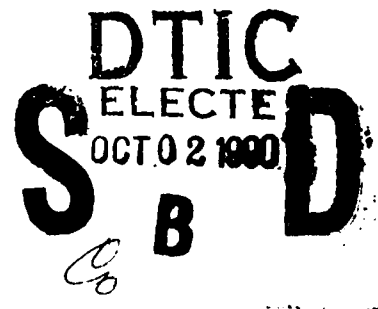Technical Report 901

Scale Development for Enlistment Motivation Measures

Todd A. Baker

July 1990

AD-A227 235

DTIC
ELECTE
OCT 0 2 1990
S
B
D

United States Army Research Institute
for the Behavioral and Social Sciences

90   1   1 47

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

JON W. BLADES
COL, IN
Commanding

Technical review by

Michael Benedict
Dale R. Palmer

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION	1b. RESTRICTIVE MARKINGS
Unclassified	--

2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT
--	Approved for public release;
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	distribution is unlimited.
--	

4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S)
ARI Technical Report 901	--

6a. NAME OF PERFORMING ORGANIZATION	6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION
U.S. Army Research Institute for the Behavioral and Social Sciences	PERI-RG	--

6c. ADDRESS (City, State, and ZIP Code)	7b. ADDRESS (City, State, and ZIP Code)
5001 Eisenhower Avenue Alexandria, VA 22333-5600	--

8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
--	--	--

8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS			
	PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT ACCESSION NO.
--	62785A	791	2105	H01

11. TITLE (Include Security Classification)

Scale Development for Enlistment Motivation Measures

12. PERSONAL AUTHOR(S)
Baker, Todd A.

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM 86/05 TO 89/12	1990, June	

16. SUPPLEMENTARY NOTATION

--

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Recruitment Scale development
05	08		Enlistment motivation
05	09		Sample survey

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Using the New Recruit Survey, this research developed multi-item scales to assess the importance of various factors in a recruit's decision to enlist. The data were collected from 1986 to 1989. The items were grouped into seven factors for the active Army and eight factors for the Reserve Components. Factors common to both samples include: self-improvement, education money, job skills, soldiering, benefits, and women's opportunities. The scales were examined for reliability and items that did not relate highly to other items were deleted. After the deletions the reliability was less than the acceptable level of .70 for five of the seven Active Army scales and four of the eight Reserve Components scales. Scale means found self-improvement to be considered most important, followed by education money and job skills. A number of scale differences were found across demographic variables. Issues that may influence the reliability of the scales and recommendations for increasing scale reliability are presented. (KR) (—

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
☐ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS	Unclassified

22a. NAME OF RESPONSIBLE INDIVIDUAL	22b. TELEPHONE (Include Area Code)	22c. OFFICE SYMBOL
Todd A. Baker	(202) 274-5610	PERI-RG

DD Form 1473, JUN 86   Previous editions are obsolete.   SECURITY CLASSIFICATION OF THIS PAGE

UNCLASSIFIED

Scale Development for Enlistment Motivation Measures

Todd A. Baker

Our nation's relatively low unemployment rate and declining pool of 17- to 21-year-old youths are creating increasing demands on the U.S. Army's recruiting resources and personnel. This demand may not be lessened by force reductions because such reductions are accompanied by budget cuts for recruiting and by increases in requirements for the most highly qualified recruits. Since 1982, when the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) designed and executed the first New Recruit Survey, the Army has periodically surveyed new soldiers on why they decided to enlist. The U.S. Army Recruiting Command (USAREC) uses this information to design marketing strategies and to evaluate such recruiting programs as the Army College Fund incentive. This research examines the way reasons for enlistment are measured, develops scales for for enlistment motivation, and examines reasons for enlistment among several important demographic groups.

This ARI effort is part of an ongoing research program designed to enhance the quality of Army personnel. This work is part of the mission of ARI's Manpower and Personnel Policy Research Group (MPPRG), to conduct research to improve the Army's ability to effectively and efficiently recruit its personnel. This research was undertaken in response to a request by the Director of the Programs, Analysis, and Evaluation Directorate, USAREC, dated 22 February 1990. Results of this research were provided to the Chief, Advertising Research and Analysis, USAREC.

The scales generated from this research can be used by military personnel planners to better assess the impact that various factors have on the enlistment decision. These results also can be used to confirm or refute previous research findings on core reasons for enlistment and the importance of different factors on individuals' decisions to enlist in the Army.

EDGAR M. JOHNSON
Technical Director

Accession For	
NTIS GRA&I	☑
DTIC TAB	☐
Unannounced	☐
Justification	

By_____
Distribution/
Availability Codes

Dist	Avail and/or Special
A-1	

v

SCALE DEVELOPMENT FOR ENLISTMENT MOTIVATION MEASURES

EXECUTIVE SUMMARY

Requirement:

For the Army to attract qualified personnel, sound measures of qualified individuals' importance perceptions of various factors are needed. The development and use of multi-item scales is a viable option for assessing the level of importance of various factors, as such scales provide more stable and conclusive measures with greater validity than single items.

Procedure:

The data analyzed in this research were collected by the 1986 U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) and 1987-1989 U.S. Army Recruiting Command (USAREC) New Recruit Surveys administered to Active Army, Reserve, and National Guard soldiers. The variables of interest were those that asked soldiers to assess how important various factors were in their decisions to enlist. There were 25 importance items on the Active Army survey and 34 on the Reserve Components survey. Responses to these items were factor analyzed for each of the two samples. Reliability analyses were then conducted to assess the quality of the scales and delete items. Once the final scales were developed, scale means were calculated and compared across various demographic variables.

Results:

The factor analyses found seven factors for the Active Army and eight factors for the Reserve Components. Factors common to both samples include: self-improvement, education money, job skills, soldiering, benefits, and women's opportunities. The Active Army had one unique factor (travel) while the Reserve Components had two (time out and serve part time). Reliability analyses, indicating the relationship among the items for a particular scale, deleted nine items from each sample. Cronbach's alpha coefficients were low (below .70) for five of the seven Active Army scales and half of the Reserve Components scales. Scale means found self-improvement to be considered most important, followed by education money and job skills. Numerous differences were found for scale means across demographic variables. It was found that soldiers with TSC I-IIIA and 2-year enlistment terms were more motivated by education money, while

soldiers with lower TSCs and longer enlistment terms were more motivated by job skills and benefits. Further, women and non-whites saw a greater number of scales being more important than men and whites. Another comparison found mean differences between soldiers' school- and work-orientations for job skills, benefits, and education money, indicating that the scales can distinguish between groups.

Utilization of Findings:

The scales generated by this research can be used by military personnel planners to better assess the impact that various factors have on the enlistment decision. These results also can be used to confirm or refute previous research findings on importance item factor structure and the importance of different factors on individuals' decisions to enlist in the Armed Services.

SCALE DEVELOPMENT FOR ENLISTMENT MOTIVATION MEASURES

CONTENTS

LIST OF TABLES

Page

Page

SCALE DEVELOPMENT FOR ENLISTMENT MOTIVATION MEASURES

INTRODUCTION

It has been stated many times that one of the primary challenges of the Armed Services is to attract acceptable numbers of qualified individuals to fill the military's human resource demands. Since the termination of the draft, the Armed Services have had to compete with the private sector and educational institutions for these individuals. This challenge becomes even more difficult with the projected decline in the number of qualified youth. Further, this challenge may not be lessened by anticipated Armed Services force reductions, as such reductions are being accompanied by recruiting budget cuts and increased enlistment standards.

In order to attract qualified individuals, the Services invest heavily in economic incentives (i.e., enlistment and educational bonuses), based on market research that identifies the needs and characteristics of individuals in the Services' prime market. The Army employs surveys (e.g., the New Recruit Survey (NRS), the Army Communications Objectives Measurement System (ACOMS)) to collect information about the attitudes, knowledge, characteristics, and what motivates both new soldiers and individuals in the prime market. This information focuses not only on views about the Army, but also on new soldiers' general views on broader issues (e.g., career and life plans, education). Responses to these surveys provide the Army with information that serves a number of purposes. NRS responses are used to:

1. determine who is enlisting in the Army and why;

2. determine how to target recruiting resources to attract high quality recruits;

3. determine why recent recruits joined and how likely they are to remain in the service; and

4. determine which recruiting and advertising practices are proving the most effective and why (cf. Halverson, 1989).

The research contained in this report focused on developing multi-item scales for importance items on the NRS that can be used to better evaluate and interpret soldier responses. The importance items examined here ask new soldiers to assess the importance of specific factors on enlistment decisions. Responses were made on a 4-point scale that ranged from "Not at all important" to "I would not have enlisted except for this reason." The research used statistical methods to recommend items for deletion from future NRS questionnaires. The U.S. Army Recruiting Command (USAREC) is reducing the number of items on the 1990 NRS form.

1

This research focused on items that ask soldiers to determine how important various factors are in their decision to enlist. Items that measure importance were grouped to form multi-item scales through the use of factor and reliability analyses. The completed scales were made up of items that were highly related to all other items on that scale; items with lower correlations were deleted from the scales. Items recommended for deletion were detected through reliability analysis. These scales were then used to determine if they can detect differences across various demographic variables as well as classify Active Army soldiers as school- or work-oriented (Toomepuu, 1986).

Previous Research

Previous research has examined the factor structure of the Active Army NRS importance items (Horne, 1988; Horne & Weltin, 1985; Pliske, Elig & Johnson, 1986). Comparisons between the Horne five-factor solution and the Pliske et al. six-factor solution showed similar results using the 1982 and 1983 responses. Both solutions found factors related to Self-Improvement, Education Money, Time Out, Military Service, and Job Skills and Benefits. The only difference in factors between the two solutions was that an additional factor (Travel) was found for Pliske et al. Even though they also used the 1983 responses, Horne and Weltin found a four-factor solution. Similar to the other solutions, Horne and Weltin found Time Out and Military Service factors. However, the remaining two factors (Deferred Gain and Immediate Gain) were unique to this analysis. One reason for these differences is that Horne and Weltin eliminated items that corresponded to Self-Improvement and used only 15 of the 25 items. Despite these differences, all factor analyses supported the notion that there are economic (e.g., Education Money, Benefits) and non-economic (e.g., Self-Improvement, Military Service) factors, as well as institutional (e.g., Military Service) and occupational (e.g., Job Skills) factors, that influence decisions to enlist.

One factor analysis was found that examined the 29 Reserve Components NRS importance items. Halverson (1989) examined the 1987 NRS responses and found a four-factor solution. The factors found were Self-Improvement, Education Money, Skill Training, and Military Service. These factors coincide with those found by both Horne (1988) and Pliske et al. (1986). Thus, factors such as Self-Improvement, Education Money, Skill Training, and Military Service appear to be consistently seen by soldiers as a factor to consider during the enlistment decision.

In addition to the research mentioned above, other projects (Boesel & Richards, 1982; Elig, 1989; Elig, Johnson, Gade & Hertzbach, 1984; Gade, Elig, Nogami, Hertzbach, Weltin & Johnson, 1984; Kim, 1982; Nieva & Gay, 1988) have examined the relative importance of various variables (e.g., gender, race, Test Score Category (TSC) on the Armed Forces Qualification Test (AFQT), enlistment term) on the enlistment decision using NRS and ACOMS data. Although some of the previous research analyzed the same

2

items, there are other importance items on the NRS and ACOMS that were examined. The NRS has two additional forced-choice items which ask the soldier to state what was the most important reason for enlisting. ACOMS has 19 items which ask individuals to assess how important it is to have opportunities for various factors. Responses to the ACOMS items were given on a 5-point scale ranging from "not at all important" to "very important".

Comparisons of these research findings have been consistent. Items associated with Self-Improvement (e.g., better individual, self-reliant, responsible) have been found to be most important in regards to the enlistment decision. The second and third most important factors were found to be Job Skills and Education Money, respectively. A Military Service factor was not examined in all the projects cited previously. When included, Military Service was usually found to be ranked behind the other three factors.

Research Purpose

The current research extends the earlier research. Factor analyses were conducted using the importance items from the 1986 - 1989 Active Army and the 1987 - 1989 Reserve Components NRS administration years. These analyses were compared to the previous factor analysis findings. Furthermore, scale means were generated and examined across demographic variables and compared to previous findings.

The current research findings added to previous research in a number of ways. First, the sample sizes used here are larger than for previous research, thus conclusions made here will be more definitive. Second, a more controlled comparison of the Active Army and Reserve Components factor structures was made. The same factor analysis method, communality estimates, and rotation methods were used to examine both samples. Third, multi-item scale means were generated and analyzed rather than responses from single items. By aggregating similar items, the stability and measurement quality of the scores were improved. Finally, the multi-item scales were composed of items that were highly related to one another. Items with lower correlations were deleted from use in the scales. By using scales made up of highly related items, an indication of the importance of a factor can be obtained with fewer items without sacrificing measurement quality.

It was hypothesized that the factor structures will be similar to earlier factor analyses. Confirmatory results will support the notion of (1) economic and non-economic and (2) institutional and occupational factors influencing enlistment decisions. The relative importance of the scales generated through factor and reliability analysis was also hypothesized to be similar to past findings. However, some differences may be present for two reasons. First, the response scales used vary slightly from earlier importance measures which may produce differences. Second, differences may be present since the sample

3

was from 1986 - 1989 versus the early 1980's for past research.
If Army advertising did influence the prime market, then
differences may be present across administration years,
especially for Education Money because recent advertising
strategies appeared to be directed at Education Money. It was
believed that some differences may occur with scale means, but
not factor structures. Advertising in the 1980's may have
changed individuals' importance perceptions, but not their
implicit theories about how importance items covary. If this was
true, then scale means can be different and factor structures
similar.

<center>SURVEY PROCEDURE AND SAMPLE</center>

The NRS was developed to collect information concerning the
enlistment motivators, attitudes, knowledge, and characteristics
of new soldiers. The Army Research Institute for the Behavioral
and Social Sciences (ARI) has been surveying soldiers at Army
reception battalions since 1982. These findings are then used to
determine the motives behind why certain individuals enlist in
the Army and develop recruiting and advertising strategies that
coincide with the views of the targeted market and sub-markets.
For a more complete description of NRS background, content, and
administration see Elig, Hertzbach, and Johnson (1984).

The NRS is a paper-and-pencil survey with approximately 225
questions in the Active Army version and about 210 in the
Reserve/National Guard version. (For the remainder of the report
the Reserve/National Guard sample will be referred to as the
Reserve Components). The NRS items of interest for this research
are those that asked soldiers to assess how important particular
factors were in their decision to enlist. For the Active Army,
there are 25 importance questions. For the Reserve Components,
there are 29 importance questions and five additional importance
questions specific to the decision to enlist in the Reserve
Components rather than the Active Army. All of these questions
are responded to on a 4-point scale assessing the level of
importance for a particular item. The anchors on the scale
include: not at all important, somewhat important, very
important, and I would not have enlisted except for this reason.
The importance questions included on the Active Army and Reserve
Componensts NRS are presented in Appendices A and B,
respectively.

A total of 22,592 Active Army and 7574 Reserve Components,
non-prior military service soldiers surveyed in NRS
administration years 1986 to 1989 were included in the analyses.
The sample size for the 1986 administration year for the Active
Army sample was 7875, for 1987 it was 6862, for 1988 it was
5697, and for the 1989 administration year the sample size was
2158. For the Reserve Components, the sample sizes for the 1987
administration year was 3749, for 1988 it was 3222, and for the
1989 administration year the sample size was 603. The sample
sizes for 1989 were lower due to the availability of only one
trimester for 1989. Further, Reserve Components data for 1986

<center>4</center>

were not included in the analysis because of changes in the Reserve Components NRS following its 1986 administration.

The demographics for both samples were representative of Army soldiers. The Active Army sample was mostly males (90%) with high school diplomas (91%). Sixty-four percent of the Active Army soldiers were TSC I-IIIA. For the Reserve Components, the sample was 87% male, 80% in high school or with high school diplomas, and 60% TSC I-IIIA.

In addition to utilizing the importance item responses for these soldiers, demographic data were also collected for each soldier from NRS data files. These demographic variables were examined to see if they are moderate, or influence, importance responses. For both Active Army and Reserve Components samples, NRS administration year, soldier gender, race, education level, and TSC were included. Specific to the Active Army sample, enlistment term, alternatives to enlistment, and preferences to enlistment were also included. The final two variables are questions on the NRS that are used by USAREC to classify soldiers as school- or work-oriented. This classification helps USAREC identify and direct recruitment strategies at different sub-markets.

RESULTS

The results are divided into three major sections. In the first section, the results of three factor analyses (one for the Active Army, one for the Reserve Components, and one with a combined data set of all common items across both samples) are presented. Second, the reliability of the scales and deletion of items are presented. Finally, scale means are presented and differences in means reported for overall samples and by the moderators mentioned above.

Factor Analysis

Soldiers' ratings on the importance items were factor analyzed to reduce the large number of items into fewer, more meaningful sets of information. Factor analysis is a statistical technique used to group item responses into factors based on the degree of correlation or covariation between item responses. The particular factor analysis method used was Principle Components Analysis with communality estimates of one for each item. The rotation method used was PROMAX which is a SAS procedure (SAS Institute, Inc., 1985) that provides both orthogonal (VARIMAX) and oblique (PROMAX) rotations. The PROMAX rotation was utilized because item responses were believed to be correlated. The same factor analysis method and rotation were used for the three factor analyses.

Active Army. The factor analysis on the 25 importance items suggested that there are seven factors. The results of this analysis, with factor loadings, are presented in Table 1.

5

Table 1

Rotated Factor Pattern of the Active Army NRS Importance Items

	Self Improvement	Benefits	Soldiering	Job Skills	Travel	Education Money	Women's Opportunities	Communalities
T095 Responsible	.871							.759
T093 Self-Reliant	.846							.716
T089 Better Individual	.794							.630
T071 Better Myself	.662							.438
T083 Physical Training	.425							.181
T087 Retire. Benefits		.860						.740
T088 Fringe Benefits		.856						.733
T076 Family Tradition			.778					.605
T074 Serve Country			.658					.433
T080 Be a Soldier			.617					.381
T069 Unemployment				.629				.396
T096 Get a Better Job				.608				.370
T078 Skill Training				.569				.324
T075 Earn More Money				.495				.245
T070 Away From Home	.301				.670			.449
T084 Decide Life Plans					.565			.319
T073 Escape Problems					.557			.310
T072 Travel		.389			.403			.162
T079 Money for College						.859		.738
T082 Money for Votech						.803		.645
Y001 Men/Women Equal							.818	.669
Y002 Mil. Experience M/W							.697	.486
T077 I Can Make It	.396			.363				.159
T086 Leader Training	.336							.113
Y003 High-Tech Equip	.309							.095
Proportion of Variance Accounted for	.229	.078	.061	.058	.051	.043	.039	

6

The first factor was labeled "Self-Improvement." All items clustered under this factor address some sort of individual improvement. These items can reflect an improvement in someone's overall characteristics or in some more specific aspect such as responsibility, self-reliance, or physical challenge.

The second factor was labeled "Benefits." This factor included items that are associated with benefits obtained from Army membership in addition to pay and benefits that are received upon retirement from the Army. It should be noted that these items do not address pay, but the benefits that are provided in addition to pay.

The third factor was labeled "Soldiering." Items in this factor represent the desire to become a soldier for the institutional aspects of the Army. Patriotic duty to serve, tradition, and wanting to be a soldier reflect these institutional aspects.

The fourth factor was labeled "Job Skills" and consists of improving one's situation in terms of employment. Improving one's employment situation is represented by acquiring skill training, getting a better job, earning more money, and getting a job (unemployment).

The fifth factor was labeled "Travel." This factor includes both items that deal with travel associated with military service (e.g., "being away from home," "travel") and time out or escape from an individual's situation before enlistment (e.g., "time to decide life plans," "escaping personal problems"). The time out aspect of this factor was found in a previous factor analysis (Pliske, et al, 1986). However, time out was not considered as a separate factor. Reasons for this will be discussed in a later section of the results.

The sixth factor was labeled "Education Money." This factor could be labeled easily because both items were clearly identifiable and were specific to the label ("money for college" and "money for votech/business education").

The final factor was labeled "Women's Opportunities" and addresses the issue of women's equality in treatment and opportunities in the Army. Items included: "men and women treated equally" and "military experience to both men and women".

Twenty-two of the 25 items loaded .40 or higher on a particular factor. Three items that did not load on a factor were not represented in the seven factor solution. These items included: "proving I can make it", "leadership training", and "working with high tech equipment". There are two possible reasons why these items did not load on a factor. First, "proving I can make it" and "leadership training" are vague and may be interpreted differently by soldiers. The ambiguity associated with some NRS items has been reported by Horne and Weltin (1985). It has been suggested previously that the term

7

"leadership" has a broad definition and comprises many distinct actions (Sackett & Hakel, 1979). If these items were interpreted differently, their correlations with other items and factor loadings would be lowered. Second, "Working with high tech equipment" is more specific than the other two items. However, this item may have been perceived by soldiers to be distinct from all other items. If it was perceived as distinct, then its correlation with other variables would be low and it would not load significantly on any factor.

Reserve Components. The factor analysis on the 29 importance items and five items specific to the Reserve Components suggested that there are eight factors. The results of this analysis, with factor loadings, are presented in Table 2.

The first factor for the Reserve Components was labeled "Self-Improvement". Similar to the Active Army, all items clustered under this factor address some sort of individual improvement. These items can reflect an improvement in someone's overall characteristics or in some more specific aspect such as responsibility, self-reliance, self-confidence, leadership, or mental and physical challenges.

The second factor was labeled "Job Skills" and consists of improving one's situation in terms of civilian employment opportunities. This is represented by acquiring skill training, civilian career development, and opportunities to find an enjoyable job.

The third factor was labeled "Serve Part Time" and consists of the importance items that are specific to the decision to enlist in a Reserve Components. With the exception of "American tradition", all items loading on this factor cannot be generalized to the Active Army. Items included: "serve America in home town", "serve my own community", "serve part-time", "exciting weekends", and "American tradition".

The fourth factor was labeled "Soldiering". Items in this factor are identical to those grouped under the corresponding Active Army factor. Items in this factor represent the desire to become a soldier for the institutional aspects of the Army.

The fifth factor was labeled "Women's Opportunities" and addresses the issue of women's equality in treatment and experiences in the Army. Items included: "men and women treated equally" and "military experience to both men and women".

The sixth factor was labeled "Benefits". This factor included items associated with monetary and non-monetary benefits obtained from Army membership, benefits that are received upon retirement from the Army, and pay. Unlike the Benefits factor for the Active Army, the Reserve Components factor does address pay as well as benefits.

Table 2

Rotated Factor Pattern of the Reserve Component NRS Importance Items

	Self Improvement	Job Skills	Serve Part Time	Soldiering	Women's Opportunities	Benefits	Education Money	Time Out	Communalities
Y152 Self-Confidence	.913								.834
Y151 Potential	.862								.743
Y153 Mental Challenge	.827								.684
T095 Responsible	.744								.554
T093 Self-Reliant	.681								.464
Y150 Proud Experience	.646								.417
T083 Phys. Training	.633								.401
T077 I Can Make It	.482								.232
T086 Leader Training	.462								.213
T071 Better Myself	.433								.187
Y123 Skill Training		.837							.701
Y147 Civilian Career		.774							.599
Y149 Skill Area		.763							.582
Y148 Job I Can Enjoy		.683							.466
Y124 Serve in Home Town			.808						.653
Y126 Serve Community			.767						.588
Y125 Serve Part-Time			.765						.585
Y127 Exciting Weekends			.599						.359
Y128 American Tradition			.530	.336					.281
T076 Family Tradition				.773					.598
T074 Serve Country				.676					.457
T080 Be a Soldier				.587					.345
Y001 Men/Women Equal					.871				.759
Y002 Mil. Experience M/W					.775				.601
Y003 High-Tech Equip.		.334			.387				.150

Table 2 (concluded)

	Self Improvement	Job Skills	Reserve	Soldiering	Women's Opportunities	Benefits	Education Money	Time Out	Communalities
T088 Fringe Benefits						.828			.759
T087 Retire. Benefits						.823			.677
T759 Earning More Money						.468			.219
T079 Money for College							.800		.640
Y146 HS-College Step							.732		.536
T082 Money for Votech	.314						.482		.232
T069 Unemployment								.648	.420
T084 Decide Life Plans								.614	.377
T094 Exper. Mil. Life	.324							.391	.153
Proportion of Variance Accounted for	.265	.070	.062	.047	.043	.040	.034	.030	

The seventh factor was labeled "Education Money". This factor grouped together items dealing with money for some form of education (e.g., college, votech, business) as well as an item which serves as a means to obtain the education money (the Army as a stepping stone from high school to college).

The final factor was labeled "Time Out". This factor includes both items that dealt with time out or escape from one's situation prior to enlistment (e.g., "time to decide life plans", "escaping personal problems") as well as "unemployment".

Thirty-three of the 34 items loaded .40 or better on a particular factor. The lone item that did not load on a factor was "working with high tech equipment". Similar to the Active Army sample, "working with high tech equipment" may have been perceived by soldiers as distinct from all other items. If it was perceived as distinct, it would not load significantly on any factor.

The factor solution for the Reserve component sample was similar to the Active Army sample. There were two major differences detected between the two samples. First, the Reserve Components had an additional factor labeled Serve Part Time comprised of the five items specific to the Reserve Components sample. These items were not included in the Active Army NRS. Second, the Reserve Components had a factor labeled Time Out while the Active Army had one labeled Travel. The two items in the Time Out solution for the Reserve Components are the same as those in the Active Army NRS. The travel items for the Active Army were not included in the Reserve Components NRS. Thus, the Reserve Components Time Out factor is made up of the two time-out items found in both samples.

Combined Active Army and Reserve Components sample. A final factor analysis was conducted on the 18 items that were included in both the Active Army and Reserve Components NRS. This factor analysis was exploratory in nature and was used to determine factors common to both markets. With these results certain advertising strategies could be directed at both markets. The results of this factor analysis are presented in Table 3.

Results of this factor analysis were similar to the findings from the separate Active Army and Reserve Components analyses. The first factor generated was labeled "Self-Improvement" that included items reflecting improvement of one's self. Factors two through 5 were labeled "Soldiering" , "Benefits", "Women's Opportunities", and "Education Money", respectively. Items included in these factors were those found in the Active Army factors. With the exception of items specific to the Reserve Components, all items in factors two through five were also found in Reserve Components factors. The final factor was labeled "Time Out". For this factor, "unemployment" loaded significantly. This item did not load in the factor solution for the Active Army.

Table 3

Rotated Factor Pattern of the Overlapping Active Army and Reserve Component
NRS Importance Items

		Self Improvement	Soldiering	Benefits	Women's Opportunities	Education Money	Time Out	Communalities
T095	Responsible Person	.853						.728
T093	Self-Reliant	.847						.717
T071	Better Myself	.615						.378
T083	Physical Training	.458	.395					.210
T077	I Can Make It	.424	.338				.370	.180
T074	Serve Country		.694					.482
T076	Family Tradition		.690				.419	.476
T080	Be a Soldier		.679					.461
T088	Fringe Benefits			.843				.711
T087	Retire. Benefits			.832				.692
Y001	M/W Equal				.861			.741
Y002	Mil. Experience M/W				.781			.610
T079	Money for College					.857		.734
T082	Money for Votech					.749		.561
T069	Unemployment						.636	.404
T084	Decide Life Plans						.561	.315
T086	Leader Training	.330	.348					.121
Y003	High-Tech Equip.			.308				.095
Proportion of Variance Accounted for		.262	.085	.073	.065	.062	.055	

12

The results of the combined sample factor analysis was similar to the other two factor analyses. This is not surprising; the Active Army and Reserve Components analyses produced similar factors. The combination of these samples would lead to results that do not vary for those overlapping items. The remaining analysis examines the two samples separately.

Reliability Analysis

Once the factors for the Active Army and Reserve Components were identified, the reliability of the factors was assessed. Reliability analysis was conducted in order to determine which items reduced or did not affect the reliability of the factor that they loaded on. It was mentioned earlier that USAREC is reducing the number of items on the NRS for the 1990 administration year. Through reliability analysis, items for deletion can be recommended.

The particular type of reliability examined here was Cronbach's alpha, which is a measure of internal consistency reliability. Internal consistency reliability assesses the average correlation among items within a scale (Nunnally, 1978). A high alpha coefficient suggests that the items on that scale are highly related to one another and measure a similar construct. Adding an item with a high correlation with all other scale items will help raise the alpha coefficient and removing that item from the scale will decrease alpha. Thus, the purpose of the reliability analysis is to develop scales in which all items are highly related and measure a similar construct.

Active Army. The results of the reliability analysis for the Active Army are presented in Table 4. This table presents the final scales generated and lists the items that were deleted. Initially, three items were not included in the analysis. These were the items that did not load on any factor. Six items were then deleted as a result of the reliability analysis. The items deleted were those that were found to not affect scale reliability to any great degree.

Two items were deleted from the Self-Improvement factor ("chance to better myself" and "physical training" resulting in a an increase in alpha from .807 to .826. For the Soldiering factor, the item pertaining to "family tradition to serve" was deleted resulting in an alpha increase from .592 to .697. The "unemployment" item was deleted from the Job Skills factor. This deletion changed alpha from .543 to .541. For the Travel factor, the two items addressing time out were deleted. With these deletions alpha changed from .477 to .465. For the Benefits, Education Money, and Women's Opportunities factors, no items were deleted because they were made up of only two items. Alpha for the Benefits factor was .734, Education Money .614, and Women's Opportunities .571.

13

Table 4

Scales and Reliabilities for the Active Army and Reserve Components NRS

SELF-IMPROVEMENT
    ACTIVE ARMY (Coefficient alpha .826)
                T095 Responsible
                T093 Self-Reliant
                T089 Better Individual
    RESERVE COMPONENTS (Coefficient alpha .888)
                T095 Responsible
                T093 Self-Reliant
                Y152 Self-Confidence
                Y151 Potential
                Y153 Mental Challenge
                Y150 Proud Experience
                T083 Phys. Training

BENEFITS
    ACTIVE ARMY (Coefficient alpha .734)
                T087 Retire. Benefits
                T088 Fringe Benefits
    RESERVE COMPONENTS (Coefficient alpha .753)
                T087 Retire. Benefits
                T088 Fringe Benefits

SOLDIERING
    ACTIVE ARMY (Coefficient alpha .697)
                T074 Serve Country
                T080 Be a Soldier
    RESERVE COMPONENTS (Coefficient alpha .697)
                T074 Serve Country
                T080 Be a Soldier

JOB SKILLS
    ACTIVE ARMY (Coefficient alpha .541)
                T096 Get a Better Job
                T078 Skill Training
                T075 Earn More Money
    RESERVE COMPONENTS (Coefficient alpha .804)
                Y123 Skill Training
                Y149 Skill Area
                Y148 Job I Can Enjoy

EDUCATION MONEY
    ACTIVE ARMY (Coefficient alpha .614)
                T079 Money for College
                T082 Money for Votech
    RESERVE COMPONENTS (Coefficient alpha .520)
                T079 Money for College
                T082 Money for Votech
                Y146 HS-College Step

Table 4   (concluded)

WOMEN'S OPPORTUNITIES
    ACTIVE ARMY (Coefficient alpha .571)
            Y001 Men/Women Equal
            Y002 Military Exp. to men and women
    RESERVE COMPONENTS (Coefficient alpha .647)
            Y001 Men/Women Equal
            Y002 Military Exp. to men and women

TRAVEL
    ACTIVE ARMY (Coefficient alpha .465)
            T070 Away from Home
            T072 Travel

SERVE PART TIME
    RESERVE COMPONENTS (Coefficient alpha .741)
            Y124 Serve in Home Town
            Y126 Serve Community
            Y127 Exciting Weekends
            Y128 American Tradition

TIME OUT
    RESERVE COMPONENTS (Coefficient alpha .423)
            T084 Decide Life Plans
            T094 Exp. Military Life

Items that did not load on any Scale
    Active Army
        T077   Importance of proving I can make it
        T086   Importance of leadership training
        Y003   Importance of working with high-tech equipment
    Reserve Components
        Y003   Importance of working with high-tech equipment

Items Deleted as a Result of Reliability Analysis
    Active Army
        T071   Importance of a chance to better myself (Scale 1)
        T083   Importance of physical training (Scale 1)
        T076   Importance of family tradition to serve (Scale 3)
        T069   Importance of unemployment (Scale 4)
        T073   Importance of escaping personal problems (Scale 5)
        T084   Importance of time to decide life plans (Scale 5)
    Reserve Components
        T077   Importance of proving I can make it (Scale 1)
        T086   Importance of leadership training (Scale 1)
        T071   Importance of a chance to better myself (Scale 1)
        Y147   Importance of civilian career development (Scale 2)
        Y125   RSRV/GUARD ENLIST DECSN: Serve Part-Time (Scale 3)
        T076   Importance of family tradition to serve (Scale 4)
        T759   Importance of earning more money (Scale 6)
        T069   Importance of unemployment (Scale 8)

15

Overall, the reliability of the scales is poor. Of the seven factors, only Self-Improvement and Benefits have acceptable reliability. For the other scales a large portion of the variation in scores can be attributed to sources other than the scale items. It may be that the items on a scale are measuring different aspects of the same construct. Recommendations for improving the reliability of the scales are presented in the discussion section.

Reserve Components. The results of the reliability analysis for the Reserve Components are presented in Table 4. This table presents the final scales generated and lists the items that were deleted. One item, "working with high-tech equipment" did not load on any factor and was not included in the analysis. Eight items were then deleted as a result of the reliability analysis.

From the Self-Improvement factor, three items, "proving I can make it", "leadership training", and "chance to better myself" were deleted. These deletions, changed Cronbach's alpha from .891 to .888. The deletion of "earning more money" for the Benefits factor resulted in an increase in alpha from .643 to .753. For the Soldiering factor, the item pertaining to "family tradition to serve" was deleted and alpha increased from .609 to .697. For the Job Skills factor, the deletion of "civilian career development" decreased alpha from .833 to .804. For the Serve Part Time factor, "serve part-time" was deleted and alpha decreased from .762 to .741. "Unemployment" was deleted from the Time Out factor and alpha increased from .392 to .423. For the Education Money factor, no item could be deleted without a meaningful drop in alpha. Cronbach's alpha for this scale was .520. The Women's Opportunities factor had only two items and no items could be deleted. The alpha for this scale was .647.

Overall, the reliabilities for the Reserve Components scales are more acceptable than those in the Active Army sample. Comparing similar scales, the alphas for four scales (Self-Improvement, Job Skills, Women's Opportunities, and Benefits) are higher in the Reserve Components than Active Army. One scale (Soldiering) was equal and one scale (Education Money) had higher reliability for the Active Army sample.

In an absolute sense, four Reserve Components scales have acceptable reliabilities (Self-Improvement, Job Skills, Serve Part Time, and Benefits). For the other four scales, reliability is low and a large portion of the variation in scale scores can be attributed to sources other than the consistency of the scale items.

Comparison of Means for the Motivator Scales

Once the scales for the Active Army and Reserve Components were developed, scale means were generated. These means were then compared using two-sample t-tests or Tukey's studentized range test (HSD) (SAS Institute, Inc., 1985) to identify differences across scales and within a scale across moderator

variables. The moderators examined for both samples include: gender, NRS administration year, population group, education level, and TSC. Moderators specific to the Active Army sample include: enlistment term, alternatives to enlistment, and preferences outside of the Army.

Active Army. Table 5 presents the overall scale means and standard deviations for each scale. In addition, Tukey HSD post-hoc analysis were conducted to identify any differences between the scales. Results of the post-hoc analysis found six sets of means. Self-Improvement was perceived as more important than any other motivation for enlistment. Self-Improvement was followed by Education Money and Soldiering motivators. The means for these two motivation scales were found to be different with Education Money being seen as more important. Benefits and Job Skills were next and were seen as equally important. Travel was perceived as relatively unimportant and Women's Opportunities was seen as least important by the Active Army sample.

The scale means and standard deviations across soldier gender are presented in Table 6. Two-sample t-tests were calculated for each scale across men and women. Results of the t-tests found that the importance of the motivators varied across gender for five of the seven scales. Being a Soldier was more important to men than to women while women were more motivated by Women's Opportunities, Travel, Job Skills, and Self-Improvement than were men. The differences found across gender shows that different motivators have varied effects on men and women.

Descriptive information concerning the scales across administration years are reported in Table 7. Tukey HSD post-hoc analyses found one significant difference out of 42 paired comparisons. It was found that the 1989 scale mean for Education Money was greater than the 1986 scale mean. Although this finding may suggest that the importance of Education Money has increased, the difference may also be due to chance. Thus, caution is advised in interpreting this finding.

Scale means and standard deviations across population group are reported in Table 8. For these comparisons all non-white responses were grouped into one category and compared to the white sample. Two-sample t-tests found five significant differences. For all differences, non-whites perceived the scale to be more important than whites. Significant scale mean differences included: Women's Opportunities, Self-Improvement, Travel, Job Skills, and Education Money.

The next moderator examined was education level. Education level was categorized into three groups. Less than high school represents any soldier who did not receive a high school diploma. High school represents soldiers who received a high school diploma and had no further educational exposure. Greater than high school consists of the soldiers who received a high school diploma and had any exposure to college classwork. Women soldiers were not included in this analysis because enlistment

Table 5

Overall Scale Means, Sample Sizes, Standard Deviations, and Mean Groupings for the Active Army Sample

Self Improvement	Education Money	Soldiering	Benefits Skills	Job	Travel	Women's Opportunities
2.617	2.407	2.311	2.234	2.214	2.090	1.685
21,103	21,785	21,739	21,901	21,598	21,883	21,760
(0.716)	(0.876)	(0.728)	(0.772)	(0.710)	(0.677)	(0.670)

Note. Means not connected by lines indicate Tukey HSD post-hoc differences between the means at d=.072, p < .05.

standards state that women must have a high school diploma to enlist. Descriptive statistics for these groups for each scale are presented in Table 9.

Although Tukey HSD post-hoc analysis did uncover eight differences between the greater than high school group and the other two groups, they will not be discussed in detail here due to their low sample size relative to the sample sizes for the other two groups. A general indication from the results for the greater than high school group is that they perceive the motivator scales as less important than the other groups.

Between the less than high school and high school groups two significant differences were found. The high school group perceived Education Money to be more important than the less than high school group. The less than high school group saw Soldiering as more important than the high school group.

TSC was examined by combining all scores into two test score categories. TSC I-IIIA were placed into one group and TSC IIIB-IV in another group. Only males were included in this analysis because of the changing TSC requirements for women from 1986 to present. Scale means and standard deviations for the two groups are presented in Table 10. Two-sample t-test results found significant differences for each scale. However, only the significant difference for Education Money was found where TSC I-IIIA soldiers saw a motivator as more important than TSC IIB-IV soldiers. For the remaining six scales, TSC IIIB-IV soldiers perceived the motivators to be more important than TSC I-IIIA soldiers.

Table 6

Scales Means, Standard Deviations, and Mean Differences for the
Active Army NRS Responses Across Gender

	Men	Women	Differences
Self-Improvement	2.601 (0.716)	2.757 (0.702)	Women > Men t= -2.54
Soldiering	2.322 (0.730)	2.214 (0.704)	Men > Women t= 1.97
Job Skills	2.200 (0.711)	2.336 (0.695)	Women > Men t= -2.60
Education Money	2.397 (0.879)	2.495 (0.844)	
Benefits	2.237 (0.771)	2.210 (0.779)	
Travel	2.075 (0.676)	2.222 (0.670)	Women > Men t= -2.98
Women's Opportunities	1.650 (0.656)	1.989 (0.711)	Women > Men t= -8.35

Note. Differences represent independent t-test mean differences
at p < .05. Sample sizes varied from 18,927 to 19,662 for Men
and 2176 to 2239 for Women.

Enlistment term was also examined as a moderator to scale
importance differences. Enlistment term was divided into three
groups. Soldiers enlisting for 2 years were placed in one group,
3 year enlistments were placed in a second group, and 4 year and
greater enlistments were placed in a third group. Enlistment
standards specify that only males with high school diplomas and
TSC I-IIIA are eligible for the 2-year term. Thus, only those
soldiers with the qualifications mentioned above were included in
the analysis. Descriptive statistics for each group are
presented in Table 11.

Results of Tukey HSD post-hoc analyses uncovered eight
significant mean differences. Those soldiers who enlisted for
terms of 4 years or greater perceived Benefits as more important
than the remaining groups. Four-year plus enlistees also saw
Soldiering and Job Skills as more important than 2-year
enlistees. The 3-year enlistees also perceived Benefits and
Soldiering to be more important than 2-year enlistees. The 2-year
enlistees were found to be more motivated by Education Money than
the other enlistment terms. These results suggest that shorter

Table 7

Scales Means, Standard Deviations, and Mean Differences for the
Active Army NRS Responses Across Administration Years 1986 - 1989

	1986	1987	1988	1989	Differences
Self-Improvement	2.609 (0.700)	2.594 (0.724)	2.627 (0.735)	2.696 (0.695)	
Soldiering	2.357 (0.720)	2.292 (0.717)	2.295 (0.746)	2.244 (0.736)	
Job Skills	2.172 (0.698)	2.204 (0.719)	2.249 (0.710)	2.303 (0.718)	
Education Money	2.345 (0.894)	2.439 (0.869)	2.407 (0.863)	2.532 (0.846)	1989 > 1986 d=.134
Benefits	2.200 (0.763)	2.224 (0.769)	2.269 (0.776)	2.299 (0.796)	
Travel	2.110 (0.666)	2.068 (0.666)	2.086 (0.689)	2.098 (0.713)	
Women's Opportunities	1.679 (0.658)	1.689 (0.673)	1.678 (0.675)	1.707 (0.686)	

Note. Differences represent Tukey HSD post-hoc mean differences
at p < .05. Sample sizes varied from 7344 to 7601 in 1986; 6400
to 6665 in 1987; 5320 to 5550 in 1988; and 2039 to 2104 in 1989.

term enlistees may be school-oriented with TSC I-IIIA while
longer term enlistees are more work-oriented with TSC IIIB-IV
(Gade, et al, 1984).

Two items on the Active Army NRS are used to make
distinctions between school- and work-oriented soldiers. One of
these items addresses what the soldier would be doing if he or
she did not enlist in the Army. Soldiers were grouped on this
item based on whether they indicated that they would be in
school, working, or looking for work. For this analysis working
and looking for work responses were grouped together and
considered work-oriented. Scale means and standard deviations
for the two groups are presented in Table 12.

Two-sample t-test results found three significant
differences among prospects. Work-oriented soldiers saw Job
Skills and Benefits as more important than the school-oriented.
Conversely, school-oriented soldiers perceive Education Money as
more important.

20

Table 8

Scales Means, Standard Deviations, and Mean Differences for the Active Army NRS Responses Across White/Non-White Samples

	White	Non-White	Differences
Self-Improvement	2.562 (0.717)	2.743 (0.698)	Non-White > White t=-4.44
Soldiering	2.329 (0.723)	2.269 (0.738)	
Job Skills	2.189 (0.715)	2.270 (0.696)	Non-White > White t=-2.36
Education Money	2.381 (0.879)	2.465 (0.865)	Non-White > White t=-2.22
Benefits	2.231 (0.766)	2.241 (0.786)	
Travel	2.058 (0.667)	2.162 (0.692)	Non-White > White t=-3.24
Women's Opportunities	1.616 (0.633)	1.839 (0.722)	Non-White > White t=-8.38

Note. Differences represent independent t-test mean differences at p < .05. Sample sizes varied from 14,695 to 15,149 Whites to 6408 to 6768 Non-Whites.

The other item used to classify soldiers pertains to what an individual would prefer to be doing if he or she was not entering the Army. For this item, there were three groups (college, work, and trade school). Summary statistics for these groups are provided in Table 13.

Tukey HSD post-hoc analyses found three significant mean differences. First, those soldiers showing a preference for trade school saw Job Skills as more important than college-oriented respondents. Further, trade school respondents perceived Education Money to be more important than those indicating a preference for work. Finally, Education Money was seen as more important by the college-oriented when compared to the work-oriented.

Reserve Components. The scale means for the Reserve Components were first divided into Reserve and National Guard samples. Significant differences between the overall scale means and across demographic variables were not found between the

21

Table 9

Scales Means, Standard Deviations, and Mean Differences for the
Active Army NRS Responses Across Education Level

	LTHS	HS	GTHS	Differences
Self-Improvement	2.665 (0.745)	2.604 (0.709)	2.367 (0.798)	LTHS,HS > GTHS d=.138
Soldiering	2.459 (0.760)	2.312 (0.727)	2.308 (0.736)	LTHS > HS,GTHS d=.122
Job Skills	2.199 (0.727)	2.205 (0.708)	2.062 (0.733)	LTHS,HS > GTHS d=.117
Education Money	2.229 (0.894)	2.423 (0.872)	1.985 (0.906)	LTHS,HS > GTHS HS > LTHS d=.128
Benefits	2.334 (0.794)	2.226 (0.768)	2.338 (0.794)	
Travel	2.017 (0.686)	2.085 (0.675)	1.914 (0.647)	HS > GTHS d=.110
Women's Opportunities	1.644 (0.671)	1.653 (0.654)	1.587 (0.673)	

Note. Differences represent Tukey HSD post-hoc mean differences
at p < .05. Sample sizes range from 1314 to 1362 for less than
high school, 17,073 to 17,756 for high school, and 540 to 554 for
greater than high school.

Reserve and National Guard samples and the samples were combined
into one, Reserve Components sample. The overall scale means and
standard deviations for the eight Reserve Components scales are
presented in Table 14. Tukey HSD post-hoc analysis found that
the eight scale means fall into six groups. Self-Improvement was
perceived by all soldiers to be the most important scale. The
next most important scales were Soldiering, Job Skills, and
Education Money. These three scales were seen as equally
important by the soldiers. The next most important scale was
Serve Part Time which differed from all other scales. Following
the Serve Part Time scale were the Benefits and Time Out scales.
The least important scale was Women's Opportunities.

Comparisons of the means between the Reserve Components and
Active Army samples showed that both samples agree on the
importance of Self-Improvement and the lack of importance of
Women's Opportunities for both men and women. Further, the means
for Soldiering are similar although the orderings vary. For the

22

Table 10

Scales Means, Standard Deviations, and Mean Differences for the Active Army NRS Responses Across Test Score Category (TSC)

	I - IIIA	IIIB - IV	Differences
Self-Improvement	2.547 (0.733)	2.700 (0.674)	IIIB-IV > I-IIIA t=-3.74
Soldiering	2.284 (0.733)	2.388 (0.721)	IIIB-IV > I-IIIA t=-2.85
Job Skills	2.131 (0.721)	2.324 (0.675)	IIIB-IV > I-IIIA t=- 5.60
Education Money	2.447 (0.867)	2.309 (0.893)	I-IIIA > IIIB-IV t= 3.62
Benefits	2.199 (0.772)	2.305 (0.766)	IIIB-IV > I-IIIA t=-3.04
Travel	2.038 (0.659)	2.142 (0.700)	IIIB-IV > I-IIIA t=-3.22
Women's Opportunities	1.556 (0.607)	1.818 (0.703)	IIIB-IV > I-IIIA t=-9.93

Note. Differences represent independent t-test mean differences at p < .05. Sample sizes varied from 13,739 to 14,161 for TSC I-IIIA and 7364 to 7740 for TSC IIIB-IV.

remaining three common scales there are significant differences between Active Army and Reserve Components means. The Reserve Components sample perceived Job Skills as more important than the Active Army. For Education Money and Benefits, the Active Army sample means were greater than those for the Reserve Components. Thus, what is important for those entering the Active Army does vary from what is important for the Reserve Components.

Descriptive statistics for Reserve Components men and women are presented in Table 15. Two-sample t-test results for each scale found three significant differences. For the Soldiering scale, men perceived it as more important than women. On the other hand, Job Skills and Women's Opportunities were seen as more important by women. These Soldiering and Job Skills findings are similar to those found for the Active Army.

The scale means and standard deviations across administration years 1987 - 1989 are reported in Table 16. Tukey HSD post-hoc analyses found one significant difference. Job Skills was perceived as more important in 1989 than in 1987.

23

Table 11

Scales Means, Standard Deviations, and Mean Differences for the Active Army NRS Responses Across Enlistment Term

	2 Years	3 Years	>4 Years	Differences
Self-Improvement	2.467 (0.737)	2.513 (0.742)	2.567 (0.721)	
Soldiering	2.105 (0.679)	2.269 (0.732)	2.316 (0.735)	4,3 > 2 d=.157
Job Skills	1.951 (0.718)	2.095 (0.705)	2.197 (0.717)	4 > 2 d=.149
Education Money	2.759 (0.879)	2.513 (0.870)	2.351 (0.875)	2 > 3,4 d=.173
Benefits	1.937 (0.786)	2.132 (0.858)	2.293 (0.863)	4,3 > 2 4 > 3 d=.153
Travel	1.940 (0.623)	2.065 (0.654)	2.060 (0.666)	
Women's Opportunities	1.484 (0.560)	1.545 (0.596)	1.570 (0.613)	

Note. Differences represent Tukey HSD post-hoc mean differences at p < .05. Sample sizes varied from 2008 to 2073 for 2 years, 2974 to 3070 for 3 years, and 6007 to 6205 for >4 years.

However, this may be a difference due to chance since only one of 24 comparisons were found to be significant.

Population group was classified for the Reserve Components in the same manner as the Active Army. Descriptive statistics for the white and non-white groups are presented in Table 17. T-tests found six significant mean differences. Whites perceived the Soldiering and Serve Part Time scales as more important than non-whites. Non-whites saw Job Skills, Education Money, Time Out, and Women's Opportunities as more important than whites.

Tukey post-hoc analyses on the three groupings of education level found four significant mean differences. Those with less than high school and high school diploma education perceived Education Money as more important than those with greater than high school education. Furthermore, those with less than a high school diploma saw Job Skills and Time Out as more important than the greater than high school group. Scale means and standard deviations for the education level groups are reported in Table

Table 12

Scales Means, Standard Deviations, and Mean Differences for the
Active Army NRS Responses Across School- and
Work-Orientation (T062)

	School	Work	Differences
Self-Improvement	2.604 (0.722)	2.624 (0.713)	
Soldiering	2.263 (0.738)	2.326 (0.723)	
Job Skills	2.073 (0.710)	2.268 (0.702)	Work > School t=-5.26
Education Money	2.589 (0.804)	2.352 (0.890)	School > Work t= 5.80
Benefits	2.124 (0.777)	2.276 (0.766)	Work > School t=-4.06
Travel	2.115 (0.671)	2.077 (0.675)	
Women's Opportunities	1.657 (0.655)	1.696 (0.672)	

Note. Differences represent independent t-test mean differences
at p < .05. Sample sizes varied from 5119 to 5325 for School-
and 15,207 to 15,759 for Work-Oriented.

18.

Two-sample t-tests for each scale found seven significant
differences between the TSC I-IIIA and IIIB-IV groups. With the
exception of Education Money, TSC IIIB-IV perceived the scales as
more important than TSC I-IIIA. Summary statistics for the two
TSC groups are presented in Table 19.

Table 13

Scales Means, Standard Deviations, and Mean Differences for the
Active Army NRS Responses Across School- and
Work-Orientation (Y155)

	College	Work	Trade School (TS)	Differences
Self-Improvement	2.656 (0.738)	2.633 (0.715)	2.712 (0.674)	
Soldiering	2.241 (0.747)	2.316 (0.743)	2.318 (0.702)	
Job Skills	2.182 (0.724)	2.278 (0.700)	2.466 (0.640)	TS > College d=.212
Education Money	2.653 (0.759)	2.207 (0.892)	2.658 (0.812)	TS > Work College > Work d=.232
Benefits	2.214 (0.789)	2.303 (0.769)	2.372 (0.755)	
Travel	2.098 (0.694)	2.019 (0.683)	2.126 (0.694)	
Women's Opportunities	1.688 (0.669)	1.691 (0.668)	1.792 (0.721)	

Note. Differences represent Tukey HSD post-hoc mean differences at $p < .05$. Sample sizes varied from 2524 to 2627 for College, 2471 to 2558 for Work, and 1108 to 1151 for Trade School.

Table 14

Overall Scale Means, Sample Sizes, Standard Deviations, and Mean
Groupings for the Reserve Components Sample

Self Improvement	Soldiering	Job Skills	Education Money	Serve Part Time	Benefits	Time Out	Women's Opportunities
2.513	2.312	2.310	2.242	2.104	1.979	1.765	1.603
6968	7351	7224	7239	7164	7335	7321	7369
(0.659)	(0.721)	(0.809)	(0.728)	(0.699)	(0.770)	(0.660)	(0.654)

Note. Lines indicate Tukey HSD post-hoc differences between the
means at d=.120, p < .05.

27

Table 15

Scales Means, Standard Deviations, and Mean Differences for the
Reserve Components NRS Responses Across Gender

	Men	Women	Differences
Self-Improvement	2.490 (0.660)	2.664 (0.634)	
Soldiering	2.335 (0.723)	2.155 (0.691)	Men > Women t= 2.15
Job Skills	2.279 (0.805)	2.509 (0.806)	Women > Men t=-2.70
Education Money	2.222 (0.732)	2.374 (0.685)	
Serve Part Time	2.122 (0.697)	1.987 (0.703)	
Benefits	1.980 (0.770)	1.972 (0.769)	
Time Out	1.766 (0.659)	1.758 (0.672)	
Women's Opportunities	1.557 (0.635)	1.907 (0.695)	Women > Men t=-5.88

Note. Differences represent independent t-test mean differences
at p < .05. Sample sizes range from 6035 to 6398 for Men and 933
to 971 for Women.

Table 16

Scales Means, Standard Deviations, and Mean Differences for the
Reserve Components NRS Responses Across Administration Years
1987-1989

	1987	1988	1989	Differences
Self-Improvement	2.499 (0.647)	2.511 (0.675)	2.611 (0.640)	
Soldiering	2.299 (0.711)	2.332 (0.736)	2.283 (0.702)	
Job Skills	2.278 (0.804)	2.312 (0.816)	2.494 (0.772)	1989 > 1987 d=.202
Education Money	2.201 (0.718)	2.276 (0.729)	2.320 (0.769)	
Serve Part Time	2.112 (0.691)	2.100 (0.714)	2.081 (0.665)	
Benefits	1.945 (0.751)	2.000 (0.784)	2.071 (0.803)	
Time Out	1.751 (0.654)	1.766 (0.666)	1.839 (0.671)	
Women's Opportunities	1.597 (0.643)	1.591 (0.659)	1.707 (0.690)	

Note. Differences represent Tukey HSD post-hoc mean differences
at p < .05. Sample sizes range from 3451 to 3638 for 1987, 2973
to 3152 for 1988, and 544 to 579 for 1989.

Table 17

Scales Means, Standard Deviations, and Mean Differences for the Reserve Components NRS Responses Across White/Non-White Samples

	White	Non-White	Differences
Self-Improvement	2.478 (0.660)	2.597 (0.648)	
Soldiering	2.351 (0.717)	2.219 (0.723)	White > Non-White t= 2.13
Job Skills	2.239 (0.806)	2.476 (0.789)	Non-White > White t=-3.76
Education Money	2.197 (0.729)	2.350 (0.716)	Non-White > White t=-2.54
Serve Part Time	2.142 (0.697)	2.016 (0.697)	White > Non-White t= 2.22
Benefits	1.965 (0.761)	2.011 (0.790)	
Time Out	1.719 (0.637)	1.872 (0.702)	Non-White > White t=-3.17
Women's Opportunities	1.539 (0.617)	1.751 (0.712)	Non-White > White t=-4.80

Note. Differences represent independent t-test mean differences at p < .05. Sample sizes range from 4096 to 5161 for Whites and 2060 to 2206 for Non-Whites.

Table 18

Scales Means, Standard Deviations, and Mean Differences for the Reserve Components NRS Responses Across Education Level

	LTHS	HS	GTHS	Differences
Self-Improvement	2.520 (0.653)	2.468 (0.662)	2.324 (0.690)	
Soldiering	2.405 (0.731)	2.250 (0.707)	2.228 (0.669)	
Job Skills	2.331 (0.778)	2.230 (0.830)	2.089 (0.843)	LTHS > GTHS d=.214
Education Money	2.228 (0.755)	2.256 (0.700)	1.876 (0.634)	LTHS,HS > GTHS d=.207
Serve Part Time	2.150 (0.688)	2.084 (0.710)	2.112 (0.679)	
Benefits	1.978 (0.767)	1.993 (0.779)	1.871 (0.727)	
Time Out	1.790 (0.660)	1.749 (0.660)	1.618 (0.605)	LTHS > GTHS d=.166
Women's Opportunities	1.561 (0.631)	1.559 (0.648)	1.484 (0.576)	

Note. Differences represent Tukey HSD post-hoc mean differences at $p < .05$. Sample sizes range from 3330 to 3564 for less than high school, 2413 to 2532 for high school, and 292 to 306 for greater than high school.

Table 19

Scales Means, Standard Deviations, and Mean Differences for the Reserve Components NRS Responses Across Test Score Category (TSC)

	I - IIIA	IIIB - IV	Differences
Self-Improvement	2.411 (0.658)	2.612 (0.628)	IIIB-IV > I-IIIA t=-2.95
Soldiering	2.273 (0.720)	2.429 (0.717)	IIIB-IV > I-IIIA t=-2.50
Job Skills	2.121 (0.796)	2.519 (0.757)	IIIB-IV > I-IIIA t=-6.37
Education Money	2.250 (0.700)	2.179 (0.778)	
Serve Part Time	2.043 (0.683)	2.242 (0.701)	IIIB-IV > I-IIIA t=-3.45
Benefits	1.903 (0.747)	2.096 (0.791)	IIIB-IV > I-IIIA t=-3.55
Time Out	1.651 (0.614)	1.939 (0.686)	IIIB-IV > I-IIIA t=-5.96
Women's Opportunities	1.440 (0.557)	1.732 (0.703)	IIIB-IV > I-IIIA t=-6.79

Note. Differences represent independent t-test mean differences at $p < .05$. Sample sizes range from 3685 to 3848 for TSC I-IIIA and 2350 to 2529 for TSC IIIB-IV.

DISCUSSION

Overview

The discussion is divided into four sections. A summary of the results is presented first, followed by discussion of the factor analyses and mean comparisons. Mean comparisons are presented in two ways. First, mean comparisons are presented for each scale across demographic variables. Next, each demographic variable is presented across motivator scales. The final section focuses on issues that directly and indirectly affect the measurement quality of NRS responses and recommendations are made for improvements in future data collection.

Detailed Summary

This research developed multi-item scales to be used for evaluating and interpreting NRS importance items and examined their ability to differentiate between sub-markets. Results of the factor analysis found seven factors for the Active Army and eight factors for the Reserve Components. The factors from both samples were found to be similar, with six factors (Self-Improvement, Job Skills, Benefits, Soldiering, Education Money, and Women's Opportunities) being interpreted as measuring the same construct. Reliability analysis was used to delete items that did not contribute to the correlation among scale items. Nine items were deleted for both samples. The final Cronbach's alpha levels for the Active Army scales were, in general, low. Only two of the seven scales had alphas greater than .70. For the Reserve Components scales, the reliabilities were more acceptable. Four of the eight Reserve Components scales had alphas greater than .70. Self-Improvement was found to be the most important scale, followed by Education Money and Soldiering. Travel, Time Out, and Women's Opportunities were perceived to be the least important. Comparisons of scale means were also made by demographic, intention, and preference variables to determine if differences in the perceived importance of the scales existed between various sub-markets. Results of these comparisons found that differences in the perceived importance of the scales do exist across demographic variables. It was found for the Active Army that the NRS question pertaining to intentions other than enlistment (NRS variable T062) did generate predictable school- and work-oriented differences in scale means, while the differences associated with the preference question (NRS variable Y155) did not make clear-cut distinctions across the orientations.

The results presented here indicate that the importance items can be put into multi-item scales. The use of scales is recommended over the examination of each item individually for a number of reasons. First, the results pointed out which items did not correlate highly with the remaining scale items and should be deleted from the survey. By deleting these items, the scales employed only those items that measured similar aspects of a particular scale. Second, the use of multi-item scales provides a more stable measure of a particular aspect of motivation. It is known that multiple measures of the same construct provide measures of higher psychometric quality for measurement of a construct than a single measure (Rushton, Brainerd & Pressley, 1983). Third, the use of scales eases interpretation. Instead of attempting to interpret every item, similar items are aggregated to form scales so fewer interpretations need to be made. If the reliabilities of some scales can be improved, it is recommended that USAREC employ these scales to examine the NRS importance items.

Comparisons with Previous Factor Analyses

In general, the results of this research agreed with results

obtained in previous research. In their factor analysis, Pliske, et al. (1986) uncovered six factors with similar headings to those found here. Although the results were similar, two differences between the factor analyses were evident. Pliske, et al. did not uncover a Women's Opportunity factor because the items that loaded on that factor were not included in the 1982-1983 version of the NRS. Further, Pliske, et al. labeled a factor "Military Service" which encompassed the Benefits and Soldiering factors found here. A definitive reason for this difference is unknown because both analyses employed similar techniques and adequate sample sizes. One reason may be that more recent NRS respondents make finer distinctions between economic (Benefits) and non-economic (Soldiering) aspects of the enlistment decision.

In another factor analysis of the 1983 Active Army sample, Horne (1988) found a five factor solution. Four factors (Personal Improvement, Institutional Motive, Escape Motive, and Educational Benefits) matched factors uncovered in the current analysis (Self-Improvement, Soldiering, Travel, and Education Money).

A third factor analysis of the 1983 Active Army sample found four factors (Institutional, Time Out, Improvement, and Make More Money) (Horne & Weltin, 1985). This solution did not match the solution found in the current analysis. Only the Time Out factor is a clean match. For the remaining factors, items that loaded onto different factors for the current solution were grouped into the same factors for Horne and Weltin. Two possible reasons for these differences are the number of items included in the factor analysis and the factor analysis method. First, Horne and Weltin included 15 items in the factor analysis while the current research used 25. Most items that were deleted reflected Self-Improvement. Second, Horne and Weltin used a maximum likelihood factor analysis method with squared multiple correlations serving as the communality estimates. The current research employed the principle components method with prior communality estimates equal to one. In a factor analysis not reported here, estimates were set to the squared multiple correlation of an item with all other items. This resulted in a factor solution with factors much less interpretable than the seven factor solution reported here.

Overall, the results of previous factor analyses were similar to the current findings. The current research supported the conclusions of the previous factor analyses in that economic and non-economic factors (Toomepuu, 1986) and institutional and occupational factors (Moskos, 1977) are part of the enlistment decision although they are weighted differently in terms of importance.

For the Reserve Components, using 1987 NRS data, Halverson (1989) uncovered a four factor solution. Labels for the four factors (Self-Improvement, Educational Money, Skill Training, and Military Service) matched the labels for four of the factors in

the present research. However, differences were evident between the four and eight factor solutions. First, Halverson did not include the five items specific to the Reserve Components which formed a factor in the current analysis. Second, Halverson employed only the Reserves in his analysis while the current research combined Reserves and National Guard into one sample. Furthermore, the factor analysis method and prior communality estimates used by Halverson were not reported. As mentioned above the method used and the communality estimates can affect the number of factors to be retained.

Comparisons with Previous Importance Rating Findings

The overall scale means showed Self-Improvement to be considered most important followed by Education Money and Job Skills. These three factors have been consistently mentioned as three important reasons for enlisting. With the exception of Kim (1982), Self-Improvement items have consistently been shown to be the most important reason for enlisting by soldiers and youth (Boesel & Richards, 1982; Elig, 1989; Elig, et al, 1984; Gade, et al, 1984; Nieva & Gay, 1988). However, for Education Money and Job Skills, the ordering of means for the present research varies from previous findings. All the previous research found Job Skills items ranked second behind Self-Improvement while Education Money was ranked third. One reason for this difference may be that some enlistment motivation research (Elig; Gade et al,; Nieva & Gay) are based on surveys of U.S. youth, not soldiers. Importance perceptions of U.S. youth may vary in terms of Job Skills and Education Money from the perceptions of soldiers. Findings may also vary due to changes over time. Elig, et al. surveyed soldiers in 1982 and 1983. Since that time, Army advertising has been directed at Education Money. With an increased focus on Education Money advertising and the increased value of educational incentives, more soldiers may be deciding to enlist because of education money. Furthermore, Elig, Gade and Shields (1982) found a significant increase in the perceived importance of Education Money from 1979 to 1982. The findings here suggest that this trend has continued.

Scale means across demographic variables. Comparisons of scale means across demographic variables between the present findings and Pliske et al. (1986) found a number of similarities. For Self-Improvement, only the findings for enlistment term varied (comparing only those variables that were examined by both projects (gender, ethnic group, education level, TSC, and enlistment term)). In the current research, no differences on Self-Improvement importance were found across enlistment term while Pliske et al. found that soldiers enlisted in 3-year terms perceived Self-Improvement as more important than soldiers with other enlistment terms.

In the present research more importance was placed on Job Skills by women, non-whites, soldiers in TSC IIIB-IV, soldiers with a work-orientation, and soldiers with enlistment terms greater than 4 years. Findings from Pliske et al. support only

the TSC finding and contradict the enlistment term finding.
Pliske et al. found that soldiers with enlistment terms of 3
years viewed Economic Advancement (Pliske et al.'s label for the
Job Skills scale) as more important. The reason for these
differences is that although there is some overlap in the items
that went into the scales, some items are unique to the scales
generated here and by Pliske et al.

More importance was found to be placed on Benefits by
soldiers who have greater than a high school diploma, soldiers in
TSC IIIB-IV, and soldiers with a work-orientation. Soldiering
was perceived to be more important by soldiers who are men, have
less than a high school diploma, were TSC IIIB-IV, and enlisted
for 4 years. Pliske et al's Military Service factor, which
combined Benefits and Soldiering supported gender and enlistment
term and did not contradict other findings.

In the present research, more importance was placed on
Education Money by non-white soldiers, who have a high school
diploma, enlisted for 2 years, are TSC I-IIIA, and have a school-
orientation. These findings support Pliske et al. and Horne and
Weltin's (1985) findings concerning enlistment term; Elig et al.
(1982, 1984), Gade et al. (1984), and Pliske et al.'s concerning
TSC; and Elig et al.'s (1982) findings for education level. This
finding suggested that the more qualified soldiers (TSC I-IIIA)
enlist for different reasons than TSC IIIB-IV soldiers. It also
suggests that the soldiers who perceived Education Money as more
important may be less likely to reenlist; instead they leave the
Army to attend college (Horne & Weltin, 1985). Furthermore,
these findings may indicate that TSC I-IIIA soldiers have a wider
perspective and more alternatives and, as a result, are less
positive towards the Army (Howell, Wilcox & Wilkes, 1988).

Travel was perceived as more important by soldiers who are
non-white, women, TSC IIIB-IV, and have a high school diploma.
Similar findings for gender and education level were also found
by Pliske et al.

In Halverson's (1989) research using the 1987 Reserve
Components sample, there are three demographic variables which
overlap with the present research (gender, ethnic group, and
TSC). For Self-Improvement, only TSC was found to be a moderator
in the present research. Soldiers with TSC IIIB-IV saw Self-
Improvement as more important than soldiers with TSC I-IIIA.
This finding was consistent with Halverson's finding for Self-
Improvement.

The findings for Job Skills were also similar across the two
projects. Job Skills was seen as more important by soldiers who
are non-white, women, and have TSC IIIB-IV.

Comparisons between the Soldiering scale and Halverson's
military service scale could not be made accurately because the
items that made up the scales were not similar. Items such as
"retirement benefits", "fringe benefits", and "men/women treated

equally" made up Halverson's scale. None of these items match the items in the Soldiering scale. If compared to Benefits (which has two items that overlap), the results for the demographic variables were found to be similar.

Both sets of results found that non-white soldiers saw Education Money as more important than white soldiers. However, Halverson also found that women saw Education Money as more important. This discrepancy may have been due to differences in the items that loaded onto the scale.

<u>Scale means within the demographic variables</u>. Discussion in this section focuses on the differences in scale means for selected demographic variables.

Comparisons between male and female soldiers found that Soldiering was more important for men and Job Skills was more important for women. These findings supported the findings of Pliske et al. and Halverson. However, the findings in earlier research that Education Money was more important for women was not supported. The current analyses found no gender difference for Education Money. Possible reasons for the differences in results may have been the use of only the Reserve sample (Halverson) and the difference in administration years used for analyses (Pliske, et al.).

Comparison between white and non-white soldiers found that Soldiering was more important for white soldiers and Job Skills as more important for non-white soldiers. These findings were in agreement with Halverson's findings. However, Pliske, et al. did not find any differences across population groups while a number of differences, in addition to those mentioned above, were found for the present research. This difference may have been due to aggregating blacks, hispanics, and the "other" category into one group. Pliske, et al. did not aggregate blacks, hispanics, and the other category into one group as was done for the current project. In general, the findings from the current research may indicate that non-whites perceive more opportunity in the military and are more likely to enlist than whites (Orvis & Gahart, 1985).

The present findings for education level, with the exception of Education Money, supported previous research (Elig, et al., 1984; Halverson, 1989; Pliske, et al., 1986). Previous findings concerning Education Money have noted that Education Money was more important for those with higher levels of education. Current results found Education Money to be more important for the less than high school diploma and high school diploma groups. A possible explanation for this difference is that Education Money increases in importance for those with up to two years of college, then its importance drops off for those with more than two years of college (Elig, et al., 1984). Future research may need to further differentiate the greater than high school group into groups with less than and those with more than two years of college in order to more effectively assess Education Money

37

differences across education level.

Comparisons between TSC I-IIIA and TSC IIIB-IV found results that supported previous research. Education Money was found to be more important for TSC I-IIIA soldiers than TSC IIIB-IV soldiers. This was consistent with previous research (Elig, et al.; Gade, et al., 1984; Pliske, et al., 1986). In addition, the finding that Job Skills were more important for TSC IIIB-IV soldiers also supported previous research (Halverson, Pliske, et al.). The remaining scales were all found to be more important to TSC IIIB-IV soldiers, which was found by Pliske et al. What this may indicate is that TSC I-IIIA soldiers have a wider perspective and more alternatives and, as a result, are less positive towards the Army than lower scoring soldiers (Howell, Wilcox & Wilkes, 1988).

Comparisons between soldiers enlisting for 2-, 3-, and 4-year terms found that Education Money was more important to the 2-year enlistees. This finding was consistent with previous research. Furthermore, the greater importance that 3- and 4-year enlistees placed on Soldiering and Job Skills was also found by Horne and Weltin (1985) and Pliske, et al. These results suggest that shorter term enlistees may be school-oriented with higher TSCs, while longer term enlistees may be work-oriented with lower TSCs (Gade, et al, 1984).

For the NRS item that addressed vocational intentions if the soldier did not enlist, soldiers classified as work-oriented saw Job Skills and Benefits as more important than the soldiers classified as school-oriented. Conversely, school-oriented soldiers perceived Education Money as more important. Nieva and Allen (1988) found similar results for Education Money and Job Skills among youth in general. These findings supported the notion that soldiers can be classified as school- or work-oriented (Toomepuu, 1986) and differences can be found across these orientations. Scales related to work (Job Skills and Benefits) were seen as more important by work-oriented soldiers while the scale related to school (Education Money) was more important to the school-oriented soldiers.

For the NRS item that addressed vocational preferences if the soldier did not enlist, school-oriented soldiers saw Education Money as more important than work-oriented soldiers. However, differences on Benefits and Job Skills failed to appear for the vocational preference item that were present for vocational intention item. It is possible that the vocational intentions item may be a more suitable measure for making school-versus work-oriented distinctions than vocational preferences.

In general, the present findings confirmed a number of findings from previous research. This support increased the confidence placed in the moderator differences found. For the findings that were supported, recruitment and advertising strategies can be developed based on these differences. For the findings not confirmed or contradictory, further examination is

needed before developing recruitment and advertising strategies.

Issues Concerning the Scales and the NRS

In this section, issues will be addressed concerning improving the reliability of some scales and the possible deletion of other scales. Another issue addressing the response scale format for the importance items will also be presented. These issues are believed to directly affect scale reliability and the measurement quality of all NRS responses. Recommendations will be made for both issues.

Reliability of the scales. As stated earlier, the alpha coefficients for five of the seven Active Army scales and four of the eight Reserve Components scales fell under .70. Reliabilities under .70 are considered unacceptable. In order for these scales to be used by USAREC, the reliabilities must be improved. For the Active Army, the reliability of the Self-Improvement and Job Skills scales may be improved by adding to the Active Army NRS the eight questions that are on the Reserve Components form. Reliabilities for the Self-Improvement and Job Skills scales for the Reserve Components sample were superior to those for the Active Army. Although the reliability for the Active Army Self-Improvement scale is acceptable, increasing the reliability further by adding a few items is a worthy change. Nunnally (1978) recommended that adding items can increase the internal consistency reliability of a scale. For Job Skills, there is one common item between the Active Army and Reserve Components (skill training). With the reliability of the Active Army scale being low, the other two items on the Active Army scale may be deleted and substituted with the Reserve Components items.

For the remaining scales, new items need to be added or current items rewritten to make the scale items more similar. For the Education Money, Soldiering, and Travel scales items may need to be rewritten or added that get at the intent of the factors in greater detail. The "generalness" of an item may lead to different interpretations which, in turn, may lead to lower correlations among the items. By being more specific, interpretation becomes easier and reliability may increase.

For the Education Money scale, however, rewriting or adding items may not increase reliability. The items that fall into this scale appear to be specific. One reason for the low reliability may be the correlation between the "money for college" and "money for votech/business education" items. Both items address money for education, however, the soldiers who feel one item is important may not feel the same way about the other. Those soldiers interested in college may have little or no desire for votech/business education and vice versa. Correlations between these items were .44 and .24 for the Active Army and Reserve Components, respectively. The higher correlation for the Active Army is reflected in its higher reliability. Research is needed to identify the characteristics of college- and votech-

oriented soldiers and determine their views towards the alternative form of education. If it is found that soldiers prefer one or the other form of education, but not both, these two items would need to be looked at separately.

For the remaining scales (Time Out and Women's Opportunities), deleting them from examination may need to be considered. The reliability for Time Out was the lowest of any of the 15 scales. Improving the reliability from .423 to .7 would be difficult given the construct that the scale is measuring. For Women's Opportunities, the reliability is higher and may be raised through rewritten or additional items. However, the primary reason for deleting these scales is based on the application of information, not reliability. Items associated with Time Out address "deciding life plans", "escaping personal problems", and "experiencing military life". Regardless of new soldier responses, this information does not coincide with NRS objectives. Information that is obtained by the NRS should be such that it can be acted upon to develop recruitment and advertising strategies. It is doubtful that Time Out information would be used for these purposes. Thus, these items should be retained only if it is important to monitor the level of potentially undesirable reasons for enlisting.

Based on the present findings, it is recommended that while some improvements can be made immediately, further research is needed to improve the reliability of most scales. The addition of items from the other NRS form may improve the reliability of some scales while rewriting existing items or adding new items may be needed for others. Finally, a few scales may need to be deleted because the reliability may not be able to reach an acceptable level. This research needs to be carried out before great confidence can be placed in the scale measures or the individual items.

Response scale anchors. At issue here is the interval nature of the 4-point response scale anchors used for the importance items. It appears that the conceptual distance between the 3 (very important) and the 4 point (I would not have enlisted except for this reason) is greater than the other intervals. This suggestion is supported by the percentage of soldiers that make a "4" response (I would not have enlisted except for this reason) for a particular item. The percentage of "4" responses for each item were found to be lower than the percentage of "1" responses (not at all important). These differences in percentages leads to questions about the normality of the response distribution and interval nature of the scale. If the response scales are not interval or normally distributed, then common statistical assumptions have been violated and the appropriateness of using parametric statistics can be questioned. Even though many parametric statistics are robust against the influence of violations of these assumptions, it is recommended that the response scales be revised to improve their interval nature. These revisions would allow for the appropriate use of advanced statistics which would provide more useful information.

Based on the present findings, it is recommended that the interval nature of the response scales be examined and the anchors revised. If future research will use parametric statistics to analyze item responses, then this issue becomes a higher priority. Results may be questionable if some statistical methods are used with smaller sample sizes. Perhaps the NRS response scales should employ response anchors similar to those that were used for ACOMS importance items.

Summary and Conclusions

The purpose of this research was to develop unique, multi-item scales that could be used to generate more stable results and ease interpretation of the NRS importance items. The results found seven and eight factor solutions for the Active Army and Reserve Components. Reliability analysis found that some scales need revision to improve reliability. Examination of scale means across demographic variables found that the scales can identify differences between sub-markets. These findings also confirmed findings from previous research (e.g., Halverson, 1989; Pliske, et al, 1986).

Future research on the NRS should focus on the reliability of the importance scales. If the reliability for some scales can be increased, then the use of scales would allow for more definitive information to be used as input for advertising and recruitment strategies. Research on the deletion of items, response scales, and survey administration should also be conducted to improve the measurement quality of the items and scales. This research has found that scales can be used to aggregate items, interpret responses, and identify sub-markets. By conducting the research mentioned above, the measurement quality of NRS items and scales should improve resulting in a survey instrument that measures soldiers' enlistment motivators, attitudes, and characteristics more effectively.

REFERENCES

Boesel, D. P., & Richards, J. A. (1982). Enlistment motivation in the all-volunteer force environment: A review of major surveys. <u>Proceedings: Annual Conference of the Military Testing Association</u>. Brooks Air Force Base, TX: Air Force Human Resources Laboratory. (DTIC No. AD-A126554).

Elig, T. W. (1989). <u>Views of U.S. youth on military service and college enrollment as alternatives to full-time employment</u>. Paper presented at the Conference on the Inter-University Seminar on Armed Forces and Society, Baltimore, MD.

Elig, T. W., Hertzbach, A., & Johnson, R. M. (1984). <u>The 1983 ARI survey of Army recruits: Tabular description of 1983 (Active) Army Assessions, Volume 1</u> (ARI RP 84-09). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences. (DTIC No. AD-A156785).

Elig, T. W., Johnson, R. M., Gade, P. A., & Hertzbach, A. (1984). <u>The Army enlistment decision: An overview of the ARI recruit surveys, 1982 and 1983</u> (ARI RR 1371). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences. (DTIC No. AD-A164230).

Elig, T. W., Gade, P. A., & Shields, J. L. (1982). <u>The 1982 DA survey of personnel entering the Army</u>. Paper presented at the annual meeting of the Military Testing Association, San Antonio, TX.

Gade, P. A., Elig, T. W., Nogami, G. Y., Hertzbach, A., Weltin, M., & Johnson, R. (1984). <u>Motives, incentives, and key influencers for enlistment, reenlistment, and attrition in the U.S. Army</u> (ARI Working Paper 84-19). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences.

Halverson, D. D. (1989). <u>Enlistment motivators for high quality recruits in the Army Reserve</u>. Master's thesis, Naval Postgraduate School, Monterey, CA. (DTIC No. AD-A212760).

Horne, D. K. (1988). <u>Enlistment motivation of Army recruits</u> (ARI Working Paper 88-2). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences.

Horne, D. K., & Weltin, M. (1985). <u>Determinants of Army career intentions</u> (ARI TR 732). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences. (DTIC No. AD-A178672).

Howell, R. D., Wilcox, J. B., & Wilkes, R. E. (1988). <u>Modeling the effects of Army advertising</u> (ARI TR 821). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences. (DTIC No. AD-A207289)

Kim, C. (1982). Youth and the military service: 1980 national survey studies of enlistment, intentions to serve, reenlistment and other labor market experiences of veterans and attriters. Columbus, OH: Ohio State University Center for Human Resource Research.

Moskos, C. C. (1977). From institution to occupation. Armed Forces and Society, 4, 41-50.

Nieva, V. F., & Allen, B. F. (1988). An initial explanation of the dual-market theory. In V. F. Nieva, G. H. Gaertner, T. W. Elig, & M. E. Benedict (Eds.), The Army communications objectives measurement system (ACOMS): Annual report, school year 86/87 (ARI TR 784). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences. (DTIC No. AD-A196607).

Nieva, V. F., & Gay, N. L. (1988). Preliminary assessment of trends among the primary male analytic sample. In V. F. Nieva, G. H. Gaertner, T. W. Elig, & M. E. Benedict (Eds.), The Army communications objectives measurement system (ACOMS): Annual report, school year 86/87 (ARI TR 784). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences. (DTIC No. AD-A196607).

Nunnally, J. C. (1978). Psychometric theory (2nd Ed.). New York: McGraw-Hill.

Orvis, B. R., & Gahart, M. T. (1985). Relationship of enlistment intention and market survey information to enlistment in active duty military service (Rand Report N-2292-MIL). Santa Monica, CA: The Rand Corporation.

Pliske, R. M., Elig, T. W., & Johnson, R. M. (1986). Towards an understanding of Army enlistment motivation patterns (ARI TR 702). Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences. (DTIC No. AD-A173817).

Rushton, J. P., Brainerd, C. J., & Pressley, M. (1983). Behavioral development and construct validity: The principle of aggregation. Psychological Bulletin, 94, 18-38.

Sackett, P. R., & Hakel, M. D. (1979). Temporal stability and individual differences in using assessment information to form overall ratings. Organizational Behavior and Human Performance, 23, 120-137.

SAS Institute Inc. (1985). SAS user's guide: Statistics, version 5 edition. Cary, NC: SAS Institute Inc.

Toomepuu, J. (1986). Education and military manpower requirements. Paper presented at the annual meeting of the Council of the Chief State School Officers.

APPENDIX A

LIST OF ACTIVE ARMY NRS IMPORTANCE ITEMS

VARIABLE NAME	SHORT TITLE	NRS QUESTION
T069	Unemployment	I enlisted because I was unemployed and couldn't find a job.
T070*	Away From Home	I enlisted to give myself a chance to be away from home on my own.
T071	Better Myself	I enlisted because the military will give me a chance to better myself in life.
T072*	Travel	I enlisted because I want to travel and live in different places.
T073*	Escape Problems	I enlisted to get away from a personal problem.
T074	Serve Country	I enlisted because I want to serve my country.
T075*	Earn More Money	I enlisted because I can earn more money than as a civilian.
T076	Family Tradition	I enlisted because it is a family tradition to serve.
T077	I Can Make It	I enlisted to prove that I can make it.
T078*	Skill Training	I enlisted to get trained in a skill that will help me get a civilian job when I get out.
T079	Money for College	I enlisted so I can get money for a college education.
T080	Be a Soldier	I enlisted because I want to be a soldier.
T082	Money for Votech	I enlisted so I can get money for civilian vocational, technical, or business school education.

APPENDIX A

LIST OF ACTIVE ARMY NRS IMPORTANCE ITEMS

VARIABLE NAME	SHORT TITLE	NRS QUESTION
T083	Physical Training	I enlisted for the physical training and challenge.
T084*	Decide Life Plans	I enlisted to take time out before deciding what I really want to do.
Y001	Men/Women Equal	I enlisted because men and women are treated as equals in the military.
Y002	Mil. Experience M/W	I enlisted because the military experience is beneficial to both men and women soldiers.
T086	Leader Training	I enlisted because I want leadership training.
T087	Retire. Benefits	I enlisted because I like the retirement benefits.
T088	Fringe Benefits	I enlisted because I want the fringe benefits (e.g., health/dental care, low prices in military stores).
T089*	Better Individual	I enlisted to become a better person.
Y003	High-Tech Equip	I enlisted to work with sophisticated, high-tech equipment.
T093	Self-Reliant	I enlisted to become self-reliant.
T095	Responsible	I enlisted to learn to be a responsible, mature person.
T096*	Get a Better Job	I enlisted to obtain a better job than the one I had.

*
These items were not included in the Reserve Components NRS.

APPENDIX B

LIST OF RESERVE COMPONENTS NRS IMPORTANCE ITEMS

VARIABLE NAME	SHORT TITLE	NRS QUESTION
T069	Unemployment	I enlisted because I was unemployed and couldn't find a job.
T071	Better Myself	I enlisted because the military will give me a chance to better myself in life.
T074	Serve Country	I enlisted because I want to serve my country.
T076	Family Tradition	I enlisted because it is a family tradition to serve.
T077	I Can Make It	I enlisted to prove that I can make it.
T079	Money for College	I enlisted so I can get money for a college education.
T080	Be a Soldier	I enlisted because I want to be a soldier.
T082	Money for Votech	I enlisted so I can get money for civilian vocational, technical, or business school education.
T083	Physical Training	I enlisted for the physical training and challenge.
T084	Decide Life Plans	I enlisted to take time out before deciding what I really want to do.
T086	Leader Training	I enlisted because I want leadership training.
T087	Retire. Benefits	I enlisted because I like the retirement benefits.
T088	Fringe Benefits	I enlisted because I want the fringe benefits (e.g., health/dental care, low prices in military stores).

APPENDIX B

LIST OF RESERVE COMPONENTS NRS IMPORTANCE ITEMS

VARIABLE NAME	SHORT TITLE	NRS QUESTION
T093	Self-Reliant	I enlisted to become self-reliant.
T094*	Exper. Mil. Life	I enlisted to see what military life is really like.
T095	Responsible	I enlisted to learn to be a responsible, mature person.
T759*	Earning More Money	I enlisted because it will enable me to earn more money.
Y123*	Skill Training	I enlisted to get trained in a skill that will help me get a better civilian job.
Y001	Men/Women Equal	I enlisted because men and women are treated as equals in the military.
Y002	Mil. Experience M/W	I enlisted because the military experience is beneficial to both men and women soldiers.
Y003	High-Tech Equip	I enlisted to work with sophisticated, high-tech equipment.
Y146*	HS-College Step	I enlisted as a stepping-stone between high school and college.
Y147*	Civilian Career	I enlisted to help my civilian career development.
Y148*	Job I Can Enjoy	I enlisted because of the wide variety of opportunities to find a job I can enjoy.
Y149*	Skill Area	I enlisted for training in useful skill areas.
Y150*	Proud Experience	I enlisted to have an experience I can be proud of.

APPENDIX B

LIST OF RESERVE COMPONENTS NRS IMPORTANCE ITEMS

VARIABLE NAME	SHORT TITLE	NRS QUESTION
Y151*	Potential	I enlisted to develop my potential.
Y152*	Self-Confidence	I enlisted to develop self-confidence.
Y153*	Mental Challenge	I enlisted to have a mental challenge.
Y124*	Serve in Home Town	I wanted to serve America while staying in my hometown.
Y125*	Serve Part-Time	I wanted to serve part-time in the military while working a civilian job.
Y126*	Serve Community	I wanted to serve my own community.
Y127*	Exciting Weekends	I wanted interesting and exciting weekends.
Y128*	American Tradition	I wanted to participate in a time-honored American tradition.

*
 These items were not included on the Active Army NRS.