,  $W_1$  and  $W_2$ , respectively) were set equal to 1.0 because we did not have empirically derived regression weights to indicate which component, if any, was more important in predicting behavioral intent for the current application.

The Fishbein and Ajzen model predicted the career choice with the highest mean intent rating for 23 of the 28 participants (i.e., 82% of the sample). Given an estimated base rate of 0.643, which was the hit rate for the attitudinal component alone, the probability of getting 23 or more hits is less than 0.03. For the 23 participants accurately predicted by the Fishbein and Ajzen model, only 11 had the highest score on both the attitudinal and normative components. Six of the 23 cases had a higher attitudinal component score on an option other than the one with the highest mean intent rating, but when combined with the normative component score the sum resulted in accurate prediction. Conversely, 7 of the 23 cases had a higher normative component score on an option other than the one with the highest mean intent rating, but when combined with the attitudinal component score the sum resulted in an accurate prediction. These results suggest that both the attitudinal and normative components were required to predict the behavioral intent of members of our sample.

Affective Component. This component was operationalized by summing the ratings given to the seven bipolar adjectives. Taken alone, the affective component predicted the career choice with the highest mean intent rating for 22 of the 28 participants. Although this was almost the same level of predictability as that achieved with the attitudinal and normative component Fishbein and Ajzen model, it was not significantly higher than that achieved with the attitudinal component alone ( $p$  less than 0.08). Interestingly, the affective component accurately predicted four of the five participants missed by the Fishbein and Ajzen model. Conversely, the Fishbein and Ajzen model predicted five of the six participants missed by the affective component. Together, the Fishbein and Ajzen model and the affective component model mispredicted only one participant. Given an estimated hit rate of 0.821, which was the hit rate for the Fishbein and Ajzen model, the probability of getting 27 or more hits for 28 cases is less than 0.03. These results suggest that a multicomponent decision model comprised of attitudinal, normative, and affective components was required to predict that career choice intentions of our sample.

Alternative Multicomponent Models. Given the above results, an additive model was developed comprised of attitudinal, normative and affective components. The values calculated for each component were rescaled prior to addition to make the component scales comparable. Specifically, since the attitudinal and normative component values were on a scale from 9 ( $1 \times 1 \times 9$ ) to 441 ( $7 \times 7 \times 9$ ) and the affective component was on a scale from 7 ( $1 \times 7$ ) to 49 ( $7 \times 7$ ), the following actions were taken: (a) A value of 9 was

subtracted from each of the values calculated for the attitudinal and normative components to make zero the minimum scale point for both components, and (b) a value of 7 was subtracted from each of the calculated affective component values to make zero the minimum scale point and then, each affective value was multiplied by 432 [i.e.,  $(441-9)/(49-7)$ ] to make the maximum affective scale value equal to that for the other scales. The combined attitudinal, normative, and affective component model predicted the choice with the highest mean intent rating for 21 participants. This hit rate was less than that for both the Fishbein and Ajzen model and the affective component model which had hit rates of 23 and 22, respectively. These results suggest that an additive model is not the most useful way to combine the attitudinal, normative, and affective component scores.

The predictability of an equally weighted attitudinal and affective component model and an equally weighted normative and affective component model were also compared to the predictability achieved with only an affective component model. The hit rates for both models were 22 and 19 correct predictions, respectively, which was equal to and less than the success rate achieved with an affective component model. In sum, none of the multicomponent models incorporating the affective component improved prediction over that achieved with the affective component alone.

#### The Paired Choice Decompositional Instrument

In addition to the Likert scale measurement approach to the Fishbein and Ajzen model, an additional measure adapted from a decompositional decision modeling approach was developed utilizing a different approach in an attempt to operationalize a multi-method measurement approach. The major distinction between the decompositional approach and those previously tested is in the perspective taken with regard to the decision making process. Rather than eliciting self-explication from the respondent regarding the relevant dimensions of his or her decision, decompositional techniques ask the respondent to make decisions, not explain them. Subsequent modeling then evaluates decisions in light of the stimuli offered and infers the salient dimensions and combinational rules used in the making of decisions.

The paired choice instrument asked respondents to state their preferences when presented with a series of twenty-four hypothetical career choices. Table 6 presents the basic response format used in this particular enlistment decision pretest. In each case, the choice is between a career having four attributes: (a) The sector of the economy in which it resides (e.g., Army or civilian), (b) the amount of skill training offered, (c) the pre-

TABLE 6

Response Format Used for Eliciting Hypothetical Career Choice

	OPTION A	OPTION B	PREFERRED OPTION
#1	Sector: Army Skill Training: Some Benefits: Medical + Tuition	Sector: Civilian Skill Training: None Benefits: None	A B
#2	Section: Civilian Skill Training: Complete Benefits: Medical	Sector: Army Skill Training: None Benefits: Medical + Tuition	A B

sence or absence of medical benefits, and (d) the presence or absence of school tuition benefits.<sup>4</sup>

What was offered to respondents, then, were choices between multi-attribute alternatives. The four attributes, as presented above, were offered to respondents as having 2 (Army/Civilian), 3 (no training/moderate training/completed training), 2 (no medical/medical), and 2 (no tuition/tuition) levels. In point of fact, a complete crossing of the 24 attribute combinations (2x3x2x2) was not used. For example, in order to remain realistic, the attribute level "Army" was never crossed with the level "no medical." This decision was made because all military personnel have medical benefits. The instrument used in the pilot test used only four attributes, however the formal final instrument will contain additional attributes.

The final set of questions was compiled and introduced by a one-page set of instructions (Appendix B). The questionnaire was then included in the package of instruments administered during the pilot test. The results of analyses of the pilot test are discussed in the section which follows.

#### The Pilot Test

Upon completion of the instruments, a pilot test was conducted to assess the time required to complete each instrument as well as the ease with which respondents could answer the questions posed. Subjects were recruited from notices posted at the WESTAT Corporation. Only volunteers between the ages of 17 and 20 were included in the sample for the pilot test. Subjects were paid a \$10 honorarium for completing the measures.

Six separate instruments were included in the set administered to each subject. The set included the Likert scale version of the Fishbein and Ajzen instrument which included the semantic differential (Appendix A), the nine factor weighting scale to assess the relative subjective weights the subject assigned to the attitudinal components of the Fishbein and Ajzen model (Appendix C), a three factor weighting scale to assess the relative weights subjects assign to the attitudinal, normative and affective components of the Fishbein and Ajzen scale (Appendix D), a twelve factor weighting scale to assess the original nine attitudinal factors with three additional items related to the normative factors (Appendix E), a subset of the questions for the paired

---

4. The primary purpose for including choice-based items in the pretest was to determine their appropriateness for inclusion in the final enlistment decision questionnaire. It was not known, for example, whether young individuals would be able to comprehend a series of complicated instructions and respond in a consistent manner. As a result, the focus here is on measurement characteristics, not substantive findings. If interest were primarily on the substance of results, a more realistic battery of attributes would have been offered.

choice instrument (Appendix B), and a set of demographic questions that can be used to predict individuals' performance on the AFQT (Armed Forces Qualifying Test) (Appendix F) which was included at ARI's request. (The actual responses to the demographic questions are reported in Appendix G.)

The instruments were administered with appropriate instructions to the group. Participants recorded their start and finish times for each instrument and completed a rating scale concerning the difficulty of each instrument for each measure, in turn. The rating scale required the subject to indicate how difficult they found the instrument to complete on a scale of 1 (very easy) to 5 (very difficult).

The results of the pilot test are displayed in Tables 7 and 8. Table 7 displays the mean time to complete each instrument as well as the minimum and maximum completion times. Table 8 provides the mean difficulty rating along with minimum and maximum ratings. The completion time averages for each instrument fall well under the 30-minute limit within which the team believes the survey must be completed. These data will provide guidelines for how best to make trade-offs between the usefulness of each measure and the time required for completion in our efforts to construct a comprehensive package of instruments within the 30-minute completion limit.

In terms of degree of difficulty, all measures pilot-tested demonstrated average difficulty ratings well within an acceptable range, suggesting that these measures can be completed with ease. In addition to these ratings, anecdotal reports and verbal comments were solicited. Participants generally commented favorably, with only two subjects noting that they found it somewhat confusing to divide 100 points among 12 factors in the twelve factor relative weights scale.

The Likert Scale Fishbein and Ajzen Instrument. Although the pilot test sample was small (three males and five females completed the Likert Scale Fishbein and Ajzen measure), the team did examine the results to explore how well the different decision process components predicted career choice with the highest mean behavioral intent for each subject. The attitudinal component of the model was operationalized in two ways: (a) As the sum of the products of the attitudinal belief and evaluation ratings of the Fishbein and Ajzen instrument, and (b) as the sum of the products using the relative weights obtained with the nine factor divide 100 points relative weights scale. The former method accurately predicted the intent of seven of the eight respondents while the latter correctly predicted six of the eight (both methods missed the same subject). The normative component, operationalized as the sum of the products of the normative belief and evaluation ratings of the Fishbein and Ajzen instrument correctly predicted the intent of all eight pilot sample subjects. The combined attitudinal and normative components (arrived at by summing the attitudinal and normative component scores) successfully predicted

Table 7  
 Time\* To Complete Instruments During Pilot Test

Instrument	Mean	Minimum	Maximum
Likert Scale Fishbein-Ajzen Instrument	13.00	9	20
Nine Factor Relative Weights Scale	2.50	1	5
Three Factor Relative Weights Scale	1.29	1	9
Twelve Factor Relative Weights Scale	6.25	4	9
Paired Choice Instrument**	11.76	6	18
AFQT Demographic Questions	5.00	3	7

\* in minutes

\*\* The times for the Paired Choice Instrument were prorated. Only 50% of the full scale was administered. This subset of questions took 5.88 minutes on the average (3 minutes minimum, 9 minutes maximum), therefore, the actual times were multiplied by 2 to yield the estimated time to complete a full set of questions.

TABLE 8

Degree of Difficulty Ratings for Instruments Used in Pilot Test

<u>Instrument</u>	<u>Mean Difficulty Rating*</u>	<u>Minimum Rating</u>	<u>Maximum Rating</u>
Likert Scale Fishbein-Ajzen Instrument	2.10	1	3
Nine Factor Relative Weights Scale	2.10	1	4
Three Factor Relative Weights Scale	1.00	1	1
Twelve Factor Relative Weights Scale	2.60	1	5
Paired Choice Instrument	2.25	1	4
AFQT Demographic Questions	1.30	1	2

---

\* Scale ranged from 1=very easy to 5=very difficult

TABLE 9

Three Factor Weighting Scale Weights For The Pilot Sample

Subject	Factor		
	Attitudinal	Normative	Affective
1	70	5	25
2	50	0	50
3	35	5	60
4	45	10	45
5	75	5	20
6	50	20	30
7	50	10	40
8	55	20	25

the intent of the same seven participants as predicted by the attitudinal component alone. Finally, the team used the affective component (derived from the semantic differential) to correctly predict the behavioral intent of seven subjects. These seven were not entirely identical to those subjects predicted by any of the other components, but the effective component did predict correctly for the subject missed by the combined attitude and normative component scores.

The pilot instruments also included two alternative weighting scales, a twelve factor scale and a three factor scale. The twelve factor scale asked respondents to divide 100 points among twelve attitudinal and normative factors. When used as weights for the Fishbein and Ajzen instrument this scale successfully predicted the intent of seven of the eight respondents, a success rate equivalent to the nine factor weighting approach and slightly poorer than the nine factor attitudinal weighting combined with the unweighted normative Fishbein and Ajzen component. The twelve factor scale, it should be noted, presented the most difficulty to respondents. Given its difficulty level and its failure to improve upon other weighting approaches, the Team does not recommend using the twelve factors approach during Phase II.

The three factor scale asked respondents to divide up 100 points among attitudinal, normative and affective factors. Table nine displays the weights given by subjects in the sample and highlights the relatively heavier emphasis given to both attitudinal and affective components. When these weights were applied to the Fishbein and Ajzen instrument, the behavioral intent of all eight subjects was correctly predicted.

It must be emphasized that these results are based on a very small sample and as such are not intended to constitute a full test of the validity of the instrument. A much larger scale data collection effort would be required to do so. However, it should be noted that the general pattern of results is consistent with that found from the earlier analysis conducted on the pooled responses from participants in three focus groups. The findings are consistent with our belief that attitudinal, normative and affective components are important determinants of behavioral intent.

The Paired Choice Instrument. In this section, the characteristics of the paired choice measurement instrument, as presented in the pretest, are reviewed. Prime consideration is given to the coherence of responses received and their ability to be modeled. Of considerably lesser interest are the substantive results obtained. The major questions can be easily summarized. Do respondents understand what is asked of them? Are their responses coherent (i.e., internally consistent)? Are the responses amenable to statistical modeling? In the subsections that follow, each of these questions is affirmatively answered. Evidence suggests that, while some work remains in the crafting of instructions, respondents understood what was asked of them and found the

task relatively easy. In addition, the responses obtained proved internally consistent and amenable to statistical modeling.

Following completion of this section of the pretest, respondents were asked to record their reactions to this section of pretest on the back of its last page. Specifically, respondents were asked to rate the difficulty of the section in terms of instructions and response format. Some noted that the instructions were long and took some time to read (the instructions were one page in length). Once instructions were completed, however, the general opinion expressed was that the paired choice formatted was unproblematic. The general lesson to be learned here is that instructions should be kept to a minimum. The specific lesson is that new and shorter instructions for paired choice items must be devised.

Inspection of the questionnaires gives the impression that individuals by and large responded to the stimuli in a consistent and coherent manner. Table 10 illustrates the response pattern observed for one individual in the pretest. As this table demonstrates, a clear pattern of tradeoff behavior is exhibited. While the threshold for tradeoff varies somewhat across respondents, clear patterns of choice were evident.

In a few cases, this data representation was nearly or completely filled with C's (indicating the individual almost always preferred the civilian sector). For the purpose of pretest statistical analysis these individuals have been excluded. In these cases there is a lack of discrimination between sectors although these cases still clearly discriminate among other attributes. This exclusion is made in order to simplify analysis. The purpose of this exercise is to determine the measurement characteristics of a choice-based response format. It has already been determined that respondents understand the choices put before them. It remains to determine statistically if their responses are internally consistent. This determination would be complicated by the presence of "outliers" so to speak and so they are excluded.<sup>5</sup> The unfortunate implication of this exclusion is that substantive results obtained from this section of the pretest cannot be unambiguously compared with those in other portions of the questionnaire.

The statistical technique used to analyze the choice data collected during this pretest is a variant of multidimensional scaling, termed conjoint measurement. This technique evaluates multiattribute choices based upon a rank ordering of preferences for attribute level pairs. In the present case respondents were

---

5. This exclusion is nothing, more or less, than a form of stratification. In a more comprehensive analysis it would be of interest to determine what characteristics are associated with individuals that self-select themselves out of consideration of the Army as an option. Such an extended analysis, of course, is not called for here.

TABLE 10

Example of Respondent Choices Among Paired Alternatives

Sector :				
Civilian	N/Y/Y	M/Y/Y	N/Y/N	M/Y/N
C/Y/N*	C**	C	C	C
C/N/N	C	C	C	C
M/Y/N	A	A	A	C
M/N/N	A	A	A	C
N/Y/N	A	A	A	A
N/N/N	A	A	A	A

\* Attribute configurations are presented as (1) skill training (N=none, M=moderate, C=complete), (2) medical benefits (y=yes, N=no), and tuition benefits (Y=yes, N=no).

\*\* The cell entry "C" means the individual chose the civilian sector. A cell entry of "A" means the individual chose the Army.

presented with choices that varied on four attributes: Sector, skill training, medical benefits, and tuition benefits. The procedure requires as input preference rating for the twenty-four attribute pairs.

The particular nonmetric conjoint measurement technique used in this preliminary analysis produces an estimate of the relative additive utility of each of the levels of the four attributes considered. For each set of attributes, the estimate of relative utility is given by the function:

$$U_{im} = 1 - L_i \frac{\sum_{n=1}^{L_j} (B \cdot R_{imjn})}{L_j L_i \sum_{n=1}^B \sum_{m=1}^{L_j} R_{imjn}}$$

where:

- $U_{im}$  = the estimated relative utility value of attribute  $i$ , level  $m$ ,
- $R_{imjn}$  = the rankings for level  $m$  of attribute  $i$  and level  $n$  of attribute  $j$ ,
- $L_i$  and  $L_j$  = indices for attributes  $i$  and  $j$ , and
- $B$  = a scalar constant.

Table 11 reports the results of the additive conjoint measurement analysis. It has already been noted above that the data appear visually to be internally consistent. This modeling or pairwise comparisons reinforces earlier impressions. The proportion of correct comparisons is 0.88. This can be interpreted as the degree to which the conjoint model reproduces the original choices observed. Of the contrasts that were made by respondents, only 12% cannot be modeled using an additive conjoint formulation.<sup>6</sup>

As noted above, only a subset of nine individuals participating in the pretest were analyzed. This strategy was chosen because the excluded individuals exhibited either very little or no variance in choice behavior with regard to sector. Unfortunately, this decision implies that the results presented here for the conjoint measurement analysis cannot be strictly compared with those presented for the other measurement techniques evaluated in this pretest. As a result, little substantive interpretation is presented.

---

6. As a check on whether model fit could be improved using an alternative specification, the data were modeled using a multiplicative specification. When modeled in the way, the proportion of correct comparisons dropped to 0.76. This indicates that the additive model provides a better representation of these data. Time constraints did not allow the use of various polynomial specifications.

TABLE 11  
 Conjoint Utility Score Matrix

ATTRIBUTE	UTILITY	IMPORTANCE	ATTRIBUTE LEVELS*		
			1	2	3
Sector	.622	.234	-.311	.311	
Medical	.362	.136	-.181	.1811	
Training	.852	.320	-.426	.000	.426
Tuition	.824	.310	-.412	.412	

PROPORTION OF CORRECT COMPARISONS=.88  
 BADNESS OF FIT MEASURE=-.12

\* The labeling of attribute levels is as follows:  
 Sector 1=Army, 2=civilian  
 Medical 1=no, 2=yes  
 Training 1=none, 2=moderate, 3=complete, and  
 Tuition 1=no, 2=yes.

As the reader can observe, the highest utilities were calculated for tuition and skill training. These appear in this analysis to be the most salient characteristics affecting choice. Sector is also a very strong influence on choice. Interestingly, medical benefits were the least important of the attributes offered. This is perhaps a function of the ages and life stages of the respondents.

In summary, this section has considered the results obtained by a decompositional measurement approach that confronted respondents with paired choices. Initially, there were concerns that the instructions and/or response format would confuse individuals and, therefore, lead to the collection of meaningless data. Fortunately, this has not proved to be the case. Though the instructions proved too long, once read they were understandable. The response format itself posed no difficulty for the individuals pretested. The lesson to be taken here is that more attention must be placed on brevity of instruction.

Finally, the coherence of responses was established through the use of visual and statistical methods. Visually, arrays, like those reproduced in Table 10, gave the impression of response consistency generally. Statistical analysis confirmed this impression by successfully modeling choices using a simple additive model.

The success of the decompositional measurement technique is significant. This approach to decision modeling offers a distinct alternative to the compositional method of Fishbein and Ajzen (1975). As an alternative, it is foreseen as a potential tool for triangulation on the specification of the enlistment decision. By working both ends toward the middle, so to speak, this project is in a better position to yield policy-relevant findings.

## DISCUSSION

While reviewing the progress of Phase I, several points emerge as important issues in our consideration of how to model effectively the individual enlistment decision. First, the Task 1 literature indicated the promising nature of the Fishbein and Ajzen expectancy model. The model was chosen because of the appropriateness of its dependent variable (behavior/behavioral intent as opposed to simply a decision) and because of its ability to incorporate normative and affective as well as attitudinal components. Although the model has not been applied specifically to the enlistment decision, the analysis of the New Recruit Survey of the summer of 1984 indicated that an expectancy-value scale can be used to obtain reliable attitudinal information about enlistment decision. Thus, we can recommend the use of an expectancy model on both theoretical as well as empirical grounds.

During Task 2, a focus group approach was utilized to generate the predecisional factors important to young adults, in their

own words. The findings of this task indicate that both positive classwork experiences and knowledge of their parents' career and military histories are salient predecisional influences. The finding related to knowledge of parental experience are of particular interest since this further supports the need to include a normative component regarding the influence of significant others when developing the instruments derived from the Fishbein and Ajzen model.

The pilot test conducted in Task 3 yielded a set of data regarding time to complete each measure as well as subjective difficulty ratings for each instrument. The times are all quite reasonable and promise to fit in within the 30-minute administration time we have as our target. The difficulty ratings also were well within an acceptable range. Two points should be noted. First, the paired choice instrument, while considered easy to complete, appears to have too lengthy an instruction sheet. This will be corrected when the remaining questions are written during Phase II. Second, several respondents reported some difficulty in completing the 12 factor relative weights scale developed for use with the Likert scale Fishbein and Ajzen instrument. Given the time to completed and difficulty reported, the fact that one subject completed it incorrectly and the fact that this weighting scale did not predict any more accurately than other scales, it is unlikely that the 12 factor scale will be chosen as the weighting scale for the final instrument to be used in Phase II.

The results reported for the Likert Scale Fishbein and Ajzen instrument strongly suggest that an exclusively attitudinal component model, which is analogous to the traditional decision-theoretic approach where each option is scored and weighted on multiple attributes, is an inadequate predictive model of enlistment intent for this population. This appears to be true regardless of the type of instrument used to measure the relative importance weights of the attitudinal component. Instead, an adequate model of enlistment intent for this population must incorporate normative and affective components in addition to an attitudinal component. Of course, these conclusions are of a preliminary nature because the sample size was small and its representativeness to the larger population is indeterminate. Indeed, the second phase of the research program should be directed toward assessing the adequacy of a multicomponent decision model of career choice for a statistically representative sample of young people.

As the Fishbein and Ajzen model demonstrates, decision-theoretic models can be readily expanded to incorporate the normative component. In many cases, all that may be required is the incorporation of attributes that represent key referents' beliefs about the alternative actions, and weights that reflect the relative importance the decision maker places on complying with key referents' beliefs. In contrast, it is not clear how to incorporate a global affective component into traditional decision-theoretic models. Simply creating an additive model with

attitudinal, normative, and affective components resulted in less accurate prediction of the choice with the highest mean intent rating than did either a Fishbein and Ajzen model (i.e., equally-weighted attitudinal and normative components) or a simple affective component model. Moreover, differentially weighting either the Fishbein and Ajzen or affective component will not improve predictability beyond that achieved with either component alone, for the number of misses with either component would set a ceiling on the predictability of the differentially weighted model. Perhaps future research with a large sample size (e.g., in Phase II) will generate empirically-derived regression weights for the attitudinal, normative, and affective components that significantly improves the predictability of an additive model.

The focus group results suggest, however, that one use an "either or" model to combine the Fishbein and Ajzen and affective component when one or the other component fails to predict intent. This suggestion is based on the findings that, for the total sample of 28 participants in the focus group measurement development stage, the affective component model accurately predicted the career choice with the highest mean intent rating four of the five times the Fishbein and Ajzen model failed to do so and, conversely, the Fishbein and Ajzen model made an accurate prediction five of the six times the affective component model failed to do so. The increase in predictability over the Fishbein and Ajzen model achieved by the "either or" model was statistically significant at the  $p=0.03$  level. One possible objection to the "either or" model is that it is generated "a posterior" (i.e., after the fact) by directly using the intent ratings. There are, however, a number of "a posterior" approaches to modeling decision processes, such as the use of multiple regression analysis [8] and multi-dimensional scaling and conjoint measurement [6], that have been shown to be both as effective as "a priori" (i.e., before the fact) techniques and of significant practical value. Indeed, we have demonstrated the viability of a conjoint measurement approach in our pilot test.

In addition to the usefulness demonstrated by the Likert scale Fishbein and Ajzen instrument, the findings of the pilot test also support the appropriateness of a paired choice instrument. Since the paired choice format is based on a decompositional approach to decision making, it avoids asking the respondent to evaluate the factors involved in decisionmaking and simply asks the respondent to make a series of decisions without self-explanation or justification. This approach holds a great deal of appeal in that, theoretically, it does not require much self-reflection or abstraction on the part of the respondent and thus can be applied to subjects who may vary greatly as to their insight into the motivations behind their decision. Pilot testing provided evidence that suggests this approach can generate internally consistent data which is amenable to statistical modeling.

The difference between the Likert scale and paired choice approaches presents an opportunity to combine both measures to

produce the type of robust multi-method measurement that would enable us to triangulate on the specification of the enlistment decision. Such a multi-method approach constitutes a measurement ideal. For this reason, we recommend completing the remainder of the paired associates instrument and developing a design plan for Phase II which will effectively utilize both instruments.

While using both the Likert scale Fishbein and Ajzen instrument in conjunction with the paired choice measure based on a decompositional model will carry the benefits associated with a multi-method approach, certain adjustments will need to be made for pragmatic reasons. The paired choice instrument, when expanded, may take nearly 20 to 30 minutes to complete. Thus, it is not possible to administer both the complete paired choice measure and the Fishbein and Ajzen instrument to each subject within the 30-minute administration time limit. Given the need to minimize respondent burden, we recommend developing a factorial survey for the execution of Phase II. In such a design each respondent would complete a demographic questionnaire, the complete Fishbein and Ajzen instrument and a subset of the paired choice measure. The sample would respond to a specific subset of the paired choice measure. This would enable the Team to administer questions well within the 30-minute limit and provide the statistical benefit of establishing orthogonal estimates for parameters specific to the paired choice factors. This factorial survey approach would, in turn, enable us to derive the maximum benefit from two separate models, the results of which would support a cost effective and comprehensive specification of the individual enlistment decision.

## REFERENCES

- Adelman, L., Sticha, P. J. & Donnell, M. L. (1984). "The role of task properties in determining the relative effectiveness of multi-attribute weighting techniques," Organizational Behavior and Human Performance, 33, 243-262.
- Edwards, W. (1977). "How to use multiattribute utility measurement for social decision making," IEEE Transactions on Systems, Man, and Cybernetics, SMC-7, 326-340.
- Fishbein, M. & Ajzen, I. (1975). Beliefs, Attitude, Intention, and Behavior: An Introduction to Theory and Research. Reading, MA: Addison-Wesley.
- Green, P. E. (1975). "Marketing applications of MDS: Assessment and outlook." Journal of Marketing, 39, 324-331.
- Hammond, K. R., Stewart, T. R., Brehmer, R. & Steinmann, D. O. (1975). "Social judgment theory" in Human Judgment and Decision Processes, M.R. Kaplun and S. Schwartz (Eds.) New York: Academic Press.
- Hammond, K. R., Stewart, T. R., Brehmer, B. & Steinmann, D. O. (1975). "Social judgment theory," in Human Judgment and Decision Processes, M.F. Kaplan and S. Schwartz Eds., New York: Academic Press.
- Kaplan, K. J. & Fishbein, M. (1969). "The source of beliefs, their saliency, and prediction of attitude" Journal of Social Psychology, 78, 63-74.
- Keeney R. L. & Raiffa, H. (1976). Decisions with Multiple Objectives. New York: Wiley.
- McTeigue, R. J., Kralj, M. M., Zirk, D. A., Adelman, L. & Wilson, M. (1986). Predecision Processes Involved in the Enlistment Decision. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Osgood, C. S., Suci, G. J. & Tannenbaum, P. H. (1957). The Measurement of Meaning. Urbana: University of Illinois Press.
- Pagel, M. D. & Davidson, A. R. (1984). "A comparison of three social psychological models of attitude and behavioral plans: Prediction of contraceptive behavior," Journal of Personality and Social Psychology, 47, 517-533.
- Ryan, M. J. & Bonfield, E. H. (1980). "Fishbein's intentions model: A test of external and pragmatic validity," Journal of Marketing, 44, 82-95.

Westat, Inc., (1986, May) The 1984 ARI Survey of Army Recruits: User's Manual (Research Note 86-46). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Zirk, D. A., McTeigue, R. J., Wilson, M., Adelman, L. & Pliske, R. (1986). Alternative Approaches to Modeling the Individual Enlistment Decision. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

APPENDIX A  
THE LIKERT SCALE FISHBEIN AND AJZEN INSTRUMENT

Name: \_\_\_\_\_

**DIRECTIONS:** Please read each statement carefully. Tell us how much you agree/disagree with each statement by scoring each one on the 7-point scale directly below the statement.

Getting the kind of occupation/technical training I want is important to me.

\_\_\_\_\_

False      1      2      3      4      5      6      7      True

I expect to get a civilian job within four months after graduating high school. (Note: If you have graduated high school, do you intend to get a civilian job within four months?)

\_\_\_\_\_

Improbable      1      2      3      4      5      6      7      Probable

I can get a civilian job now that offers great opportunities for advancement (moving up the ladder).

\_\_\_\_\_

False      1      2      3      4      5      6      7      True

Earning the amount of pay I would like to have is important to me.

False      1      2      3      4      5      6      7      True

I can get a civilian job that offers the number and kind of opportunities for personal growth that I want.

False      1      2      3      4      5      6      7      True

I can get a civilian job now that offers the amount of job security I want.

False      1      2      3      4      5      6      7      True

I intend to follow the thinking of my teacher/guidance counselor.

False      1      2      3      4      5      6      7      True

I can find work now in the civilian world that offers the amount of job satisfaction I want.

False      1      2      3      4      5      6      7      True

I can get a civilian job now that offers the kinds of occupation/technical training I want.

False      1      2      3      4      5      6      7      True

Having the amount of job satisfaction I want is important to me.

False      1      2      3      4      5      6      7      True

I intend to follow the thinking of my parents.

False      1      2      3      4      5      6      7      True

Having enough money for college is important to me.

False      1      2      3      4      5      6      7      True

I intend to get a civilian job within four months after graduating high school. (Note: If you have graduated high school, do you intend to get a civilian job within four months?)

Improbable      1      2      3      4      5      6      7      Probable

Having the number and kind of opportunities for personal growth that I want is important to me.

False      1      2      3      4      5      6      7      True

My friends think that I should get a civilian job.

False      1      2      3      4      5      6      7      True

Being patriotic and serving my country is important to me.

False      1      2      3      4      5      6      7      True

My parents think that I should get a civilian job.

False      1      2      3      4      5      6      7      True

Having great opportunities for advancement is important to me.

False      1      2      3      4      5      6      7      True

I can get a civilian job now that offers me the kind of salary I want to earn.

False      1      2      3      4      5      6      7      True

Having the number and kind of benefits I want is important to me.

False      1      2      3      4      5      6      7      True

I can get a civilian job that will enable me to pay for college.

False      1      2      3      4      5      6      7      True

Having the amount of job security I want is important to me.

False      1      2      3      4      5      6      7      True

I intend to follow the thinking of my friends.

False      1      2      3      4      5      6      7      True

I can get a civilian job that will show that I am patriotic and want to serve my country.

False 1 2 3 4 5 6 7 True

My teachers/guidance counselor thinks that I should get a civilian job.

False 1 2 3 4 5 6 7 True

I can get a civilian job that offers the number and kind of benefits I want.

False 1 2 3 4 5 6 7 True

I plan to get a civilian job within four months after graduating high school.  
(Note: If you have graduated high school, do you intend to get a civilian job within four months?)

Improbable 1 2 3 4 5 6 7 Probable

For each of the following pairs of adjectives, please rate how you feel about a civilian job.

Dislike 1 2 3 4 5 6 7 Like

Unpleasant 1 2 3 4 5 6 7 Pleasant

Disagreeable 1 2 3 4 5 6 7 Agreeable

Disapprove 1 2 3 4 5 6 7 Approve

Unenjoyable 1 2 3 4 5 6 7 Enjoyable

Unfavorable 1 2 3 4 5 6 7 Favorable

Bad 1 2 3 4 5 6 7 Good



Having the amount of job security I want is important to me.

False      1      2      3      4      5      6      7      True

The Army College Fund and G.I. Bill can give me the money I need for college.

False      1      2      3      4      5      6      7      True

Having the amount of job satisfaction I want is important to me.

False      1      2      3      4      5      6      7      True

I intend to follow the thinking of my parents.

False      1      2      3      4      5      6      7      True

Having enough money for college is important to me.

False      1      2      3      4      5      6      7      True

The Army offers the kind of job security I want.

False 1 2 3 4 5 6 7 True

I expect to enlist in the Army within four months after graduating from high school. (Note: If you have graduated high school, do you intend to enlist in the Army within the next four months?)

Improbable 1 2 3 4 5 6 7 Probable

My teachers/guidance counselor thinks that I should enlist in the Army.

False 1 2 3 4 5 6 7 True

The Army offers the kind of pay I want to earn.

False 1 2 3 4 5 6 7 True

Having the number and kind of benefits I want is important to me.

False 1 2 3 4 5 6 7 True

My friends think that I should enlist in the Army.

False      1      2      3      4      5      6      7      True

Having the number and kind of opportunities for personal growth that I want is important to me.

False      1      2      3      4      5      6      7      True

The Army offers the amount of job satisfaction I want.

False      1      2      3      4      5      6      7      True

Having great opportunities for advancement is important to me.

False      1      2      3      4      5      6      7      True

Joining the Army shows that I am patriotic and want to serve my country.

False      1      2      3      4      5      6      7      True

The Army offers great opportunities for advancement (moving up the ladder).

False 1 2 3 4 5 6 7 True

The Army offers the kind of occupation/technical training I want.

False 1 2 3 4 5 6 7 True

I intend to follow the thinking of my friends.

False 1 2 3 4 5 6 7 True

The Army offers the number and kind of benefits I want.

False 1 2 3 4 5 6 7 True

I intend to follow the thinking of my teacher/guidance counselor.

False 1 2 3 4 5 6 7 True

Being patriotic and serving my country is important to me.

False 1 2 3 4 5 6 7 True

I plan to enlist in the Army within four months after graduating from high school. (Note: If you have graduated high school, do you intend to enlist in the Army within four months?)

False 1 2 3 4 5 6 7 True

Getting the kind of occupational/technical training I want is important to me.

False 1 2 3 4 5 6 7 True

For each of the following pairs of adjectives, please rate how you feel about enlisting in the Army.

Dislike 1 2 3 4 5 6 7 Like

Unpleasant 1 2 3 4 5 6 7 Pleasant

Disagreeable      1    2    3    4    5    6    7      Agreeable

Disapprove      1    2    3    4    5    6    7      Approve

Unenjoyable      1    2    3    4    5    6    7      Enjoyable

Unfavorable      1    2    3    4    5    6    7      Favorable

Bad      1    2    3    4    5    6    7      Good

Name: \_\_\_\_\_

**DIRECTIONS:** Please read each statement carefully. Tell us how much you agree/disagree with each statement by scoring each one on the 7-point scale directly below the statement.

Going to college will lead to the kind of occupational/technical training I want.

\_\_\_\_\_

False      1      2      3      4      5      6      7      True

I intend to go to college within four months after graduating from high school. (Note: If you have graduated high school, do you intend to go to college within four months?)

\_\_\_\_\_

Improbable      1      2      3      4      5      6      7      Probable

My teachers/guidance counselor thinks that I should go to college.

\_\_\_\_\_

False      1      2      3      4      5      6      7      True

Earning the amount of pay I would like to have is important to me.

\_\_\_\_\_

False      1      2      3      4      5      6      7      True

I intend to follow the thinking of my friends.

False      1      2      3      4      5      6      7      True

Having enough money for college is important to me.

False      1      2      3      4      5      6      7      True

Having the number and kind of opportunities for personal growth that I want is important to me.

False      1      2      3      4      5      6      7      True

Having the amount of job security I want is important to me.

False      1      2      3      4      5      6      7      True

Going to college will provide great opportunities for advancement.

False      1      2      3      4      5      6      7      True

Having the number and kind of benefits I want is important to me.

False      1      2      3      4      5      6      7      True

I intend to follow the thinking of my parents.

False      1      2      3      4      5      6      7      True

Going to college will show that I am patriotic and want to serve my country.

False      1      2      3      4      5      6      7      True

Getting the kind of occupational/technical training I want is important to me.

False      1      2      3      4      5      6      7      True

My friends think that I should go to college.

False      1      2      3      4      5      6      7      True

Going to college will allow me to obtain the amount of job security I want.

False      1      2      3      4      5      6      7      True

Being patriotic and serving my country is important to me.

False      1      2      3      4      5      6      7      True

I expect to go to college within four months after graduating from high school. (Note: If you have graduated high school, do you intend to go to college within four months?)

Improbable      1      2      3      4      5      6      7      Probable

Having great opportunities for advancement is important to me.

False      1      2      3      4      5      6      7      True

As a college graduate, I can get a job that offers me the kind of salary I want to earn.

False      1      2      3      4      5      6      7      True

I intend to follow the thinking of my teachers/guidance counselor.

False      1      2      3      4      5      6      7      True

Going to college will lead to the amount of job satisfaction I want.

False      1      2      3      4      5      6      7      True

I do not need a job or the Army to pay for college.

False      1      2      3      4      5      6      7      True

Going to college will lead to the number and kind of opportunities for personal growth that I want.

False      1      2      3      4      5      6      7      True

My parents think that I should go to college.

False      1      2      3      4      5      6      7      True

Having the amount of job satisfaction I want is important to me.

False 1 2 3 4 5 6 7 True

Going to college will lead to the number and kind of benefits that I want.

False 1 2 3 4 5 6 7 True

I plan to go to college within four months after graduating from high school. (Note: If you have graduated from high school, do you intend to go to college within four months?)

False 1 2 3 4 5 6 7 True

For each of the following pairs of adjectives, please rate how you feel about a civilian job.

Dislike 1 2 3 4 5 6 7 Like

Unpleasant 1 2 3 4 5 6 7 Pleasant

Disagreeable      1      2      3      4      5      6      7      Agreeable

Disapprove      1      2      3      4      5      6      7      Approve

Unenjoyable      1      2      3      4      5      6      7      Enjoyable

Unfavorable      1      2      3      4      5      6      7      Favorable

Bad      1      2      3      4      5      6      7      Good

APPENDIX B  
THE PAIRED CHOICE INSTRUMENT

Name: \_\_\_\_\_

**Directions:** We would like to learn your preferences between various career situations in the Army and in the civilian sector. Each career situation will be described in terms of two factors: (1) the amount of skill training, and (2) the amount of benefits.

- "Skill Training" has three levels:
  - Minimal (the job provides minimal, if any, skill training)
  - Some (the job provides some skill training)
  - Full (the job qualifies you in a skill)
- "Benefits" has three levels:
  - Salary (the job provides a salaried wage, but no other benefits)
  - Salary + Medical (the job provides medical coverage in addition to salary)
  - Salary + Medical + Tuition (the job pays tuition costs to college or a vocational school in addition to salary + medical coverage)

You will be presented with 24 choices between (1) a job in the Army with a certain level of "skill training" and a certain level of "benefits", and (2) a job in the civilian sector with either a different level of skill training and/or benefits. For each choice, we want you to tell us which career situation you prefer.

For example, which career situation would you prefer?

Option #1		Option #2
Sector: Army	<u>or</u>	Sector: Civilian
Skill Training: Some		Skill Training: Minimal
Benefits: Salary + Medical		Benefits: Salary + Medical

In this, as in each of the 24 career choices, just circle the option you prefer.

Think about each choice, and give your intuitive response. It is not necessary that you like either choice, just that you choose between them. Remember, always circle the option you prefer.

OPTION A

OPTION B

PREFERRED JOB

Sector: Army  
 Skill Training: Some  
 Benefits: Salary +  
 Medical + Tuition

Sector: Civilian  
 Skill Training: Minimal  
 Benefits: Salary

A B

Sector: Civilian  
 Skill Training: Some  
 Benefits: Salary

Sector: Army  
 Skill Training: Minimal  
 Benefits: Salary +  
 Medical + Tuition

A B

Sector: Army  
 Skill Training: Some  
 Benefits: Salary +  
 Medical

Sector: Civilian  
 Skill Training: Complete  
 Benefits: Salary

A B

Sector: Civilian  
 Skill Training: Minimal  
 Benefits: Salary +  
 Medical

Sector: Army  
 Skill Training: Minimal  
 Benefits: Salary +  
 Medical

A B

Sector: Civilian  
 Skill Training: Some  
 Benefits: Salary +  
 Medical

Sector: Army  
 Skill Training: Some  
 Benefits: Salary +  
 Medical

A B

Sector: Civilian  
 Skill Training: Complete  
 Benefits: Salary +  
 Medical

Sector: Army  
 Skill Training: Minimal  
 Benefits: Salary +  
 Medical + Tuition

A B

Sector: Army	Sector: Civilian	A	B
Skill Training: Minimal	Skill Training: Some		
Benefits: Salary + Medical + Tuition	Benefits: Salary		

Sector: Army	Sector: Civilian	A	B
Skill Training: Some	Skill Training: Some		
Benefits: Salary + Medical	Benefits: Salary		

Sector: Civilian	Sector: Army	A	B
Skill Training: Complete	Skill Training: Minimal		
Benefits: Salary + Medical	Benefits: Salary + Medical		

Sector: Civilian	Sector: Army	A	B
Skill Training: Minimal	Skill Training: Some		
Benefits: Salary + Medical	Benefits: Salary + Medical		

Sector: Army	Sector: Civilian	A	B
Skill Training: Minimal	Skill Training: Some		
Benefits: Salary + Medical + Tuition	Benefits: Salary + Medical		

Sector: Army	Sector: Civilian	A	B
Skill Training: Some	Skill Training: Complete		
Benefits: Salary + Medical + Tuition	Benefits: Salary + Medical		

Sector: Army	Sector: Civilian	A	B
Skill Training: Some	Skill Training: Minimal		
Benefits: Salary + Medical	Benefits: Salary		

Sector: Civilian	Sector: Army	A	B
Skill Training: Some	Skill Training: Minimal		
Benefits: Salary	Benefits: Salary + Medical		
Sector: Civilian	Sector: Army	A	B
Skill Training: Minimal	Skill Training: Minimal		
Benefits: Salary + Medical	Benefits: Salary + Medical + Tuition		
Sector: Civilian	Sector: Army	A	B
Skill Training: Some	Skill Training: Some		
Benefits: Salary + Medical	Benefits: Salary + Medical + Tuition		
Sector: Army	Sector: Civilian	A	B
Skill Training: Some	Skill Training: Some		
Benefits: Salary + Medical + Tuition	Benefits: Salary		
Sector: Civilian	Sector: Army	A	B
Skill Training: Complete	Skill Training: Minimal		
Benefits: Salary	Benefits: Salary + Medical + Tuition		
Sector: Army	Sector: Civilian	A	B
Skill Training: Minimal	Skill Training: Some		
Benefits: Salary + Medical	Benefits: Salary + Medical		
Sector: Army	Sector: Civilian	A	B
Skill Training: Some	Skill Training: Complete		
Benefits: Salary + Medical + Tuition	Benefits: Salary		

Sector: Army	Sector: Civilian	A	B
Skill Training: Minimal	Skill Training: Some		
Benefits: Salary + Medical	Benefits: Salary		

Sector: Civilian	Sector: Army	A	B
Skill Training: Minimal	Skill Training: Some		
Benefits: Salary + Medical	Benefits: Salary + Medical + Tuition		

Sector: Army	Sector: Civilian	A	B
Skill Training: Some	Skill Training: Complete		
Benefits: Salary + Medical	Benefits: Salary + Medical		

Sector: Civilian	Sector: Army	A	B
Skill Training: Complete	Skill Training: Minimal		
Benefits: Salary + Medical	Benefits: Salary + Medical		

APPENDIX C

THE NINE FACTOR RELATIVE WEIGHTS SCALE

Name: \_\_\_\_\_

**DIRECTIONS:** How important are these nine factors to you when considering a career? Divide 100 points between the nine factors. The more important you consider the factor, the more points you should give it. Factors that are not important to you should get fewer points. Make sure that the points given to all nine factors add up to 100 points.

Money \_\_\_\_\_

Job Satisfaction \_\_\_\_\_

College Funding \_\_\_\_\_

Opportunities for  
Person Growth \_\_\_\_\_

Patriotism/Serving  
One's Country \_\_\_\_\_

Opportunities for  
Advancement \_\_\_\_\_

Benefits \_\_\_\_\_

Job Security \_\_\_\_\_

Occupational/  
Technical Training \_\_\_\_\_

SUM = 100

APPENDIX D  
THE THREE FACTOR RELATIVE WEIGHTS SCALE

Name: \_\_\_\_\_

**Directions:** How important are these three general factors to you when considering a career? Divide-up 100 points between these three general factors. The more important you consider a factor, the more points you should give it. General factors that are not important to you should get fewer points. Make sure the points given to all three factors add up to 100 points.

- Specific characteristics of the career such as the amount of money you will make, your opportunities for occupational/technical training, funding for college or vocational education, your opportunities for personal growth, etc. \_\_\_\_\_
  
- What other people, most notably friends, parents, and teachers, think about the career choice. \_\_\_\_\_
  
- Your intuitive feelings about the career, that is, whether you think it will be pleasant or not, bad or good, enjoyable or not, etc. \_\_\_\_\_
  
  

SUM \_\_\_\_\_

APPENDIX E  
THE TWELVE FACTOR RELATIVE WEIGHTS SCALE

Name: \_\_\_\_\_

**Directions:** How important are these twelve factors to you when considering a career? Divide-up 100 points between the twelve factors. The more important you consider the factor, the more points you should give it. Factors that are not important to you should get fewer points. Factors that are not applicable should be scored N/A. Make sure that the points given to all twelve factors add up to 100 points.

Friend's Opinion	_____
Money	_____
Job Satisfaction	_____
College/Vocational Educational Funding	_____
Opportunities for Personal Growth	_____
Patriotism/Serving One's Country	_____
Teachers' Opinion	_____
Opportunities for Advancement	_____
Benefits	_____
Job Security	_____
Occupational/ Technical Training	_____
Parents' Opinion	_____

Sum                      100

**APPENDIX F**  
**THE DEMOGRAPHIC QUESTIONS**

Name: \_\_\_\_\_

### BACKGROUND INFORMATION

Directions: Please answer the questions below so that we can tabulate some general background information for the people completing the questionnaires.

1. What was your age on your last birthday?

ENTER AGE IN YEARS \_\_\_\_\_

2. What is the highest grade or year of school or college that you have completed and gotten credit for? Please circle answer below.

LESS THAN 8TH GRADE

8TH GRADE

9TH GRADE

10TH GRADE

11TH GRADE

12TH GRADE

1ST YEAR COLLEGE/JR. OR COMM. COL./VOC., BUS., OR TRADE SCHOOL (FR)

2ND YEAR COLLEGE/JR. OR COMM. COL./VOC., BUS., OR TRADE SCHOOL (SO)

3RD YEAR OF 4-YEAR COLLEGE (JR)

4TH YEAR OF 4-YEAR COLLEGE (SR)

5TH YEAR COLLEGE/1ST YEAR GRADUATE OR PROFESSIONAL SCHOOL

2ND YEAR GRADUATE OR PROFESSIONAL SCHOOL

3RD YEAR GRADUATE OR PROFESSIONAL SCHOOL

MORE THAN 3 YEARS GRADUATE OR PROFESSIONAL SCHOOL

3. Are you currently employed, either full-time or part-time? Circle Answer.

YES            NO

4. Are you looking for work now? Circle answer.

YES            NO

5. How many hours per week do/did you usually work at your main/last job?

ENTER NUMBER OF HOURS: \_\_\_\_\_

6. How easy or difficult is it for someone your age to get a full-time job in your community? Circle answer.

ALMOST IMPOSSIBLE  
VERY DIFFICULT  
SOMEWHAT DIFFICULT  
NOT DIFFICULT AT ALL

7. How likely is it that you will be serving in the military? Circle answer.

DEFINITELY  
PROBABLY  
PROBABLY NOT  
DEFINITELY NOT

8. Have you ever talked with any military recruiter to get information about the military?

YES            NO

9. If you have talked with an Air Force recruiter, what month and year was your last contact with an Air Force recruiter? Please skip this question if you have never talked to an Air Force recruiter.

ENTER MONTH        \_\_\_\_\_                      ENTER YEAR        \_\_\_\_\_

10. If you have talked with an Army recruiter, what month and year was your last contact with an Army recruiter? Please skip this question if you have never talked to an Air Force recruiter.

ENTER MONTH        \_\_\_\_\_                      ENTER YEAR        \_\_\_\_\_

11. If you have talked with a Marine Corps recruiter, what month and year was your last contact with a Marine Corps recruiter? Please skip this question if you have never talked to an Air Force recruiter.

ENTER MONTH        \_\_\_\_\_                      ENTER YEAR        \_\_\_\_\_

12. If you have talked with a Navy recruiter, what month and year was your last contact with a Navy recruiter? Please skip this question if you have never talked to a Navy recruiter.

ENTER MONTH        \_\_\_\_\_                      ENTER YEAR        \_\_\_\_\_

13. Do you have a regular high school diploma, a GED, an ABE, or some other kind of certificate of high school completion? Please circle answer below.

REGULAR HIGH SCHOOL DIPLOMA

ABE (ADULT BASIC EDUCATION) CERTIFICATE (e.g.,  
CORRESPONDENCE, NIGHT SCHOOL)

GED (GENERAL EDUCATIONAL DEVELOPMENT) EQUIVALENCY CERTIFICATE

SOME OTHER KIND OF CERTIFICATE OF HIGH SCHOOL EQUIVALENCY

NONE OF THE ABOVE

14. What grades do/did you usually get in high school? Circle one answer only.

MOSTLY A'S (A NUMERICAL AVERAGE OF 90-100)

MOSTLY A'S AND B'S (A NUMERICAL AVERAGE OF 85-89)

MOSTLY B'S (A NUMERICAL AVERAGE OF 80-84)

MOSTLY B'S AND C'S (A NUMERICAL AVERAGE OF 75-79)

MOSTLY C'S (A NUMERICAL AVERAGE OF 70-74)

MOSTLY C'S AND D'S (A NUMERICAL AVERAGE OF 65-69)

MOSTLY D'S AND F'S (A NUMERICAL AVERAGE OF 64 AND BELOW)

15. Below is a list of high school mathematics and technical courses. Please tell whether you have taken or plan to take the courses in regular high school. Please circle the answers.

a. Elementary algebra

TAKEN                      PLAN TO TAKE                      NOT TAKEN

b. Plane geometry

TAKEN                      PLAN TO TAKE                      NOT TAKEN

c. Business mathematics

TAKEN                      PLAN TO TAKE                      NOT TAKEN

d. Computer science

TAKEN                      PLAN TO TAKE                      NOT TAKEN

e. Intermediate algebra

TAKEN                      PLAN TO TAKE                      NOT TAKEN

f. Trigonometry

TAKEN                      PLAN TO TAKE                      NOT TAKEN

g. Calculus

TAKEN                      PLAN TO TAKE                      NOT TAKEN

h. Physics

TAKEN                      PLAN TO TAKE                      NOT TAKEN

16a. What is the highest grade or year of school or college that your father completed? Please circle the answer.

LESS THAN 8TH GRADE

8TH GRADE

9TH GRADE

10TH GRADE

11TH GRADE

12TH GRADE

1ST YEAR COLLEGE/JR. OR COMM. COL./VOC., BUS., OR TRADE SCHOOL (FR)

2ND YEAR COLLEGE/JR. OR COMM. COL./VOC., BUS., OR TRADE SCHOOL (SO)

3RD YEAR OF 4-YEAR COLLEGE (JR)

4TH YEAR OF 4-YEAR COLLEGE (SR)

5TH YEAR COLLEGE/1ST YEAR GRADUATE OR PROFESSIONAL SCHOOL

2ND YEAR GRADUATE OR PROFESSIONAL SCHOOL

3RD YEAR GRADUATE OR PROFESSIONAL SCHOOL

MORE THAN 3 YEARS GRADUATE OR PROFESSIONAL SCHOOL

16b. What is the highest grade or year of school or college that your mother completed? Please circle the answer.

LESS THAN 8TH GRADE

8TH GRADE

9TH GRADE

10TH GRADE

11TH GRADE

12TH GRADE

1ST YEAR COLLEGE/JR. OR COMM. COL./VOC., BUS., OR TRADE SCHOOL (FR)

2ND YEAR COLLEGE/JR. OR COMM. COL./VOC., BUS., OR TRADE SCHOOL (SO)

3RD YEAR OF 4-YEAR COLLEGE (JR)

4TH YEAR OF 4-YEAR COLLEGE (SR)

5TH YEAR COLLEGE/1ST YEAR GRADUATE OR PROFESSIONAL SCHOOL

2ND YEAR GRADUATE OR PROFESSIONAL SCHOOL

3RD YEAR GRADUATE OR PROFESSIONAL SCHOOL

MORE THAN 3 YEARS GRADUATE OR PROFESSIONAL SCHOOL

17. Just to be sure all groups are represented in our survey, please tell whether you consider yourself . . . (Circle answer)

WHITE

BLACK

ASIAN OR PACIFIC ISLANDER (INCLUDES CHINESE, JAPANESE, FILIPINO, KOREAN, VIETNAMESE, PACIFIC ISLANDER, ASIAN INDIAN, OR OTHER ASIAN)

AMERICAN INDIAN OR ALASKAN NATIVE

18. Are you of Hispanic background? (This includes Spanish-American, Mexican-American, Puerto Rican, Chicano, Cuban-American, etc.) Please circle answer.

YES

NO

19. What kind of school or training program will you be enrolled in? Please circle highest training program.

NO SCHOOLS OR TRAINING PROGRAM

ADULT BASIC EDUCATION (ABE) (H.S. COURSES IN NIGHT SCHOOL OR BY CORRESPONDENCE)

TAKING HIGH SCHOOL COURSES IN REGULAR, DAY HIGH SCHOOL

GED OR H.S. EQUIVALENCY PROGRAM

SKILL DEVELOPMENT PROGRAM (e.g., PUBLIC EMPLOYMENT, JOBS, OIC, WIN, CETA)

ON-THE-JOB TRAINING PROGRAM

APPRENTICESHIP PROGRAM

VOCATIONAL, BUSINESS, OR TRADE SCHOOL

2-YEAR JUNIOR OR COMMUNITY COLLEGE

4-YEAR COLLEGE OR UNIVERSITY

APPENDIX G  
RESPONSES TO THE DEMOGRAPHIC QUESTIONS

The responses to each AFQT questions are reported below for the sample of eight respondents participating in the pilot test. Results are reported as frequencies and means as appropriate. Question Number is keyed to Questionnaire as it appears in Appendix F.

1. Mean Age of Sample=18.75 years
2. Mean highest grade in school completed=12.88
3. Currently Employed=7  
Currently Unemployed=1
4. Looking for Employment=1  
Not looking for employment=7
5. Hours per week worked at last job: Mean=33.13
6. Difficulty of Finding Full-Time Employment:  
Somewhat Difficult=6  
Not Difficult at All=2
7. Likelihood of Military Service:  
Probably=1  
Probably Not=5  
Definitely Not=2
8. Have Spoken with Military Recruiter=2  
Have Never Spoken with Military Recruiter=6
- 9-12. Dates of Contact with Military Recruiters  
Subject 1=Army 06/84 and Air Force 05/85  
Subject 2=Navy 11/85
13. Type of Certificate of High School Completion:  
Diploma=6  
Not Yet Graduated=2
14. Usual Grades Received in School:  
Mostly A's =2  
Mostly A's and B's=3  
Mostly B's and C's=2  
Mostly C's =1
15. List of Courses Taken in Regular High School:
  - a) Elementary Algebra  
Taken=8      Plan to Take=0      Not Taken=0
  - b) Plane Geometry  
Taken=8      Plan to Take=0      Not Taken=0
  - c) Business Mathematics  
Taken=3      Plan to Take=2      Not Taken=3

- d) Computer Science  
Taken=1      Plan to Take=0      Not Taken=3
- e) Intermediate Algebra  
Taken=8      Plan to Take=0      Not Taken=0
- f) Trigonometry  
Taken=5      Plan to Take=1      Not Taken=2
- g) Calculus  
Taken=4      Plan to Take=0      Not Taken=4
- h) Physics  
Taken=3      Plan to Take=0      Not Taken=5
- 16a. Highest Grade Father Completed  
First year college=1  
Fourth year college=3  
First year graduate school=1  
More than three years graduate school=2  
No response=1
- 16b. Highest Grade Mother Completed  
Twelfth grade=1  
Fourth year college=2  
First year graduate school=1  
Second year graduate school=1  
More than three years graduate school=2  
No response=1
17. Ethnic Identification  
White=8
18. Are You Hispanic  
Yes=1  
No=7
19. Highest training program enrolled in:  
High school courses in day school=2  
Four year college=6