

DTIC FILE COPY

**Development and Field Tests of the
Army Work Environment Questionnaire**

Darlene M. Olson
Army Research Institute

and

Walter C. Borman
Personnel Decisions Research Institute

DTIC
ELECTE
JUL 08 1987
S D
OK

AD-A182 078

Selection and Classification Technical Area
Manpower and Personnel Research Laboratory



U.S. Army

Research Institute for the Behavioral and Social Sciences

May 1987

Approved for public release; distribution unlimited.

87 7 8 111

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ARI Technical Report 737	2. GOVT ACCESSION NO. A182078	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) DEVELOPMENT AND FIELD TESTS OF THE ARMY WORK ENVIRONMENT QUESTIONNAIRE		5. TYPE OF REPORT & PERIOD COVERED Final Report August 1984-September 1986
		6. PERFORMING ORG. REPORT NUMBER ---
7. AUTHOR(s) Darlene M. Olson (ARI), and Walter C. Borman (Personnel Decisions Research Institute)		8. CONTRACT OR GRANT NUMBER(s) MDA 903-82-C-0531
9. PERFORMING ORGANIZATION NAME AND ADDRESS Personnel Decisions Research Institute 43 Main Street, S.E. Minneapolis, MN 55414		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q162722A791 2.3.1.H.1
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Research Institute for the Behavioral and Social Sciences 5001 Eisenhower Avenue, Alexandria, VA 22333-5600		12. REPORT DATE May 1987
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) ---		13. NUMBER OF PAGES 76
		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE ---
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) ---		
18. SUPPLEMENTARY NOTES Contracting Officer's Representative, Darlene M. Olson.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Environmental variables Performance measurement Situational constraints Critical incidents		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) → Empirical research has investigated work performance in terms of taxonomies of abilities values and personality characteristics. However, until recently little research has focused on developing environmental taxonomies or examining relationships between these factors and performance criteria. Although field studies have supported associations between environmental variables and affective reaction to the job, these variables have shown only weak and inconsistent relationships with performance ratings. In this research, a (Continued)		

ARI Technical Report 737

20. (Continued)

14-dimension environmental taxonomy containing variables that had both a facilitating and inhibiting influence on soldier performance was identified through application of a critical incident methodology. Further, a 110-item Army Work Environment Questionnaire (AWEQ) was developed to measure these job- and climate-oriented environmental dimensions.

The influence of these environmental variables on a comprehensive set of supervisor and peer ratings of soldier effectiveness, job knowledge tests, and hands-on measures was examined for a sample of about 1,300 Army enlisted personnel from nine military jobs. Principal component factor analyses with a varimax rotation indicated that a 5-factor solution consisting of (1) Resources and Equipment, (2) Support, (3) Skills Utilization, (4) Perceived Job Importance, and (5) Unit Cooperation and Cohesiveness provided a parsimonious explanation of the underlying Army environment constructs. Significant ($p < .05$) correlations were found between such environmental variables as Perceived Job Importance, Skills Utilization, and Support and both ratings and the more objective performance measures. Implications for future research are discussed.

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

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

EDGAR M. JOHNSON
Technical Director

WM. DARRYL HENDERSON
COL, IN
Commanding

Research accomplished under contract
for the Department of the Army

Personnel Decisions Research Institute

Technical review by

Jane Arabian
Laurel W. Oliver

Accession For	
NTIS CRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

NOTICES

DISTRIBUTION: Primary distribution of this report has been made by ARI. Please address correspondence concerning distribution of reports to: U.S. Army Research Institute for the Behavioral and Social Sciences, ATTN: PERIPOT, 5001 Eisenhower Ave., Alexandria, Virginia 22303-5608.

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Technical Report 737

Development and Field Tests of the Army Work Environment Questionnaire

Darlene M. Olson
Army Research Institute

and

Walter C. Borman
Personnel Decisions Research Institute

Selection and Classification Technical Area
Lawrence M. Hanser, Chief

Manpower and Personnel Research Laboratory
Newell K. Eaton, Director

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

Office, Deputy Chief of Staff for Personnel
Department of the Army

May 1987

Army Project Number
2Q162722A791

Manpower, Personnel, and Training

Approved for public release; distribution unlimited.

ARI Research Reports and Technical Reports are intended for sponsors of R&D tasks and for other research and military agencies. Any findings ready for implementation at the time of publication are presented in the last part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

FOREWORD

This research on the development and field testing of the Army Work Environment Questionnaire (AWEQ) was conducted as a component of Project A, the Army's comprehensive and innovative soldier selection and classification project. This AWEQ research was an effort that involved the exploratory development of a measure of environmental influences on soldier performance. Before Project A, Army selection and classification tests were related to school success but had not been linked explicitly to job performance. Further, previous research had examined only the effects of abilities, personality characteristics, and motivation on job performance. Other factors, such as work environment and organizational variables, may enhance the prediction of soldier performance or more thoroughly describe the interrelationships among human attributes, enlistment standards, selection criteria, and job performance.

In response to these gaps in the existing research knowledge base, a 14-dimension environmental taxonomy containing both inhibitors and facilitators of soldier performance was identified through application of a critical incident methodology; a 110-item Army Work Environment Questionnaire was constructed to measure these environmental variables. The present technical report documents the test development of the AWEQ and discusses relationships between environmental variables and a comprehensive set of Army performance measures. This research will serve as a basis from which to examine the unique contributions of individual difference and environmental factors to soldier performance.



EDGAR M. JOHNSON
Technical Director

ACKNOWLEDGMENTS

The authors wish to thank Ms. Sharon Rose, Drs. Lorian Roberson, John Kamp, Larry Hanser, Betty Smith, and Linda Schultz-Shiner, and Mrs. Helen Sperling for their help in the test development of the Army Work Environment Questionnaire.

DEVELOPMENT AND FIELD TESTS OF THE ARMY WORK ENVIRONMENT QUESTIONNAIRE

EXECUTIVE SUMMARY

Requirement:

The purpose of this research was to identify both positive and negative environmental influences on soldier performance. An Army environmental questionnaire was developed to measure the environmental variables. Further, relationships between these variables and job performance measures were examined.

Procedure:

A 110-item Army Work Environment Questionnaire (AWEQ) was developed and pilot and field tested on 1,369 first-tour Army enlisted personnel from nine military occupational specialties. Concurrently, soldiers in the research sample were administered an appropriate hands-on and job knowledge test, and supervisors and peers evaluated their performance on Army-wide and MOS-specific behaviorally anchored rating scales. Factor analysis and item analysis were used to revise the environmental questionnaire. Relationships between these environmental variables and Army performance measures were examined.

Findings:

A reliable questionnaire that measures soldiers' perceptions of the Army work environment was constructed. Specifically, the following five Army environment constructs were identified: (1) Resources/Tools/Equipment, (2) Support, (3) Skills Utilization, (4) Perceived Job Importance, and (5) Unit Cooperation and Cohesiveness. Significant relationships were found between both job- and climate-oriented environmental variables and both supervisory and peer ratings of soldier effectiveness. Also, significant correlations were found between environmental variables and the more objective job knowledge and hands-on performance measures.

Utilization of Findings:

This research developed and field tested a reliable and valid measure of the Army work environment. The AWEQ might be used as a diagnostic or needs assessment questionnaire to evaluate soldier perceptions of their current job environment with the intention of making recommendations for organizational interventions. Also, AWEQ data could be used to construct realistic job previews for new recruits. Further, if considered necessary, responses to the AWEQ might be used to adjust scores on the performance measures for effects of the work environment.

DEVELOPMENT AND FIELD TESTS OF THE ARMY WORK ENVIRONMENT QUESTIONNAIRE

CONTENTS

	Page
INTRODUCTION	1
Army Problem	1
Present Research Effort: Examination of Environmental/ Organizational Influences on Soldier Performance	1
CHAPTER 1: RATIONALE FOR ENVIRONMENTAL RESEARCH	3
Theoretical Research on Environmental Variables	3
Empirical Research on Environmental Variables	4
CHAPTER 2: DEVELOPMENT OF THE ARMY WORK ENVIRONMENT QUESTIONNAIRE	8
Stage I: Identification of Environmental Influences on Soldier Performance	8
Stage II: Development of the Army Work Environment Questionnaire (AWEQ)	10
Pilot Testing of the Army Work Environment Questionnaire	10
CHAPTER 3: FIELD TEST PROCEDURES FOR THE AWEQ	13
Sample	13
Field Test Measures	13
Procedures	14
CHAPTER 4: AWEQ FIELD TEST RESULTS	16
Stage III: Descriptive Statistics and Factor Analyses of the MOS A and MOS B Field Tests	16
Descriptive Statistics	16
Factor Analysis of the AWEQ Items for the MOS A Field Test	19
Factor Analysis of the AWEQ Items for the MOS B Field Test	22
Stage IV: Relationships Between AWEQ Variables and Performance Criteria for the Field Tests	25
SUMMARY	33
REFERENCES	36
APPENDIX A. PERFORMANCE INCIDENT FORM	40
B. DEFINITIONS OF THE 14 ARMY WORK ENVIRONMENT DIMENSIONS	41

CONTENTS (Continued)

	Page
APPENDIX C. INSTRUMENT ADMINISTERED IN THE FIELD TESTS	47
INSTRUMENT ADMINISTERED IN THE CONCURRENT VALIDATION	56
D. ASSIGNMENT OF ITEMS TO SCALES ON THE AWEQ	64

LIST OF TABLES

Table 1. A taxonomy of Army work environment dimensions	9
2. Description of the field test samples	13
3. Means, standard deviations, and reliability coefficients of the research measures for the field tests	17
4. AWEQ scale intercorrelations for the field tests	18
5. Factor analysis of the AWEQ for MOS A field test	20
6. AWEQ factor intercorrelations and reliability estimates for the total MOS A field test	21
7. Factor analysis of the AWEQ for the MOS B field test	23
8. AWEQ factor intercorrelations and reliability estimates for the MOS B field test	24
9. Percentage of significant correlations between environmental scores and performance criteria for the field tests	26
10. Correlations between AWEQ scale scores and performance criteria for MOS A field test	28
11. Correlations between AWEQ scale scores and performance criteria for the MOS B field test	29
12. Correlations between the AWEQ 5-factor solution and performance criteria for the MOS B field test	31

INTRODUCTION

Army Problem

In the past, Army selection and classification tests have been related to school success, but have not been linked explicitly to on-the-job performance. Consequently, Army planners could not specify to Congress their needs for qualified recruits, USAREC could not target its recruiting, trainers could not pre-plan their resources based on soldier capability, and personnel managers could not be sure that they had selected the right soldiers and identified the most effective job placement for those soldiers.

In an attempt to address these concerns, the Assistant Secretary of Defense (MRA&L), in July 1980, mandated that the Department of Defense standards for enlistment and assignment should be based upon the probability of successful job performance (Pirie, 1980). Each service was asked to demonstrate the feasibility of setting standards based upon job performance and to establish long-term programs to validate current selection and classification standards and Armed Services Vocational Aptitude Battery (ASVAB) test scores against on-the-job performance.

In response, the Army Research Institute for the Behavioral and Social Sciences (ARI) initiated Project A, a nine-year research program to develop the basic research requirements for linking selection and classification standards to job performance. The primary goal of Project A is to achieve increased Army effectiveness through improving the soldier-duty match. This goal will be accomplished by developing a comprehensive state-of-the-art set of selection and classification measures (predictors) and performance criteria, and empirically demonstrating the relationships between these predictor and performance measures.

Present Research Effort: Examination of Environmental/Organizational Influences on Soldier Performance

Job performance has been conceptualized as a product of individual attributes, abilities, and skills which are measurable at the time an individual first enters the organization, of environmental and organizational variables which impact on the individual after job-entry, and of the person's motivation to perform. Hence, in order to adequately describe the linkages and interrelationships among human attributes, enlistment standards, and job performance, research should investigate all potential influences on performance, not exclusively job entry predictors (Wetorgan, Olson, & Sperling, 1983).

Previous research has investigated the effects on work performance of human abilities, values, personality characteristics and motivation (Dunnette, 1976; Campbell & Pritchard, 1976). Although these approaches have accounted for some variance in performance across workers and job settings, other variables may enhance this prediction or more comprehensively describe performance. One class of variables which could impact on performance, but has received little systematic investigation, is the work environment. In a broad sense, the work environment functions as the context in which performance occurs (Magnusson, 1981). Specifically,

situational or environmental factors have been defined as a set of circumstances that are likely to influence the behavior of at least some individuals and have a reasonably high probability of reoccurrence in essentially the same form (Frederiksen, Jensen, & Beaton, 1977).

Environmental and organizational factors present in the work setting are known to influence behavior (e.g., work performance) in two ways. First, they can influence performance through constraint (Naylor, Pritchard, & Ilgen, 1980; Peters & O'Connor, 1983). The environment can inhibit, interfere with, or set limits on the range of behaviors that are displayed, which in turn can have a potential effect on task performance and the relationship between ability and performance. Second, the environment can impact on performance through affective reactions to the work setting (Naylor et al., 1980). For instance, the environment provides information about the organizational reward system and other informal operating practices, which subsequently can arouse motives, affective reactions, and expectations for certain consequences of designated behaviors. As a result of these organizational contingencies, patterns of behavior are shaped and their direction, magnitude, and duration can be modified through alteration of existing organizational contingencies.

Although the environment provides the context and opportunity for behavior and sets limits on the range of acceptable behavior, individuals are not passively shaped by environmental contingencies. Rather, individuals are active in terms of the cognitive processing of environmental information, and are goal-directed participants in a continuously ongoing reciprocal person by situation interaction process (Bandura, 1978; Magnusson & Endler, 1977). In order to describe effectively work performance, it is necessary to identify and measure reliably the relative contributions of environmental variables and individual differences in explaining variance in individual performance.

CHAPTER 1: RATIONALE FOR ENVIRONMENTAL RESEARCH

Theoretical Research on Environmental Variables

A major impetus for research on environmental variables was the work of Schneider (1978), who proposed that such situational influences as job or task characteristics, organizational practices, and climate variables could either directly influence performance or moderate the relationship between cognitive abilities and performance.

During the early 1980's Peters and O'Connor initiated a program of research to conceptualize and study the effects of constraints, which are a type of situational influence, on performance. Specifically, environmental constraints have been defined as aspects of the immediate work situation that act in some fashion to interfere with the use of individual abilities and motivation in performing various tasks or jobs (Peters & O'Connor, 1980).

A theoretical model which describes the impact of situational constraints on performance and affective reactions of workers to their jobs was developed by Peters and O'Connor and their colleagues. When work conditions are highly constraining, it was hypothesized that there would be a corresponding decrement in performance. Further, these researchers proposed that the presence of constraints in a work setting would have a differential impact on individual performance based on the adequacy of task relevant abilities and level of motivation. Specifically, it was assumed that environmental constraints would have the most severe impact on the performance of highly capable and well-motivated workers. Further, these individuals would experience more dissatisfaction and frustration with their jobs than their counterparts with lower levels of ability and motivation.

On the basis of preliminary theoretical and empirical research, Peters, O'Connor, and Eulberg (1984) proposed a domain of situational constraints which is applicable across work environments and consists of the following 11 general factors:

1. Job-related Information
2. Tools and Equipment
3. Materials, Supplies and Parts
4. Budgetary Support
5. Required Services and Help from Others
6. Task Preparation
7. Time Availability
8. Work Environment
9. Scheduling (e.g., coordination of work activities)
10. Transportation
11. Job-relevant Authority

This proposed taxonomy does not necessarily represent an exhaustive list of environmental influences (e.g., constraints), nor are all the dimensions necessarily independent. In particular, since these situational

variables are defined as "constraints" and emphasize deficiencies within work environments, potentially positive/facilitating characteristics of these same dimensions have not received adequate research investigation.

On the basis of content, this proposed taxonomy represents a broad combination of environmental influences, which have been traditionally investigated under the guise of job and task characteristics (Hackman & Oldham, 1974; Sims, Szilagy, & Keller, 1976), organizational variables (Payne & Pugh, 1976; Porter, Lawler, & Hackman, 1975), and climate factors (James & Jones, 1974; Schneider, 1975; Schneider & Reichers, 1983). Research examining relationships between job and organizational variables and such outcome criteria as performance, motivation, and job satisfaction has been heavily criticized. This has occurred because of serious limitations in theoretical models, ambiguous definitions of relevant constructs, reliance on inadequate measures of the variables (e.g., exclusive use of questionnaires), and difficulties in analyses and interpretation of perceptual data (Roberts & Glick, 1981). Consequently, any research conducted on the role of environmental constraint factors should be cognizant of these existing problems and endeavor to improve the conceptual and methodological adequacy of research in this area.

Empirical Research on Environmental Variables

Although the conceptual model of situational constraints proposed by Peters and O'Connor (1980) has received support in laboratory studies, the results have not been as consistent or encouraging in applied settings. Data from analog laboratory research (Peters, O'Connor, & Rudolf, 1980; Peters, Chassie, Lindholm, O'Connor, & Rudolf, 1981; Peters, & Fisher, & O'Connor, 1982; O'Connor, Peters, & Segovis, 1980) have demonstrated the negative impact of situational constraints on performance and affective reactions to the job (e.g., frustration and dissatisfaction).

For example, in the Peters et al. (1980) investigation, four of the eight situational constraint factors identified by Peters & O'Connor (1980) (i.e., Job-related Information, Tools and Equipment, Materials and Supplies, and Task Preparation) were manipulated to create either facilitating or inhibiting conditions. Findings showed that significantly lower performance and higher levels of frustration and dissatisfaction were associated with the presence of inhibiting conditions during experimental task performance.

Further, in the Peters et al. (1982) laboratory study, the contribution of the individual (i.e., ability and experience) versus the situation (i.e., constraints) to variance in performance was examined. As hypothesized, findings indicated that individual differences in ability and experience predicted performance better when the variance in performance was not strongly related to situational constraints. In addition, O'Connor et al. (1980) in a reanalysis of earlier laboratory data found that both frustration and performance could be predicted better by differential abilities in low constraint rather than high constraint conditions.

Hence, the results from analog experiments suggest that the presence of inhibiting performance constraints is related to lower task performance in experimental laboratory settings and can generate negative affective

reactions to constraining task conditions. Also, these laboratory findings tentatively suggest that situational constraints may moderate known predictor (e.g., ability) and criterion (e.g., performance) relationships.

Several correlational field studies have been conducted to examine the effects of environmental variables on various work outcomes. In research which used measures of satisfaction and frustration as outcome criteria, O'Connor, Peters, Rudolf and Pooyan (1982) found that situational constraints were significantly associated with negative affective responses to the job (e.g., frustration and job dissatisfaction). These findings were consistently observed across samples of employees from different jobs and occupational levels in private sector organizations. These main effects of situational constraints on affective reactions were replicated in a bank environment, where employees who depicted their jobs as high in constraining conditions were less satisfied and more frustrated with their job environment (Pooyan, O'Connor, Peters, Quick, Jones, Kulisch, 1982). However, correlations were near zero between environmental constraints and ratings of job performance.

In contrast to organizational field studies conducted by Peters and O'Connor and their colleagues which have shown relatively weak relationships between constraint measures and performance ratings, Steel and Mento (1986) in a sample of branch managers from a large finance company, found significant effects of high vs. low situational constraint environments on supervisory appraisals, self-ratings, and one measure of objective performance (i.e., past due control). Further, Steel and Mento (1986) demonstrated that an overall measure of contextual constraints explained more criterion variance in supervisory appraisals ($r^2=.13$) and feedback-based self-appraisals ($r^2=.10$) than for the more objective performance criterion (i.e., past due control measure, $r^2=.01$).

Although the previous field investigations were conducted in civilian work environments and yielded mixed results for the relationships between constraint conditions (factors) and performance criteria, other applied research has examined environmental influences on performance in military settings.

A recent comprehensive field study sponsored by the Air Force Human Resources Laboratory (AFHRL) measured situational constraint dimensions for a sample ($N=1352$) of enlisted personnel in multiple Air Force Job Specialty Codes (AFSC) (Watson, O'Connor, Eulberg, & Peters, 1982). In this research 14 environmental constraint dimensions (e.g., Job-related Information, Time Availability, Tools and Equipment, Communication, and Authority to Accomplish Work Goals) were identified through a critical incident approach (Flanagan, 1954). A 57 item multiple-choice questionnaire was constructed to assess these constraint dimensions. The environmental measure was correlated not only with performance criteria, but also with other outcome variables such as satisfaction, locus of control, supervisory culpability, and reenlistment intentions for the entire Air Force sample.

Findings demonstrated that total scores on the environmental constraint questionnaire correlated significantly ($p < .001$) with measures of frustration (.44), general satisfaction (-.28), supervisor satisfaction

(-.43), pay satisfaction (-.28), locus of control (.14), and supervisory culpability (.37). Reenlistment intentions (-.07) were also significantly ($p < .05$) associated with total scale score on the environmental questionnaire. Further, significant correlations which were theoretically appropriate were obtained between scores on the above outcome measures and scores on the 14 separate constraint dimensions. No correlations between Air Force-wide performance measures and either scale or total scores on the environmental constraint questionnaire were reported.

In order to examine the generalizability of these findings across Air Force jobs, additional data were collected with this environmental constraint questionnaire for several AFSC (e.g., Fire Protection Specialist, Aircraft Systems Mechanic, and Security Specialist). The sample size ranged from 59 to 100 in the various AFSC. Besides the previous measures of affective reactions to the job, performance measures (e.g., scores on specific and general Air Force occupational performance scales) were examined as outcome criteria. Contrary to the Peters and O'Connor (1980) conceptual model of situational influences, constraints tended not to significantly influence performance outcomes, and did not interact with ability or motivation in the prediction of performance. However, results did corroborate previous findings that constraints decreased satisfaction, and increased frustration and intentions of leaving the Air Force.

Although this research has shown that environmental constraint factors impact negatively on laboratory task performance and can result in negative affective reactions to the jobs in applied settings, research data have only begun to accumulate on the relationships between environmental variables and performance criteria for different jobs.

Future research is needed to (1) develop environmental taxonomies and measure environmental variables that operate in specific occupational settings (e.g., the Army environment), (2) examine the assumptions of the Peters and O'Connor (1980) model of situational constraints for other applied work settings, and (3) assess whether positive and negative environmental factors act as moderators of the relationships between task-relevant abilities, motivation, affective reactions to the job, and performance criteria. The present research represents an important step towards addressing the first two of these issues. Specifically, the research described in this report will: (1) discuss the development of a taxonomy of the Army work environment using a critical incident methodology and describe the test development of a 110 item Army Work Environment Questionnaire (AWEQ) and (2) examine relationships between scores on this environmental questionnaire (AWEQ) and measures of both maximal and typical soldier performance.

In this research, the performance measures are conceptualized on a continuum. The hands-on and job knowledge tests, which represent the "can do" or skill/ability-related proficiency aspects of performance, are viewed as more maximal, objective and direct criteria. In comparison, the supervisory and peer ratings which represent the "will do" or affective/motivational aspects of performance are assumed to be more typical, subjective and indirect criteria. When job performance measures are described along a continuum, a comprehensive view of the criterion space is advanced (Asher & Sciarrino, 1974; Guion, 1965; Landy & Trumbo, 1980;

Human Resources Research Organization, American Institutes for Research, Personnel Decisions Research Institute and the Army Research Institute, 1983). A future report on the results from the Project A concurrent validation data collection will examine the role of environmental variables as moderators of predictor (e.g., ability and temperament) and performance criteria.

CHAPTER 2: DEVELOPMENT OF THE ARMY WORK ENVIRONMENT QUESTIONNAIRE

The research described in this report was conducted in four stages. The first stage involved identification of environmental/organizational influences that impact on Army-wide performance. The second stage focused on the development of an Army Work Environment Questionnaire (AWEQ) to measure these environmental influences, and subsequent pilot testing of the instrument. The third and fourth stages of the research involved two field tests exploring relationships between AWEQ scale and factor scores and a set of performance criteria (e.g., overall supervisory and peer ratings of soldier effectiveness, job knowledge tests, and hands-on measures).

Stage I: Identification of Environmental Influences on Soldier Performance

A taxonomy of first-tour environmental influences on Army performance was derived through application of a critical incident methodology (Planagan, 1954). An open-ended narrative questionnaire was used to generate behavioral examples in which environmental and organizational factors were described as responsible for either effective or ineffective soldier performance. Appendix A provides a copy of the critical incident form used in this research. This critical incident approach to the identification of environmental factors is consistent with and parallels the work of other researchers (e.g., Peters, O'Connor, & Eulberg, 1984; Schneider, 1978).

Specifically, a series of six workshops were held at Forts Benning, Riley, and Carson over a nine month time period in 1983-1984. A combined sample of 67 commissioned officers (e.g. majors and captains, $N = 34$) and non-commissioned officers (NCO), $N = 33$, who were incumbents from a wide array of Army military occupational specialties (MOS), participated in the development of the environmental taxonomy. During this research phase, these Army experts provided written examples of environmental and organizational factors that influenced performance both positively and negatively.

In order to generate examples of such organizational and environmental influences on performance, research participants were instructed to focus on incidents involving individual soldiers where environmental factors beyond the control of the soldier made a significant difference in his or her performance.

The 282 critical incidents collected from these workshops were independently content-analyzed by a group of six judges, psychologists from the Army Research Institute and Personnel Decisions Research Institute. Each judge independently developed a category system and sorted the critical incidents on the basis of perceived similarity of content into these dimensions. After the critical incidents were categorized, judges discussed and reconciled any differences in the dimensions. Each environmental dimension was then defined jointly by the group of judges according to the critical incidents which were representative of the specific dimension. While defining the environmental dimensions, judges tried to maintain a close correspondence between the actual content of the critical incidents and resulting definitions.

The taxonomic work of Peters and O'Connor (1980) was expanded in this research by identifying facilitating as well as constraining aspects of environmental variables. Table 1 presents the taxonomy of the 14 environ-

Table 1

A Taxonomy of Army Work Environment Dimensions

1. Resources/Tools/Equipment
2. Workload/Time Availability
3. Training in MOS Skills/Opportunity to Improve MOS Skills
4. Physical Working Conditions
5. Job Relevant Authority
6. Job Relevant Information
7. Perceived Job Importance
8. Work Assignment
9. Changes in Job Procedures and Equipment
10. Reward System
11. Discipline
12. Individual Support
13. Job Support
14. Role Models

Note. The first nine environmental dimensions are related more directly to the job, whereas the remaining five dimensions are more climate-oriented.

mental dimensions resulting from the content-analysis of the critical incidents. Appendix B defines the 14 environmental dimensions. These dimensions tended to be similar to others identified in the civilian and military literature (Eulberg et al., 1984). Further, this environmental taxonomy contains an empirically derived set of variables, whose individual influences on performance criteria are hypothesized to range from facilitating some baseline performance toward more maximally effective samples of work behavior to inhibiting or constraining typical work performance.

Conceptually, the first nine environmental factors are "job-related", whereas the remaining five dimensions are more indicative of climate variables. The definitions of these environmental and organizational factors and the corresponding items on the AWEQ attempt to focus on the more observable characteristics and descriptive qualities of the Army work environment rather than on evaluative components of the environment. This perspective on the development of the taxonomy and questionnaire items was taken to minimize the errors associated with purely perceptual data.

After the environmental dimensions were defined, a retranslation procedure was conducted where the entire group of critical incidents was sorted back into the 14 dimensions by three of the previous judges. The critical incidents were sorted correctly into their respective dimensions about 76% of the time.

Stage II: Development of the Army Work Environment Questionnaire (AWEQ)

A 110-item multiple choice questionnaire was developed to measure the environmental dimensions identified in Stage I of the research. Appendix C contains both the 110 item AWEQ used in the field tests and the revised version of the instrument administered in the Concurrent Validation. Once the environmental dimensions were defined, they were divided among four psychologists for the construction of questionnaire items. Each psychologist wrote items for four environmental dimensions. Each of the 14 environmental dimensions was treated as a scale on the Army Work Environment Questionnaire, and items were written to cover the content of the separate dimensions. The number of items used to measure the environmental dimensions ranged from a low of 6 for such factors as Physical Working Conditions and Job-Relevant Authority to a high of 11 items for the Training dimension.

The items on the AWEQ are answered using a 5-point frequency rating scale (e.g., 1 = Very Seldom or Never to 5 = Very Often or Always). Respondents are asked to indicate "how often" each environmental situation described in a questionnaire item occurs on their present job. For example, items consisted of statements such as "In your job, changes in equipment are introduced with little or no explanation" (Changes in Job Procedures and Equipment), or "If you needed help, you could depend on your co-workers to help you perform your required job tasks," (Job Support). An effort was made to balance the number of positively and negatively worded items. Appendix D shows the assignment of AWEQ items to their conceptual dimensions.

Pilot Testing of the Army Work Environment Questionnaire

The Army Work Environment Questionnaire (AWEQ) was pilot tested on 102 first-term Army enlisted personnel at Ft. Polk, Louisiana. The total sample contained 42 soldiers from the 95B MOS (Military Police) and 60 soldiers from the 71L MOS (Administrative Specialist).

The performance criteria used in the pilot research were supervisory and peer ratings of overall soldier effectiveness. This rating of overall soldier effectiveness was made separately by supervisors and peers who had knowledge of individual soldier performance in 11 categories (e.g., Technical Knowledge/Skill) of Army-wide performance. Overall soldier effectiveness ratings were made on a 7-point scale (i.e., ranged from 1 or 2 = "Below Standard: Soldier performs poorly in important effectiveness areas; does not meet standards nor expectations for adequate soldier performance" to 6 or 7 = "Soldier performs excellently in all or almost all effectiveness areas; exceeds standards and expectations for soldier performance").

The rating scales were administered to groups of 15 or fewer peers or supervisors of the target ratees. On average, 1.90 supervisor raters and 3.26 peer raters provided these performance evaluations on the Army-wide rating scales. During the peer rating sessions, raters (who were in addition ratees and members of the sample) also responded to the AWEQ.

Analyses of results from piloting the AWEQ (1) evaluated the adequacy of discrimination indices (e.g., estimates of internal consistency reliability) for the 110 items and 14 scales on the measure and (2) examined the relationships between scores on the AWEQ dimensions and preliminary Project A performance criteria.

Scores on the 14 dimensions were derived such that mean ratings of zero were indicative of a neutral work environment with respect to facilitating or inhibiting conditions. Positive mean scale values represented positive or favorable descriptions of the work environment, whereas negative scale means indicated more negative or unfavorable assessments of the work setting. The range of means and standard deviations observed for the AWEQ scales suggested that soldiers tended to provide an overall positive description of the Army work environment, with scale means for Perceived Job Importance and Physical Working Conditions above the scale midpoint (+2.5). In contrast, although the AWEQ dimensions of Training and the Reward System were viewed somewhat negatively, these variables were not described as severe constraints on performance.

Item to scale correlations, internal reliability estimates, and scale intercorrelations were computed to determine the homogeneity of the 14 AWEQ dimensions. Findings showed that the majority of the AWEQ items correlated highest with their assigned dimension. In the small number of cases (less than 10%) where items appeared to be misclassified (i.e., items had higher correlations with a non-assigned dimension), item content and reliability was examined to decide whether to revise item content or reassign an item to a more appropriate dimension. Measures of internal consistency reliability (i.e., alpha coefficients) for the AWEQ dimensions ranged from .50 for Physical Working Conditions to .83 for the Reward System. The average alpha coefficient across all 14 scales was .70. Scale intercorrelations showed that the climate-oriented AWEQ dimensions (i.e., Scales 10-14, average $r = .60$) were more highly interrelated than the job-oriented dimensions (i.e., Scales 1-9, average $r = .38$).

Overall, these findings suggest that some revisions in the AWEQ were necessary to increase the homogeneity of the environmental scales. Subsequent item revisions and factor analysis work with larger field test samples are described later in the report.

In analyses of pilot data, significant ($p < .05$) correlations were obtained between scores on the AWEQ scales and both supervisory and peer ratings of overall soldier effectiveness. Specifically, supervisory ratings are significantly related to the more objective job scales of Training ($r = .20$), Job-Relevant Authority ($r = .24$) and Work Assignment ($r = .23$), as well as to the climate-oriented scales of Reward System ($r = .27$). In comparison, the peer overall effectiveness ratings were significantly correlated with such AWEQ job scales as Physical Working Conditions ($r = .22$), Job-Relevant Information ($r = .26$), and Changes in Job Procedures/Equipment ($r = .36$). Significant relationships were also observed between peer performance ratings and the climate dimensions (e.g., $r = .20$ for Reward system and $r = .24$ for Role Models). Further, these preliminary data suggest that environmental influences may relate differently to different performance criteria.

Several conclusions emerged from the analyses of AWEQ pilot data. This research identified 14 conceptual environmental dimensions that are hypothesized to influence performance in the Army work environment. The Army environmental taxonomy corresponds reasonably well with other civilian and military taxonomies (e.g., Kulberg, O'Connor, Peters, & Watson, 1984). Further, although some redundancy was observed among the AWEQ scales particularly for the climate-oriented dimensions, correlations between individual items and their own dimensions were higher than correlations between these items and other dimensions in almost all cases.

Although previous empirical research (e.g., Peters, O'Connor, & Kulberg, 1984) found significant relationships between environmental variables and performance only in experimental laboratory settings, this pilot study found significant relationships between six scales on the AWEQ (e.g., Reward System) and performance (e.g., overall ratings of soldier effectiveness). Despite the correlational nature of these preliminary findings, it is encouraging that some statistically significant relationships between environmental predictors and performance measures were obtained in an applied military setting. Hence, these results provide support for the theoretical work of Peters and O'Connor (1980), which contends that environmental factors can directly influence performance on the job. [A more detailed discussion of the piloting of the Army Work Environment Questionnaire can be found in a conference paper by Olson, Borman, Roberson, and Rose (1984).]

Importantly, the Project A research program provided an opportunity to revise the AWEQ. This was needed to improve the psychometric properties (e.g., internal scale reliabilities) of the instrument and to enhance the measurement of these environmental factors. Further, predictor and criterion data collected during the Project A field tests provided additional opportunities to examine relationships between AWEQ scales and factors, and a more comprehensive set of both typical and maximal performance measures, than were available for this pilot test.

CHAPTER 3: FIELD TEST PROCEDURES FOR THE AWEQ

Sample

During this research, data were collected on two waves of first-tour soldiers, who had 1-3 years of service. These two separate data collection waves were known as the Batch A and B field tests. The Army Work Environment Questionnaire (AWEQ) and a set of performance measures were administered in the Batch A field test to 548 first-term enlisted personnel stationed at three Continental United States (CONUS) and two European Army (USAREUR) installations. This sample included 150 cannon crew members (13B MOS), 155 motor transport operators (64C MOS), 129 administrative specialists (71L MOS), and 114 military police (95B MOS).

The Batch B field test sample contained 821 first-term enlisted personnel from five Army jobs. There were 178 infantrymen (11B MOS), 172 armor crewmen (19E MOS), 148 radio teletype operators (31C MOS), 156 light wheel vehicle mechanics (63B MOS), and 167 medical care specialists (91A MOS). These MOS were sampled at four CONUS and two USAREUR installations. Table 2 displays the number of soldiers tested by location and MOS during the Project A field tests.

Table 2

Description of the Field Test Samples

Army Installation	MOS									Total
	11B	13B	19E	31C	63B	64C	71L	91A	95B	
Fort Hood							48		42	90
Fort Lewis	29		30	16	13			24		112
Fort Polk	30		31	26	26		60	30	42	245
Fort Riley	30		24	26	29		21	34	30	194
Fort Stewart	31		30	23	27			21		132
USAREUR	58	150	57	57	61	155		58		596
Total	178	150	172	148	156	155	129	167	114	1369

Note. Soldiers occupied skill level one positions in their MOS.

Field Test Measures

An assessment battery containing the Army Work Environment Questionnaire (AWEQ) and a comprehensive set of typical (e.g., supervisory ratings) and maximal (e.g., job knowledge test) performance measures was used in the two field tests.

Army Work Environment Questionnaire (AWEQ). The 110 item Army Work Environment Questionnaire, as described above, was administered in both the Batch A and Batch B field tests. Since analysis of Batch A data had indicated that less than 10% of the AWEQ items had low reliabilities and additional work was still required to refine the factor structure of the instrument, items were not deleted prior to the Batch B field test. Although relationships between performance criteria and the conceptual scales from the environmental taxonomy were of research interest, independent replication of the AWEQ factor structure was emphasized.

Job Performance Measures. A complete description of the test development work related to typical and maximal performance criteria can be obtained from other Project A reports. Specifically, the Army-wide rating scales (Borman, Pulakos, & Rose, 1985), hands-on proficiency measures and job knowledge tests (Campbell, Campbell, Rumsey, & Edwards, 1985), and MOS-specific behavior-based rating scales (Toquam, McHenry, Corpe, Rose, Lammelin, Kanery, Borman, Mendel, & Bosshardt, 1985) were developed and field tested for each of the nine Army MOS.

The typical performance criteria used in the Batch A field test included supervisory and peer ratings of overall soldier effectiveness, NCO Potential, and eleven separate ratings on dimensions of Army-wide performance (e.g., technical knowledge, physical fitness, self-control, etc.). Separate behaviorally-anchored rating scales (BARS), derived from a critical incident job analysis procedure, were used to measure both the MOS (job)-specific and Army-wide components of soldier performance and effectiveness on a 7-point behavior rating scale. For each research participant in the five Batch B MOS, an Army-wide and MOS-specific rating was computed by averaging the performance ratings across all individual dimensions for supervisors and peers separately. These average Army-wide and MOS-specific performance ratings were more reliable than ratings on the overall effectiveness and overall performance dimensions previously used as typical criteria in the Batch A field test.

The maximal performance criteria used in both field tests included hands-on (work sample) tests and job knowledge measures. The hands-on tests for each MOS consisted of 15 tasks identified as important and representative for the MOS. The individual performance components of each task were scored by trained raters on a pass-fail basis, and an overall hands-on score was computed for each soldier by averaging the proportions passed across the tasks tested. In both field tests, multiple-choice tests were developed for 30 tasks in each MOS and were revised to better assess job knowledge relevant to these important tasks for an MOS. An overall job knowledge test score for each research participant was derived as a percentage of the number of knowledge test items answered correctly.

Procedures

The rating scales were administered to groups of 15 or fewer peers or supervisors of the target ratees after they were trained using a combination error and accuracy training program (e.g., Pulakos, 1984). Specifically, a three-part rater training program was administered by trained Project A staff members. First, criteria for rater selection were carefully laid out. Researchers sought two supervisors and four fellow

first-tour soldiers who were knowledgeable about each ratee's performance and had been working with him or her for a minimum of two months to provide soldier effectiveness ratings. The second part of the approach involved convincing raters that the ratings were for research purposes only and would be kept confidential. The third component of the training provided the raters with information on common rating errors (i.e., halo, stereotyping, and "one incident of performance error") through a lecture-discussion format. To ensure that peer raters were acquainted with the behavior-based rating scales and had some practice with the scales, they made self-ratings on the Army-wide BARS. Concurrently with these assessments, first-tour soldiers participating in the research were administered: (a) the Army Work Environment Questionnaire and (b) the appropriate job knowledge and hands-on test. For all respondents, scores on the Army Work Environment Questionnaire were merged with scores from the maximal and typical performance criteria for analyses.

CHAPTER 4: AWEQ FIELD TEST RESULTS

Stage III: Descriptive Statistics and Factor Analyses of the MOS A and MOS B Field Tests

Descriptive Statistics

Table 3 presents the means, standard deviations, and reliability coefficients for the research measures administered to Batch A and B field test samples. The data show that such dimensions from the Army environmental taxonomy as Perceived Job Importance, Discipline, Physical Working Conditions, Individual Support, and Job Relevant Information were described positively. In contrast, descriptions of Training, Reward System, Job Support, and Work Assignment were viewed negatively. Generally, these patterns of mean ratings for AWEQ dimensions were also observed within each MOS and installation. These findings suggest that there is some correspondence across different samples of Army enlisted personnel with respect to descriptions of the Army work environment.

In general, estimates of internal consistency reliability indicate that the climate scales were slightly more reliable than the job-oriented scales for both field tests, with alpha coefficients ranging from .56 to .85. Overall, the AWEQ dimensions for the MOS A field test were more reliable than the same dimensions in the MOS B field test with mean alpha coefficients across dimensions of .70 versus .67. In the early stages of developing research measures, reliabilities in the magnitude of .50 or .60 are adequate for test development purposes (Nunnally, 1967). Uncorrected reliability estimates displayed in Table 3 show that the job knowledge tests tended to be the most reliable of the maximal performance criteria and the Army-wide BARS (supervisors) had the largest coefficients of the typical performance measures.

Table 4 displays the intercorrelation matrix of the AWEQ scales for the Batch A and Batch B field tests. In the MOS A sample, a mean intercorrelation of .41 was observed for the job-oriented dimensions as compared to a higher mean intercorrelation of .63 for the climate-related dimensions. For the job scales, high intercorrelations were observed between Training and Work Assignment ($r = .65$) and Job-Relevant Authority and Job-Relevant Information ($r = .62$). In contrast, high intercorrelations were found between the climate-oriented dimensions of Individual Support and Job Support ($r = .78$). These patterns of intercorrelations suggest that a large amount of shared variance exists between some of the AWEQ dimensions.

The intercorrelation matrix for the AWEQ scales in the MOS B field test show that the climate-oriented dimensions are again more highly related than the job-oriented factors. For example, Job Support was strongly associated with the Reward System ($r = .73$), Individual Support ($r = .72$), and Role Models ($r = .65$). The Job-Relevant Authority dimension, conceptualized as a job-related factor, had its strongest associations with the climate scales of Role Models ($r = .61$) and Job Support ($r = .64$). These similar patterns of intercorrelations observed in the field tests suggest that a taxonomy of fewer than 14 dimensions should

Table 3

Means, Standard Deviations, and Reliability Coefficients of the Research Measures for the Field Tests

Measures	MOS A Field Test			MOS B Field Test		
	<u>M</u>	<u>SD</u>	<u>r^a</u>	<u>M</u>	<u>SD</u>	<u>r^a</u>
Overall Effectiveness (Peers)	4.74	.94	.60-.79	4.63	.87	.47-.71
Overall Effectiveness (Supervisors)	4.48	1.18	.62-.82	4.49	1.07	.54-.74
NCO Potential (Peers)	4.48	1.15	.60-.69	4.30	1.16	.57-.74
NCO Potential (Supervisors)	4.50	1.38	.61-.68	4.18	1.37	.53-.74
Army-wide BARS (Peers)	4.62	.69	.82-.88	4.52	.72	.78-.86
Army-wide BARS (Supervisors)	4.61	.84	.81-.85	4.50	.84	.81-.86
MOS-specific BARS (Peers)	4.68	.65	.49-.65	4.60	.66	.76-.86
MOS-specific BARS (Supervisors)	4.74	.78	.45-.57	4.62	.77	.78-.87
Hands-on Test	65.08	9.68	.30-.82	71.72	16.11	.35-.56
Job Knowledge Test	60.40	10.58	.63-.91	62.47	10.63	.84-.91
AMEQ Scales (N of items): ^b						
Resources ((n = 7)	.19	5.99	.85	-.99	4.96	.75
Workload (n = 8)	-.52	4.69	.57	-.67	4.34	.58
Training (n = 11)	-2.56	6.15	.68	-3.02	5.91	.64
Physical Working Conditions (n = 6)	1.73	4.07	.56	.67	3.83	.57
Job Authority (n = 6)	-.31	4.07	.64	-.25	3.65	.57
Job Information (n = 8)	1.34	4.81	.62	.45	4.60	.67
Perceived Job Importance (n = 7)	3.09	4.90	.70	1.76	4.65	.67
Work Assignment (n = 9)	-1.00	6.55	.76	-1.90	6.80	.70
Changes in Job Procedures (n = 8)	-.41	4.80	.59	-.89	4.21	.58
Reward System (n = 7)	-1.84	5.62	.80	-1.75	5.14	.78
Discipline (n = 6)	.79	4.34	.65	1.10	4.07	.65
Individual Support (n = 9)	1.38	6.20	.75	.79	5.46	.73
Job Support (n = 8)	-1.48	5.64	.76	-1.42	5.12	.72
Role Models (n = 10)	.82	6.55	.72	.74	5.98	.71

Note. The N for the MOS A field test ranged from 515 to 528 and the N for the MOS B field test ranged from 718 to 750.

^aFor performance ratings, the range of interrater reliabilities across MOS are reported.

For Hands-on and Job Knowledge tests, the range of split-half reliabilities across MOS are reported.

For the environmental scales, Cronbach's alpha coefficients are used as measures of internal consistency.

^bMean scale scores were computed such the "0" is a neutral environment. Positive mean values indicate positive descriptions of the environment for that scale. Negative scale means indicate the opposite.

Table 4

ANEQ Scale Intercorrelations for the Field Tests

ANEQ SCALES	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Resources/Tools/Equipment	44													
2. Workload/Time Availability	52	31												
3. Training	29	26	23											
4. Physical Working Conditions	55	48	23	51										
5. Job Relevant Authority	47	52	39	51	62									
6. Job Relevant Information	52	50	42	50	60	40								
7. Perceived Job Importance	21	20	30	22	32	33	43							
8. Work Assignment	26	24	66	18	35	36	43	40						
9. Changes in Job Procedures/Equipment	49	51	44	43	50	51	24	40	48					
10. Reward System	38	40	40	37	58	56	29	33	45	54				
11. Discipline	31	31	18	37	47	48	30	14	36	45	54			
12. Individual Support	31	32	35	36	56	60	34	27	41	62	54	78		
13. Job Support	39	40	44	38	64	62	34	37	48	73	48	72	69	
14. Role Models	41	46	44	42	61	60	34	35	50	56	48	58	65	

Note. All ANEQ scale intercorrelations are significant at $p < .05$.

Scales 1-9 are more job-oriented and scales 10-14 are more climate-oriented.

Correlations above the diagonal are for the MOS A field test and those below the diagonal are for the MOS B field test.

permit a more parsimonious explanation of the underlying Army work environment constructs.

Factor Analysis of the AWEQ Items for the MOS A Field Test

Factor analysis was conducted to enhance the homogeneity of the individual scales and to help in decisions to reduce items from the instrument. A principal components factor analysis with a varimax rotation was conducted on the AWEQ items and a six factor solution emerged. Three climate-oriented factors were identified: (a) Individual Support, (b) Respect for the Military, and (c) Unit Cohesiveness/Cooperation. In addition, three job-oriented factors which included (a) Resources/Tools/Equipment/Physical Working Conditions, (b) Skills Utilization and (c) Workload/Time Availability were found. Table 5 summarizes the item to factor loadings on the AWEQ for the MOS A field test. This preliminary factor structure of the Army Work Environment Questionnaire for the MOS A sample demonstrates how the 14 dimensions in the conceptual taxonomy collapse. Specifically, the Training and Work Assignment dimensions become a Skills Utilization factor. The Support factor contains items from the Job and Individual Support dimensions, as well as the Reward System. A large job factor was found which had items loading from the Resources/Tools/Equipment and Physical Working Conditions dimensions.

Although the Unit Cohesiveness/Cooperation factor was not conceptualized as a dimension in the original Army environment taxonomy, the six items which define this factor are drawn from a mixture of the climate-oriented AWEQ dimensions. Table 5 shows high loadings for the items on the Support, Skills Utilization, and Unit Cohesiveness/Cooperation factors, with the majority of the loadings around .60 or higher.

Intercorrelations between the AWEQ factors and estimates of internal consistency reliability are presented in Table 6. Moderately high intercorrelations were observed between the major climate factor of Support and Respect for the Military ($r = .62$) and Unit Cohesiveness/Cooperation ($r = .46$). In comparison, the more job-oriented Skills Utilization factor was not highly associated with either Resources/Tools/Equipment and Physical Working Conditions ($r = .07$) or Time Availability/Workload ($r = .08$) which indicates that these job factors are measuring somewhat different components of the Army work environment. The alpha coefficients for the AWEQ factors, ranging from .68 to .92, are good for a research instrument and are higher than those observed for the 14 AWEQ scales. Although the Military Respect and Time Availability/Workload factors have the lowest alpha coefficients, this finding may be related to the small number of items loading on these factors.

Factor analysis of the AWEQ and factor intercorrelations for the MOS A field test data suggest that replication of this factor structure with other Army samples is needed. Hence, in order to maintain comparability of data for subsequent analysis and interpretation of the AWEQ factor structure, all 110 items on the questionnaire were retained for administration in the MOS B field test.

Table 5
Factor Analysis of the ANEQ for MOS A Field Test

FACTOR I		FACTOR II		FACTOR III		FACTOR IV		FACTOR V		FACTOR VI	
Individual Support N = 16 Items		Resources/Tools/ Equipment/Working Conditions N = 20 Items		Skills Utilization N = 9 Items		Respect for Military N = 7 Items		Time Availability/ Workload N = 6 Items		Unit Commitment/ Organization N = 6 Items	
Item No.	Factor Loading	Item No.	Factor Loading	Item No.	Factor Loading	Item No.	Factor Loading	Item No.	Factor Loading	Item No.	Factor Loading
10	.69	6	.65	1	.77	39	.40	2	.50	21	.57
31	.43	13	.49	36	.61	94	.50	15	.61	29	.68
71	.59	59	.69	49	.52	102	.40	47	.48	52	.62
108	.57	79	.63	45	.62	38	.52	64	.48	74	.62
7	.63	85	.68	60	.80	63	.44	76	.49	81	.58
41	.48	95	.58	78	.74	86	.47	92	.41	100	.67
48	.70	101	.56	89	.52	106	.47				
68	.51	9	.45	97	.65						
77	.67	35	.60	109	.63						
16	.67	105	.45								
22	.62	17	.40								
96	.67	24	.45								
99	.65	27	.47								
104	.69	40	.43								
51	.62	37	.54								
80	.62	52	.44								
		75	.40								
		20	.45								
		46	.40								
		61	.48								

Note. Criteria for inclusion of an ANEQ item: (1) Factor loading of .40 or greater (2) No double loading of the item on other factors, and (3) a minimum of three items loading on a factor.

N = 548 first-term Army enlisted personnel for Batch A field test.

Table 6

**AWEQ Factor Intercorrelations and Reliability Estimates for the
Total MOS A Field Test**

AWEQ Factors ^a	N of Items	2	3	4	5	6	<u>r</u> ^b
1. Support	16	-.27	.21	.62	-.19	.46	.92
2. Resources/Working Conditions	20		.07	-.30	.46	-.08	.89
3. Skills Utilization	9			.29	.08	.22	.86
4. Military Respect	7				-.16	.46	.75
5. Time Availability/Workload	6					-.09	.68
6. Unit Cohesiveness/Cooperation	6						.81

Note. Correlations are based on an N of 513-530.

All correlations with an absolute magnitude greater than r = .08 are significant at p < .05.

^aAWEQ factors 1, 4, and 6 are more climate-oriented, whereas factors 2, 3, and 5 are more job-oriented.

^bEstimates of reliability are alpha coefficients or measures of internal consistency.

Factor Analysis of the AWEQ Items for the MOS B Field Test

A principal components factor analysis with a varimax rotation was conducted on the 110 item AWEQ for the MOS B sample. The results suggest that the underlying structure of the AWEQ can be described by a five factor solution. The factors are: 1) Resources/Tools/Equipment, Workload/Time Availability, Changes in Job Procedures/Equipment (Factor I), 2) Individual/Job Support (Factor II), 3) Skills Utilization (Factor III), 4) Perceived Job Importance (Factor IV), and 5) Unit Cohesiveness/Cooperation (Factor V). Table 7 displays the AWEQ items and their respective factor loadings for the five factor solution. Two job-oriented factors (Resources/Tools/Equipment and Skills Utilization) emerged, with the remaining factors climate-related.

A total of 38 items from the original 110 item AWEQ appear to effectively define the AWEQ factor structure. The criteria used to evaluate AWEQ items for inclusion in the factor structure were: 1) items were required to have a factor loading of .30 or higher, 2) there was minimal double loading by an item on other factors, 3) a minimum of three items were to load on a particular factor, and 4) the item had to make sense conceptually as part of the factor. When the five factor solution was examined with respect to these inclusion criteria, the Support, Skills Utilization and Unit Cohesiveness/Cooperation factors were particularly strong with loadings generally .50 or higher. In contrast, Factor I, which is a large job-oriented factor, was conceptually ambiguous with items from three of the original AWEQ dimensions (taxonomy) defining the factor.

When comparisons were made between the AWEQ factor solutions for the MOS A and MOS B field tests, several interesting findings emerged. First, partial replication was found in MOS B for the Support, Skills Utilization and Unit Cohesiveness/Cooperation factors that were observed in MOS A. Second, the largest factor in both solutions was the job-oriented Resources/Tools/Equipment factor. Third, the somewhat weak Military Respect factor from the MOS A field test was replaced by a Perceived Job Importance factor in the MOS B analysis.

Generally, the factor loadings for AWEQ items in the MOS B field test were not as strong (.30 was the criterion used for inclusion of items) as those observed for the MOS A field test. Despite this finding, 35 items from the AWEQ were common to the factor solutions of both field tests. Overall, these findings suggest considerable correspondence in factor solutions across the two field test data sets.

Table 8 shows the factor intercorrelation matrix and the reliability estimates of the AWEQ factors for the MOS B field test. The alpha coefficients for the AWEQ five factor solution are good, ranging from .66 to .83. As was found with the Batch A data, the climate-related factors tended to be more highly intercorrelated than the job-related factors. The average intercorrelation for the climate factors is .39 and for the job factors .21. Further, Factor I, the large job-oriented Resources/Tools/Equipment factor, had higher correlations with the climate factors than with the other job factor (Skills Utilization). Although the factors

Table 7

Factor Analysis of the ANEQ for the MOS B Field Test

FACTOR I			FACTOR II			FACTOR III			FACTOR IV			FACTOR V		
Resources/Tools/Equipment/ Workload/Time Availability			Support (Individual/Job)			Skills Utilization			Perceived Job Importance			Unit Observances/ Cooperation		
Changes in Job Procedures and Equipment N = 15 Items			N = 9 Items			N = 4 Items			N = 6 Items			N = 4 Items		
Item No.	Factor Loading		Item No.	Factor Loading		Item No.	Factor Loading		Item No.	Factor Loading		Item No.	Factor Loading	
2	.48		14	.42		36	.57		19	.57		21	.51	
6	.53		48	.54		60	.69		41	.41		29	.60	
8	.45		68	.48		78	.66		52	.41		81	.42	
17	.48		71	.66		97	.57		75	.39		100	.51	
20	.43		80	.54										
27	.60		94	.53										
28	.52		96	.56										
43	.47		104	.60										
46	.59		108	.68										
47	.52													
55	.46													
61	.44													
64	.58													
85	.42													
92	.40													

Note. Criteria for inclusion of ANEQ items: 1) factor loading of .30 or greater, 2) no double loading of the item on another factor, 3) a minimum of three items loading on a particular factor, and 4) assignment of the item to the factor had to make sense conceptually.

N = 821 first-term Army enlisted personnel for Batch B field test.

Table 8

AWEQ Factor Intercorrelations^a and Reliability Estimates for the MOS B Field Test

AWEQ Factors	N of Items	2	3	4	5	<u>r</u> ^b
1. Resources/Tools/Equipment and Workload/Time Availability	15	.39	.21	.26	.19	.83
2. Support (Individual/Job)	9		.26	.43	.45	.82
3. Skills Utilization	4			.32	.19	.76
4. Perceived Job Importance	6				.28	.66
5. Unit Cohesiveness/Cooperation	4					.71

Note. Correlations are based on N ranging from 727-746.

All correlations are significant at p < .05.

Factors 1 and 3 are job-oriented and Factors 2, 4, and 5 are climate-oriented.

^aFactor intercorrelations are for the 5-factor solution.

^bEstimates of internal consistency reliability are alpha coefficients..

had less shared variance in MOS B than MOS A, some redundancies remained in this 5-factor solution.

Although the factor structure from the MOS A field test was generally replicated with the 5-factor solution in the MOS B field test, other interpretable factor structures¹ were explored that emphasized both factor loadings and significant AWEQ item to performance relationships.

After item response distributions, item-total correlations, scale intercorrelations, internal consistency indices, and factor analyses were examined, the AWEQ was reduced from the original 110 items to 53 items for the Concurrent Validation. Appendix C contains the revised Army Environment Questionnaire, a 99 item multiple-choice instrument. The first 53 items on the Army Environment Questionnaire represent the revised AWEQ and the remaining 45 items measure leadership variables not discussed in this report.²

Revisions to the AWEQ were primarily driven by the factor analysis. Also, adequate coverage of the dimensions from the original Army taxonomy was maintained. This approach to AWEQ revisions strengthened the psychometric properties of the instrument that had been administered in the field tests, but still afforded the opportunity for continued examination of interesting conceptual issues and the testing of hypotheses on environment-performance relationships with data collected during the Concurrent Validation.

Stage IV: Relationships Between AWEQ Variables and Performance Criteria for the Field Tests

Findings from the field tests consistently show significant relationships between environmental variables and Army performance measures. Further, results from the field tests tend to corroborate findings observed in the pilot research.

Table 9 summarizes the percentages of significant correlations for environment-performance relationships in the MOS A and MOS B field tests. Results displayed in the left hand panel of Table 9 apply to the MOS A field test and those in the right-hand panel address MOS B field test findings. Generally, four patterns of significant relationships were noted between AWEQ scale and factor scores and soldier performance. First, a larger number of significant correlational effects were observed between the typical measures of performance (i.e., supervisory and peer ratings) and environmental variables than for the more objective, maximal performance criteria (i.e., job knowledge tests). Second, there were more significant relationships between the typical performance measures and the

¹A detailed presentation of these factor analyses can be found in ARI Working Paper RS-WP-86-06.

²For a discussion of the relationships between leadership and job performance, readers are referred to White, Gast, Sperling, and Rumsey (1984), and White, Gast, and Rumsey (1985).

Table 9

Percentage of Significant Correlations Between Environmental Scores and Performance Criteria for the Field Tests

Performance Criteria	MOS A Field Test		MOS B Field Test	
	% of Significant Correlations		% of Significant Correlations	
	14 ASEQ Scale Scores		14 ASEQ Scale Scores	
Typical ^a vs Maximal Criteria ^b	59	36	54	29
Typical: Climate vs Job ^c	85	44	75	42
Maximal: Climate vs Job	10	50	50	17
Supervisors vs Peers	86	32	57	50
Performance Criteria	AMEQ 6-Factor Solution ^d		AMEQ 5-Factor Solution	
	AMEQ 6-Factor Solution ^d		AMEQ 5-Factor Solution	
	AMEQ 6-Factor Solution ^d		AMEQ 5-Factor Solution	
Typical vs Maximal Criteria	50	42	65	40
Typical: Climate vs Job	92	8	88	31
Maximal: Climate vs Job	33	50	50	25
Supervisors vs Peers	58	42	70	60

Note. ^aThe typical performance criteria include supervisory and peer job performance ratings.

^bThe maximal performance criteria include job knowledge tests and hands-on measures.

^cThe climate and job distinctions refer to the environmental variables from the ASEQ.

^dAMEQ factor solutions are discussed later in the article.

climate-oriented scale and factor scores than between those measures and the job-oriented dimensions. Third, there were more significant effects observed between environmental variables and supervisory ratings than between those variables and peer ratings. Fourth, the job-oriented AWEQ dimensions and factors tended to have a larger number of significant associations with maximal performance criteria than was found with the climate-oriented variables for the MOS A field test. The exact opposite pattern of relationships was noted in the MOS B field test.

Table 10 shows the correlations between scale scores on the AWEQ and both typical and maximal performance measures for the MOS A field test sample. Generally, scores across the typical performance measures in the MOS A field test data had significant positive correlations with the job-oriented AWEQ dimension of Changes in Job Procedures/Equipment and the climate-oriented scales of Discipline, Individual Support, and Role Models. Specifically, the environmental dimensions had the largest positive correlations with supervisory ratings of NCO Potential. In contrast, fewer significant associations were observed between typical performance ratings and the AWEQ scales of Workload/Time Availability, Resources/Tools/Equipment, and the Reward System.

Although fewer significant effects were observed between environmental variables and maximal performance criteria (i.e., 59% of the correlations were significant for typical measures as compared with only 36% for the maximal performance criteria, cf. Table 9), positive relationships were found for hands-on measures with such job-oriented dimensions as Training and Work Assignment. Further, negative correlations were observed between scores on job knowledge tests and such AWEQ scales as Resources/Tools/Equipment, Physical Working Conditions, and Role Models.

Table 11 presents the correlation coefficients between the 14 AWEQ scale scores and the set of performance criteria for the total MOS B sample. Also, the reader is referred to Table 9 which shows the percentage of significant correlations between environmental variables and MOS B performance criteria. Several interesting findings emerged. First, the largest correlations were found between environmental variables and typical performance measures, specifically the Army-wide BARS. In terms of the number of significant effects, 54% of the correlation coefficients between environmental variables and typical performance measures were statistically significant compared with 29% of the correlations for maximal criteria.

Second, the environmental dimensions of (a) Perceived Job Importance, (b) Discipline, (c) Individual Support, and (d) the Reward System generally tended to be significantly correlated with performance criteria for the total MOS B sample. In contrast, AWEQ scale scores on (a) Resources/Tools/Equipment, (b) Workload/Time Availability, (c) Physical Working Conditions, and (d) Changes in Job Procedures/Equipment were not significantly associated with scores on the performance measures. Although the magnitude of these environment-performance relationships are lower than those previously reported for the MOS A field test, fairly consistent trends have been observed in the pattern of significant relationships between climate-oriented AWEQ scales and performance ratings.

Table 10

Correlations Between AVEQ Scale Scores and Performance Criteria for MOS A Field Test

Performance	AVEQ ^a													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<u>Typical Performance Measures^{b, c}</u>														
Overall Effectiveness (Peers)	-.01	-.01	.13°	.04	.09	.08	.06	.06	.10°	.08	.15°	.17°	.10°	.10°
Overall Effectiveness (Supervisors)	.02	.02	.08	.11°	.15°	.14°	.14°	.11°	.09°	.16°	.21°	.24°	.21°	.17°
MCO Potential (Peers)	.06	-.01	.04	.07	.08	.06	.09	.04	.07	.06	.16°	.14°	.08	.12°
MCO Potential (Supervisors)	.14°	.08	.13°	.18°	.21°	.15°	.17°	.15°	.15°	.21°	.22°	.26°	.23°	.26°
<u>Maximal Performance Measures</u>														
Hands-on Test	-.01	.03	.22°	.08	.02	.01	0	.18°	.06	.06	.07	.08	.07	.05
Job Knowledge Test	-.27°	-.13°	.12°	-.14°	-.09°	-.09°	-.08	.07	-.13°	0	-.03	-.02	-.02	-.13°

Note. AVEQ scales 1-9 are more job-oriented and scales 10-14 are more climate-oriented.

AVEQ Scales: 1 - Resources/Tools/Equipment, 2 - Workload/Time Availability, 3 - Training, 4 - Physical Working Conditions, 5 - Job Relevant Authority, 6 - Job Relevant Information, 7 - Perceived Job Importance, 8 - Work Assignment, 9 - Changes in Job Procedures/Equipment, 10 - Reward System, 11 - Discipline, 12 - Individual Support, 13 - Job Support, 14 - Role Models.

^bThe typical performance measures were peer and supervisory ratings.

^cThe Army-wide BARS and MOS-specific BARS for supervisors and peers were not available for these analyses on the MOS A field test data.

° $p < .05$.

Table 41

Correlations Between AVEQ Scale Scores and Performance Criteria for the MOS 3 Field Test

Performance Criteria	Scale Scores on Army Work Environment Questionnaire ^a													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<u>Typical Performance Measures</u>														
Army-wide BARS (Peers)	.05	.02	.07	.08	.13	.09	.23	.07	.04	.11	.14	.18	.14	.11
Army-wide BARS (Supervisors)	.01	-.05	.08	.06	.15	.11	.17	.12	.04	.11	.13	.14	.13	.09
MOS-specific BARS (Peers)	.01	-.04	.06	.05	.07	.04	.16	.04	0	.05	.10	.09	.07	.05
MOS-specific BARS (Supervisors)	-.01	-.08	.08	.05	.06	.06	.13	.11	-.04	.05	.06	.05	.05	.05
Overall Soldier Effectiveness (Peers)	.05	-.02	.08	.06	.10	.06	.20	.06	.05	.10	.14	.14	.11	.08
Overall Soldier Effectiveness (Supervisors)	.01	-.05	.08	.07	.13	.09	.15	.12	-.01	.10	.14	.11	.10	.07
MCO Potential (Peers)	.04	0	.07	.09	.10	.06	.21	.09	.06	.07	.13	.18	.12	.09
MCO Potential (Supervisors)	.02	-.03	.07	.07	.17	.09	.16	.10	.02	.10	.12	.14	.14	.09
<u>Maximal Performance Measures</u>														
Hands-on Test	-.02	0	-.06	-.01	-.04	.02	.09	-.02	-.02	-.08	.08	.04	-.07	.04
Job Knowledge Test	-.05	-.05	-.05	.05	0	.05	.13	-.07	-.08	-.09	.13	.14	-.05	.01

Note. ^aAVEQ SCALES: 1-Resources, 2-Workload, 3-Training, 4-Physical Working Conditions, 5-Job Relevant Authority, 6-Job Relevant Information, 7-Perceived Job Importance, 8-Work Assignment, 9-Changes in Job Procedures/Equipment, 10-Reward System, 11-Discipline, 12-Individual Support, 13-Job Support, 14-Role Models.

^b $p < .05$.

Third, when relationships between typical and maximal performance measures and environmental factors were examined, a larger percentage of significant correlations were observed between these measures and climate-oriented environmental variables. It was predicted that job-oriented environmental factors should have a larger number of significant relationships with the objective, maximal performance measures, than with the supervisory and peer ratings of overall soldier effectiveness. However, these findings did not support this contention, because a larger percentage of climate-oriented factors than job-oriented factors were significantly correlated with both types of performance indices.

Fourth, consistent relationships were observed between environmental variables and typical performance measures, specifically the Army-wide BARS, regardless of whether performance was evaluated by supervisors or peers. This finding indicates the existence of some convergence across types of performance criteria with respect to the influence of environmental factors.

Since factor analyses indicated that less than 14 dimensions described the underlying Army work environment constructs, relationships between AWEQ factor scores and performance criteria were examined. For the MOS A field test, statistically significant relationships were found between the typical performance ratings and Individual Support (r s ranged from .10 to .22), Respect for the Military (r s ranged from .13 to .24), and Unit Cohesiveness/Cooperation (r s ranged .12 to .15). The Skills Utilization factor had significant relationships with scores on both the hands-on measures ($r = .21$) and the job knowledge tests ($r = .15$). Further, Job Knowledge test scores were significantly correlated ($r = .26$) with the large job factor (Resources/Tools/Equipment and Physical Working Conditions).

Table 12 displays the correlations between the AWEQ 5-factor solution and the typical and maximal performance measures for the MOS B field test. Significant relationships were found between Factor V, Unit Cohesiveness/Cooperation and both typical and maximal performance measures. The Army-wide BARS for both supervisors and peers were significantly related to Factor II, Support and Factor IV, Perceived Job Importance (r s ranged from .14 to .15 and from .15 to .21, respectively). In contrast to the finding observed for the MOS A field test, Factor III, Skills Utilization, was not significantly associated with the more objective hands-on measures and job knowledge tests.

Generally, these results tended to replicate the patterns of significant relationships found in the MOS A field test for environmental variables (scales and factors) and performance criteria. However, two differences should be noted in the correlation patterns across the field tests. For the maximal performance criteria, a greater number of significant effects were observed with climate-oriented environmental variables for the MOS B field test whereas the reverse trend was found for the MOS A field test. This contradictory finding for relationships between environmental variables and maximal performance measures may be related to sampling error and/or reliability of the environmental predictors or criterion measures.

Table 12

Correlations Between the AWEQ 5-Factor Solution and Performance Criteria for the MOS B Field Test

Performance Criteria	AWEQ Factor Scores ^{a, b}				
	1	2	3	4	5
<u>Typical Performance Measures</u>					
Army-wide BARS (Peers)	0	.14*	.05	.21*	.11*
Army-wide BARS (Supervisors)	-.01	.15*	.08*	.15*	.09*
MOS-Specific BARS (Peers)	-.05	.06	.03	.14*	.08*
MOS-Specific BARS (Supervisors)	-.07	.04	.10*	.11*	.08*
Overall Soldier Effectiveness (Peers)	-.03	.11*	.04	.19*	.11*
Overall Soldier Effectiveness (Supervisors)	-.03	.12*	.10*	.14*	.07
NCO Potential (Peers)	0	.12*	.08*	.19*	.12*
NCO Potential (Supervisors)	0	.14*	.08*	.16*	.10*
<u>Maximal Performance Measures</u>					
Hands-on Test	-.01	0	0	.06	.08*
Job Knowledge Test	-.10*	.02	-.04	.13*	.10*

Note. Correlations are based on an N of 654-674.

^aAWEQ Factors: 1 = Resources/Tools/Equipment, Workload/Time Availability, Changes in Job Procedures/Equipment; 2 = Support (Individual/Job); 3 = Skills Utilization; 4 = Perceived Job Importance; 5 = Unit Cohesiveness/Cooperation.

^bFactors 1 and 3 are job-oriented and Factors 2, 4, and 5 are climate-oriented

* $p < .05$.

Although for relationships between the typical performance measures and the AWEQ 5-factor solution for the MOS B sample, 70% of the supervisory and 60% of the peer rating correlations were significant (cf. Table 9) the highest correlations were found between climate factors and peer ratings of performance. This finding differs from that observed in the MOS A field test where a larger number of significant correlations were observed between climate factors and supervisory ratings of performance. Generally, consistent patterns of relationships between environmental variables and supervisor/peer ratings of performance initially found in the MOS A field test, were corroborated in the MOS B field test. Specifically, Table 12 shows similar patterns of correlations for the supervisory and peer ratings of NCO Potential across environmental factors.

SUMMARY

The present research identified 14 dimensions that describe environmental influences on work performance in Army settings. This Army environmental taxonomy, which contains dimensions broadly associated with job characteristics and organizational climate factors, corresponds reasonably well with other civilian and military taxonomies (e.g., Eulberg, O'Connor, Peters, & Watson, 1984). A 110-item Army Work Environment Questionnaire (AWEQ) was developed to reliably measure these environmental dimensions. The AWEQ was pilot and field tested on a sample of 1369 first-tour Army enlisted personnel from a representative group of nine military occupational specialties (MOS).

Internal consistency reliability analyses and principle component factor analyses with varimax rotations guided revisions to the 14 dimension taxonomy and indicated that a 38 item 5-factor solution provided the most parsimonious statistical explanation of the underlying Army work environment constructs. The 5-factor solution includes the following factors: 1) Resources and Equipment, 2) Support, 3) Skills Utilization, 4) Perceived Job Importance, and 5) Unit Cohesiveness and Cooperation. In order to maintain adequate coverage of such environmental dimensions as Discipline, Role Models, and Job Relevant Authority, which had significant correlations with performance criteria, a total of 53 items from the AWEQ was retained and administered in the concurrent validation.

Correlational analyses were used to examine relationships between the AWEQ variables and the comprehensive set of job performance ratings and the more objective hands-on and job knowledge tests for the Batch A and B field tests. Several major findings can be identified.

Generally, research participants tended to describe the Army work environment more positively with respect to such variables as Perceived Job Importance, Physical Working Conditions, Discipline, and Individual Support. In contrast, environmental dimensions related to Training, Work Assignment, Job Support, and the Reward System tended to be perceived more negatively.

Although the magnitude of the correlations between environmental variables and performance were weak (i.e., on the average the significant r s ranged from the low teens to the mid-twenties), a number of consistent trends were found in the pattern of relationships. In both field tests, the largest number of significant relationships was observed between environmental variables and the typical performance ratings. Although fewer significant correlations were found between the more objective maximal performance measures and environmental influences, significant relationships were observed between scores on the job knowledge tests and hands-on measures and such theoretically appropriate environmental variables as Training and Work Assignment. Contrary to O'Connor, Peters, Pooyan et al. (1984), these data do not consistently show that environment to performance associations are higher when more objective criteria as opposed to ratings are used.

In both the Batch A and B field tests, the largest number of significant relationships were found between the typical performance ratings and the climate-oriented environmental variables. Specifically, consistent relationships were noted between supervisory ratings and the environmental dimensions of Individual/Job Support, Discipline, and Role Models. These findings were replicated in the environmental factor-performance associations, where significant positive correlations were observed between performance ratings and such environmental factors as Support, Perceived Job Importance, and Cooperation/Cohesiveness. These findings tentatively suggest that the use of an interpretable factor solution as opposed to summated environmental composite scores discussed previously in the constraint research, may provide better conceptual and operational descriptions of environment-performance relationships.

Although for the typical performance criteria more significant effects were observed between environmental variables and supervisory measures, a high degree of correspondence was found in the magnitude of the correlations regardless of whether performance was evaluated by supervisors or peers. This finding suggests the presence of some convergence for the different performance measures with respect to the influence of environmental variables.

Despite the correlational nature of these findings, it was encouraging that some statistically significant relationships were obtained between environmental variables/factors and performance measures in an applied Army work setting. Prior to this Army research, environmental influences were only associated significantly with performance on analog laboratory tasks and in civilian managerial work environments. The results from Army enlisted personnel extend the empirical civilian research of Steel and Mento (1986) and Peters and O'Connor (1980) and their colleagues, to applied Army work environments. Specifically, O'Connor et al. (1984) found that environmental constraints accounted for only 1% of the variance in performance and other work-related criteria, and Steel and Mento (1986) have shown that a composite index of constraint explained 13% of the variance in supervisory appraisals and 10% of the variance in self appraisals. In comparison, these results from Army enlisted personnel show that up to 7% of the criterion variance is explained by environmental variables (significant r s ranged from .09 to .26 between performance measures and environmental variables).

Besides expanding the knowledge base on the relationships between environmental variables and performance to Army work settings, the present research extends previous work on environmental constraints in two important ways. First, the Army Work Environment Questionnaire (AWEQ) was developed to assess specifically environmental variables that were described as impacting both negatively and positively on soldier performance. Prior to this effort, situational constraint research tended to emphasize why performance was ineffective and did not identify variables that influenced more effective or maximal levels of job performance. Second, since this research was conducted as a component of a larger Army selection and classification project, the opportunity existed to use a comprehensive set of previously uninvestigated performance criteria. These measures included not only supervisory and peer behaviorally-anchored performance ratings, but also more objective criteria including job

knowledge tests and hands-on measures. Further, the initial use of peer performance ratings in this research demonstrated some consistency across multiple rating sources (supervisor vs. peer) with respect to the influence of environmental variables.

Although the magnitude of the environment-performance correlations was smaller than expected, these findings may be related to: (1) a lack of sufficiently constraining or facilitating conditions on the part of the environmental variables themselves (few environmental variables received ratings at the extremes of the scale which suggests that the Army work environment was not perceived as overly facilitating or constraining), (2) contextual factors such as raters adjusting their performance evaluation for the influences of specific work environments or (3) reliability of both the environmental predictors and performance criteria (.56 to .85 and .30 to .91 (cf. Table 2), respectively).

In summary, it would appear based on the large samples used in this field research and the comprehensive set of performance criteria examined, that these Army findings replicate and extend previous empirical civilian research on relationships between environmental variables and performance. Whether the low correlations observed in this research and previous studies for environment-performance relationships actually indicate that environmental factors are primarily "nuisance variables" and do not act as major facilitators or inhibitors of effective job performance, should continue to be an active area for research.

Upon completion of the Batch A and B field tests, a concurrent validation, which involves the administration of the experimental predictor battery and new criterion measures from Project A to approximately 10,000 first term soldiers in 19 MOS, will be initiated. Subsequent research, which uses Project A concurrent validation data, will apply path-analytic and hierarchical regression models to further explore the contributions to soldier performance of individual differences and work environment factors. Specifically, whether environmental factors interact with individual differences in the prediction of performance or moderate relationships between other predictors (e.g., ability and temperament variables) and performance criteria should be examined. Further research is needed to: (1) develop environmental taxonomies in other organizational settings, (2) improve the measurement of performance and other work-related variables, (3) examine the differential impact of environmental variables for a diverse group of jobs, and (4) conduct unit-level analysis of environmental variables to determine whether homogeneity of environmental perceptions exists across similar work groups.

REFERENCES

- Asher, J. J., & Sciarrino, J. A. (1974). Realistic work sample tests: A review. Personnel Psychology, 27, 519-533.
- Bandura, A. (1978). The self system in reciprocal determinism. American Psychologist, 33, 344-358.
- Borman, W. C., Pulakos, E. O., & Rose, S. R. (1985). Report on the Development and Field Test of Army-Wide Rating Scales and the Rater Orientation and Training Program. Alexandria, VA: Human Resources Research Organization.
- Campbell, C. H., Campbell, R. C., Rumsey, M. G., & Edwards, D. C. (1985). Development and field test of Project A task-based MOS specific criterion measures. Alexandria, VA: Human Resources Research Organization.
- Campbell, J. P., & Pritchard, R. D. (1976). Motivation theory in industrial and organizational psychology. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 63-130). Chicago, IL: Rand McNally.
- Dunnette, M. D. (1976). Aptitude, abilities, and skills. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 473-520). Chicago, IL: Rand McNally.
- Eulberg, J. R., O'Connor, E. J., Peters, L. H., & Watson, T. W. (1984). Performance constraints: A selective review of relevant literature. Psychological Documents.
- Flanagan, J. C. (1954). The critical incident technique. Psychological Bulletin, 51, 327-358.
- Frederiksen, N., Jensen, O., & Beaton, A. (1977). Prediction of organizational behavior. New York: Pergamon Press.
- Guion, R. M. (1965). Personnel testing. New York: McGraw-Hill.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. Journal of Applied Psychology, 60, 159-170.
- Human Resources Research Organization, American Institutes for Research, Personnel Decisions Research Institute, and Army Research Institute (1983). Improving the selection, classification, and utilization of Army enlisted personnel, Project A: Research Plan. Research Report 1332. (AD A129 728)
- James, L. R., & Jones, A. P. (1974). Organizational climate: A review of theory and research. Psychological Bulletin, 81, 1096-1112.

- Kane, W. D. (1981). Task accomplishment in an Air Force maintenance environment. (AD-A101 108/9). Bolling AFB, D.C.: Air Force Office of Scientific Research (NL) (80-0146).
- Landy, F. J., & Trumbo, D. A. (1980). Psychology of Work Behavior. Homewood, IL: Dorsey.
- Magnusson, J. (1981). Toward a psychology of situations: An interactional perspective. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Naylor, J. D., Pritchard, R. D., & Ilgen, D. R. (1980). A theory of behavior in organizations. New York: Academic Press.
- Nunnally, J. C. (1967). Psychometric theory. New York: McGraw-Hill.
- O'Connor, E. J., Peters, L. H., & Segovia, J. (1980, August). Situational constraints, task-relevant abilities, and experienced frustration. Paper presented at the annual Meeting of the Academy of Management, Detroit, MI.
- O'Connor, E. J., Peters, L. H., Rudolf, C. J., & Pooyan, A. (1982). Situational constraints and employee affective reactions: A partial field replication. Group and Organization Studies, 7, 418-428.
- O'Connor, E. J., Peters, L. H., Eulberg, J. R., & Watson, T. W. (1984). Situational constraints in Air Force work settings: Effects on performance, affective reactions and reenlistment plans. Paper presented at the Annual Meeting of the Academy of Management, Boston, MA.
- O'Connor, E. J., Peters, L. H., Pooyan, A., Weekley, J., Frank, B., & Eren-Prantz, B. (1984). Situational constraint effects on performance, affective reactions and turnover: A field replication and extension. Journal of Applied Psychology, 69(4), 663-672.
- Olson, D. M., Borman, W. C., Roberson, L., & Rose, S. R. (1984, August). Relationship between scales on an Army work environment questionnaire and measure of performance. Paper presented at the 92nd Annual Meeting of the American Psychological Association, Toronto, Canada.
- Olson, D. M., & Borman, W. C. (1985, October). Examination of environmental determinants of Army performance criteria. Paper presented at the Military Training Association, San Diego, California.
- Payne, R. L., & Pugh, S. S. (1976). Organization structure and organization climate. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology. Chicago, IL: Rand McNally.
- Peters, L. H., & O'Connor, E. J. (1980). Situational and work outcomes: The influences of a frequently overlooked construct. Academy of Management Review, 5, 391-397.

- Peters, L. H., O'Connor E. J., & ... (1980). The behavioral and affective consequences of performance-relevant situation variables. Organizational Behavior and Human Performance, 25, 79-96.
- Peters, L. H., Fisher, C. D., & O'Connor, E. J. (1982). The moderating effect of situational control of performance variance on the relationship between individual differences and performance. Personnel Psychology, 35, 609-621.
- Peters, L. H., O'Connor, E. J., & Kulberg, J. R. (1984). Situational constraints: Sources, consequences, and future considerations. Research in Personnel and Human Resources Management, 3, forthcoming.
- Peters, L. H., Chassie, M. B., Lindholm, H. R., O'Connor, E. J., & Rudolf, C. J. (1981, March). The joint influence of situational constraints and goal setting on performance and affective outcomes. Paper presented at the Southwest Academy of Management Meeting, Houston, TX.
- Pirie, R. L. (1980, July). Enlistment standards (Memorandum). Washington, D.C.: Assistant Secretary of Defense, (MRA & L).
- Pooyan, A., O'Connor, E. J., Peters, L. H., Quick, J. C., Jones, N. D., & Kulisch, A. (1982). Supervisory/subordinate differences in perceptions of performance constraints: Barriers are in the eye of the beholder. Proceedings of the Annual Convention of the Southwest Academy of Management, 170-174.
- Porter, L. W., Lawler, E. E., III, & Hackman, J. R. (1975). Behavior in organizations. New York: McGraw-Hill.
- Roberts, K. H. & Glick, W. (1981). The job characteristic approach to task design: A critical review. Journal of Applied Psychology, 66, 193-217.
- Schneider, B. (1975). Organizational climate: An essay. Personnel Psychology, 28, 447-479.
- Schneider, B. (1978). Person-situation selection: A review of some ability situation interaction research. Personnel Psychology, 31, 381-397.
- Schneider, B., & Reichers, A. E. (1983). On the etiology of climates. Personnel Psychology, 36, 19-39.
- Sims, H. P., Szilagyi, A. D., & Keller, R. T. (1976). The measurement of job characteristics. Academy of Management Journal, 19, 195-212.
- Steel, R. P., & Mento, A. J. (1986). Impact of situational constraints on subjective and objective criteria of managerial job performance. Organizational Behavior and Human Decision Processes, 37, 254-265.

- Toquan, J. L., McHenry, J. J., Corpe, V A., Rose, S. R., Lammelin, S. E., Kemery, E., Borman, W. C., Mendel, R., & Bosshardt, M. (1985). Behaviorally anchored rating scales for nine MOS: Development activities and field test results. Minneapolis, MN: Personnel Decisions Research Institute.
- Watson, T. W., O'Connor, E. J., Eulberg, J. R., & Peters, L. H. (1983, October). Measurement and assessment of situational constraints in Air Force work environments: A brief summary. Proceedings of the 25th Annual Conference of the Military Testing Association.
- Watrogan, L. I., Olson, D. M., & Sperling, H. M. (1983). A systemic model of work performance (Working Paper 83-6). Alexandria, VA: U. S. Army Research Institute for the Behavioral and Social Sciences.
- White, L. A., Gast, I. F., Sperling, H. M., & Rumsey, M. G. (1984, October). Influence of soldiers' experiences with supervisors on performance during the first tour. Paper presented at the Military Testing Association, Munich, Germany.
- White, L. A., Gast, I. F., & Rumsey, M. G. (1985, October). Leader behavior and the performance of first term soldiers. Paper presented at the Military Testing Association, San Diego, California.
- White, M. A., Atwater, L. Y., & Mohr, D. A. (1981, August). A practical methodology for identifying impediments to productivity (NPRDC TR-81-18). San Diego, CA: Navy Personnel Research and Development Center.

PORT RILEY WORKSHOP

Appendix B

Definitions of the 14 Army Work Environment Dimensions

1. RESOURCES/TOOLS/EQUIPMENT

- Tools, parts, equipment needed to do the job are not available at all, or not available in sufficient quantity.
- Equipment/tools are of inferior quality, faulty, inadequate for the job, break down frequently, and/or require excessive maintenance time.

Versus

- Necessary tools, parts, equipment are always available or easily accessible; an adequate supply of necessary supplies is maintained.
- Tools/equipment are well conditioned and in running order; defective tools or parts are quickly replaced to avoid maintenance down time. Outmoded equipment/tools are replaced with newer models to keep pace with technological changes in the Army.

2. WORKLOAD/TIME AVAILABILITY

- Workload is too heavy -- assigned additional details (e.g., training, inspection preparation) after duty hours; required to work longer shifts due to personnel shortages; good performers given others' tasks to complete in addition to own.
- Too little time given -- given unreasonable time limit to complete a specific job, or the assigned workload consistently too great for time limit; no scheduled time for tasks that are low priority but essential (e.g., maintenance); frequent interruptions (e.g., special duties) conflict with task completion.
- Workload too light -- too many personnel assigned to a job; unit tasked with too little work, soldier must perform "busy work".

Versus

- Workload commensurate with available time limits. It is usually possible to finish all assigned tasks within the scheduled time limit. Workload is distributed evenly across unit members.
- Assignments are carefully scheduled so that low priority items can be completed during slow periods. To the extent possible, training activities and special details are scheduled to coincide with slack time in the work schedule.

Appendix B (Continued)

Definitions of the 14 Army Work Environment Dimensions

3. TRAINING IN MOS SKILLS/OPPORTUNITY TO IMPROVE MOS SKILLS

- Did not receive adequate training in AIT/other schools, etc., or training content conflicts with what is expected on the job; does not receive additional on the job training to correct deficiency.
- Does not receive additional training to keep current in MOS.
- Does not have the opportunity to practice new skills acquired in training due to assignments to non-MOS specific details or assignments out of MOS.

Versus

- Received adequate training in AIT/other schools; training content matches well with what's expected on the job.
- Receives on the job training and practice time to improve MOS skills and/or to keep up to speed on MOS skills that are infrequently used (i.e., combat skills).

4. PHYSICAL WORKING CONDITIONS

- Must perform work in unfavorable physical conditions that are not a typical requirement for the MOS. For example, extremely dirty or disorderly workshops and motor pools, office buildings where noise, temperature level, etc. are inadequately controlled.

Versus

- In garrison, job sites are well maintained. Offices and workshops are orderly and clean. Efforts are made to keep noise, temperature levels, etc., within an acceptable range.

5. JOB RELEVANT AUTHORITY

- Soldiers assigned tasks to complete, but due to their rank or failure of supervisors to provide support, they do not have sufficient authority to get the job done, e.g., can not obtain cooperation from other personnel.

Versus

- Where soldiers' task accomplishment depend on eliciting cooperation from others, they are also delegated relevant authority and supported accordingly so that they are able to get the job done.

Appendix B (Continued)

Definitions of the 14 Army Work Environment Dimensions

6. JOB RELEVANT INFORMATION

- Soldier does not receive information, either from the chain-of-command or immediate work group, that is needed to perform task efficiently, e.g., up-to-date technical documents, notice of regulation or procedural changes, sufficient notification of upcoming events and deadlines, etc.

Versus

- Soldier is kept up-to-date on all information relevant to the job and provided the necessary technical manuals and other documents. Soldier is promptly notified of changes in procedures or regulations that affect own work.

7. PERCEIVED JOB IMPORTANCE

- Soldier believes his/her role in the Army, MOS or on a specific task is not important. For example, such soldiers do not personally have responsibility for the outcome of their work, or so many personnel are working on the same job that they feel no ownership of outcome; soldiers feel their MOS skills are not important because they are never or rarely called upon to use them.

Versus

- Soldier assigned tasks involving some level of responsibility, or his/her job affords an opportunity to perform tasks of obvious significance (e.g., rescue missions).

8. WORK ASSIGNMENT (AND UNDER UTILIZATION OF ABILITIES)

- Soldiers are not performing at ability level or not using skills acquired in training because they have been assigned to a duty outside their MOS; soldiers are assigned within their MOS but given little or no MOS-specific work (e.g., combat MOS or overcrowded MOS). Instead soldier spends most duty hours on post details such as clean-up.

Versus

- Soldiers are assigned to MOS they were trained for and given assignments appropriate to ability and skill level. Where MOS skills are infrequently used (e.g., combat MOS), other opportunities are provided to maintain MOS specific proficiencies. If soldier is assigned outside own MOS, he/she is given the opportunity to keep current in this MOS and to prepare for the appropriate Skill Qualification Test (SQT).

Appendix B (Continued)

Definitions of the 14 Army Work Environment Dimensions

9. CHANGES IN JOB PROCEDURES AND EQUIPMENT

- Nature of MOS tasks change frequently due to changes in procedures, equipment or supervision. Little or no start up time is offered before new procedures go into effect. Soldier must learn new tasks immediately. Changes may be introduced with little or no explanation of the rationale involved.

Versus

- Job tasks tend to be consistent over time. When new equipment or procedures are introduced, sufficient learning time is provided. Rationale behind changes that affect soldiers' work are explained.

10. REWARD SYSTEM (REWARDS/RECOGNITION/POSITIVE FEEDBACK)

- Good performance ignored, inconsistently or inequitable rewarded either due to Army-wide policies or leadership practices.

Versus

- Good performance consistently and fairly rewarded/recognized by chain-of-command (e.g. at command level, awards, soldier of month, local recognition; at supervisor level, praise, favorable assignments, promotion recommendation, passes, etc.).

11. DISCIPLINE

- Punishment practices are inconsistent and unfair, some soldiers receive no punishment or milder form of discipline for offenses; entire unit is punished for behavior of a few soldiers.
- Discipline inappropriate for offense, overly harsh or severe.

Versus

- Punishment is appropriate, targeted to specific soldier and nature of offense; soldier perceives discipline as a warning and is motivated to reform.

Appendix B (Continued)

Definitions of the 14 Army Work Environment Dimensions

12. INDIVIDUAL SUPPORT

Chain-of-command, immediate supervisor, work group or other Army personnel soldier comes in contact with:

- Show insensitivity to new soldiers having difficulty coping with Army-life, fail to recognize personal problems contributing to poor performance, fail to take action when problems identified by soldier himself or others (includes administrative errors contributing to severe personal hardship).
- Fail to support soldier in rehabilitative efforts (e.g., alcohol programs), "write-off" soldier as loser.

Versus

- Express an interest in soldier's general welfare, are aware of changes in individual's performance/behavior, sensitive to potential difficulties, encourage communication.
- Recognize serious problems, refer to counseling, support efforts at rehabilitation.

13. JOB SUPPORT

Chain-of-command, work group, immediate supervisor or other Army personnel soldier works with:

- Fail to recognize individual performance problems (e.g., inadequately trained new soldier, slow learner) and/or do not provide assistance/guidance to soldier with obvious performance weakness; label soldier based on initial performance; do not offer opportunities for good or poor performers to improve job skills.

Versus

- Are aware of individual differences in performance, recognize soldier's weaknesses and strengths, offer additional assistance/guidance, provide personal attention and opportunities for improving job skills.

Appendix B (Continued)

Definitions of Army Work Environment Dimensions

14. ROLE MODELS (FOR JOB AND SOCIAL BEHAVIOR)

- Soldier exposed to leaders or peers who encourage low standards for social behavior and job performance by not adhering to Army Regulations, exhibiting a lack of knowledge about their MOS, avoiding participation in Army events, disparaging Army life, accepting or promoting negative behavior such as AWOLs, alcohol abuse, etc.

Versus

- Soldier observes leaders and peers who adhere to and support Army Regulations, are skilled and knowledgeable in their MOS, actively participate in Army events, express an interest in an Army career, avoid negative behaviors, etc.
-

Appendix C

Instrument Administered in the Field Tests

APHY WORK ENVIRONMENT QUESTIONNAIRE

Sponsoring Organization

**U.S. Army Research Institute
Alexandria, Virginia**

DATA REQUIRED BY THE PRIVACY ACT OF 1974
(5 U.S.C. 552a)

TITLE OF FORM

Army Work Environment Questionnaire

PRESCRIBING DIRECTIVE

AR 70-1

1. AUTHORITY

10 USC Sec 4503

2. PRINCIPAL PURPOSE(S)

The data collected with the attached form are to be used for research purposes only.

3. ROUTINE USES

This is an experimental personnel data collection form developed by the U. S. Army Research Institute for the Behavioral and Social Sciences pursuant to its research mission as prescribed in AR 70-1. When identifiers (name or Social Security Number) are requested they are to be used for administrative and statistical control purposes only. Full confidentiality of the responses will be maintained in the processing of these data.

4. MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION

Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals for not providing all or any part of the information. This notice may be detached from the rest of the form and retained by the individual if so desired.

FORM

Privacy Act Statement - 26 Sep 75

ARMY WORK ENVIRONMENT QUESTIONNAIRE

Overview

Your job performance is the result of many things. Not only do your skill and motivation affect your performance, but the situations you encounter at work can affect how well you do your job. Some situations allow you to get your work done quickly and easily. At other times the work environment may hinder your good performance.

In this questionnaire we would like you to tell us about your job situation. We are interested in identifying the factors in the Army work environment that affect your productivity. This questionnaire is designed to identify these factors. You will be asked to answer questions that will give us a description of your job and work group.

Please answer all questions carefully and honestly. Your answers will be kept completely confidential, and will be used for research purposes only. None of your individual responses will be disclosed to anyone, nor will they be used to evaluate your performance.

Describing Your Work Environment

On the following pages you will find a number of statements describing different situations or events that can occur on a job. We would like to know how often each situation occurs on your job. Some of the situations may rarely or never happen on your job, while some may happen quite often. We would like for you to tell us how often each of the situations happens on your present job.

Use the following scale to rate how often each situation occurs on your present job. On the answer sheet provided, fill in the circle that contains the number representing your rating for each statement.

Very Seldom or Never	Seldom	Sometimes	Often	Very Often or Always
1	2	3	4	5

- . If the situation happens all of the time, or almost all of the time on your job, fill in the circle containing the "5" for that statement.
- . If the situation happens quite often, or most of the time on your job fill in the circle containing the "4" for that statement.
- . If the situation happens sometimes, or about half of the time on your job, fill in the circle containing the "3" for that statement.
- . If the situation happens seldom, or less than half of the time on your job, fill in the circle containing the "2" for that statement.
- . If the situation never happens, or hardly ever happens on your job, fill in the circle containing the "1" for that statement.

1. The tasks that are assigned to you allow you to use your MOS skills.
2. Unscheduled interruptions make it hard to complete your tasks on time.
3. The work that you are assigned is not very challenging to you.
4. Your supervisor follows the same procedures you learned in AIT.
5. The place where you work is too noisy to work well.
6. Your job is made harder because you are not given enough of the necessary materials, supplies or parts to complete a job.
7. Your supervisor is available to talk with when you have a personal problem.
8. You are expected to perform new job tasks without sufficient time to practice or learn the actual task.
9. If the physical conditions where you work were better, you could do a better job.
10. Your leader tells you when you've done a good job.
11. The place where you work is either too hot or too cold to work well.
12. The training you received in AIT/other schools does not help you do your assigned job.
13. The tools/equipment you need for your job work very well.
14. When you are disciplined because of inappropriate or negative behavior, you are told specifically why you were disciplined.
15. There is enough time to finish your duties without rushing.
16. Your supervisors give you the support that you need to carry out your assignments.
17. Your job is made harder because what your supervisor tells you disagrees with written information (e.g., TMs).
18. You are supervised by persons who do not adhere to Army regulations.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

19. Your work is really not needed because there are enough other people assigned to the same job.
20. Important equipment changes or substitutions are made on your job without much advance notice.
21. Other personnel give you the cooperation that you need to complete assignments.
22. Your supervisor provides feedback on how to improve your job performance.
23. Your job is made harder because the equipment you use is different from the equipment you were trained on.
24. The technical manuals and other written materials you need for your job are not available.
25. You don't get the help from others that you need to do your job.
26. You perform the same MOS tasks on a daily basis.
27. You cannot get your job done on time because you are not notified in advance of schedule/deadline changes.
28. You have to follow the instructions of others even though you are in a better position to know what should be done.
29. If you need help, you can depend on your co-workers to help you perform your required job tasks.
30. You work for a leader whose enthusiasm for the Army inspires you to perform the best that you can.
31. Good performance is ignored in your work group.
32. When tasked to perform specific duties of your job, you receive conflicting orders from two or more superiors.
33. In your unit, punishment is delivered to the specific soldier who committed the offense.
34. Your job is made more difficult because the Army does not provide you with the help you need to solve personal problems.
35. You have to waste time looking for materials you need for your work.
36. You are assigned to work that you were not trained for in AIT.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

37. The tasks you perform are of little importance to anyone.
38. In your unit discipline is administered fairly.
39. You have a lot of respect for officers in your unit.
40. The written information (e.g., TMs, regulations) that you receive about your job is out of date.
41. When a squad member has a personal problem, your supervisor doesn't want to hear about it.
42. The lighting where you work is adequate to get the job done.
43. Having to get approval from others slows down your work.
44. Your peers encourage you to talk down the Army.
45. The work you are assigned helps prepare you for the SQT for your MOS.
46. In your unit, changes in job procedures are introduced with little or no explanation.
47. There is not enough time to complete your assigned work.
48. When a squad member is having problems coping with Army life or the job, your supervisor tries to help him/her.
49. Your job is easier to do because of the training you received in AIT.
50. Other soldiers receive either no discipline or a milder form of discipline, while you are severely disciplined for the same offense.
51. Your supervisor tells you everything you need to know to do your job.
52. The tasks you perform are important to you and to others.
53. You are assigned to garrison details such as clean-up.
54. Time is set aside on your job for practicing MOS skills.
55. You have leaders in the Army who display low standards of job performance.
56. You are assigned work that is appropriate to your ability and skill level.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

57. The members of your company make a special effort to help each other to get the job done.
58. There is not enough work to keep you busy.
59. The tools/equipment you must work with are faulty or damaged.
60. You are assigned to do the kind of work that the Army trained you to do.
61. In your job, changes in equipment are introduced with little or no explanation.
62. Army personnel (other than your supervisor or work group) help you with personal problems.
63. You are fairly rewarded for good work.
64. There are unscheduled activities to work on which keep you from getting your job done.
65. Your supervisor provides discipline that is appropriate (i.e., not overly severe or extremely lenient) for the offense committed.
66. There is only unimportant "busy work" to do on your job.
67. You are supervised by persons who know very little about the requirements of your job.
68. Your supervisor supports soldiers who are attending rehabilitation programs (e.g., alcohol abuse treatment).
69. On a new task, you must teach yourself how to do it correctly.
70. People in your work group (other than your supervisor) provide you with the information you need to do your job.
71. You get recognition from supervisors for the work you do.
72. Your supervisor provides training so you can keep up-to-date in your MOS.
73. In your unit, the discipline practices are inconsistent and unfair to soldiers like yourself.
74. A high degree of cooperation exists among members of your squad.
75. The tasks you perform do not require much skill--"anyone" could do them.

1	2	3	4	5
Very Seldom	Seldom	Sometimes	Often	Very Often
or Never				or Always

76. You must continue working after hours to complete all tasks.
77. When a squad member does a poor job, your supervisor tries to find out what the problem is.
78. You have the opportunity to practice or use the skills that are specific to your MOS.
79. The materials, supplies or parts that you're provided to work with are damaged, inferior or in some other way inadequate for the job.
80. Your supervisor keeps you up-to-date on procedural/policy changes that affect your job.
81. The soldiers in your work group help each other out when they have personal problems.
82. You have experienced important changes in procedures on your job.
83. When you are presented with a new job task, you are given sufficient time to learn the task before you are expected to perform it.
84. Soldiers who perform the same get the same rewards.
85. Your job is made harder because the equipment you must work with is out-of-date.
86. The chain-of-command gives you the support that you need to do a good job.
87. Your skills and abilities are important for getting the job done.
88. While interacting with other soldiers, you receive pressure to drink alcohol.
89. The work that you are assigned is not specific to your MOS.
90. You have enough authority to carry out your assignments.
91. Your job is made easier because you receive on-the-job training.
92. There are not enough people to do all the necessary work on your job.
93. Soldiers in your squad (unit) are encouraged to develop new ways of doing things.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

94. You respect NCO in your unit.
95. Your job is made easier because the necessary materials, supplies or parts are available.
96. When you have difficulty performing your job tasks, you receive guidance and support from your immediate supervisor.
97. You are assigned to a job that is outside of your MOS.
98. You are called upon to do a task because you are the only one in your work group/unit with the necessary skills.
99. Your supervisor sees that you get the credit you deserve for doing a good job.
100. You can rely on your work group to help you out on the job during difficult times.
101. The tools/equipment that you need to complete a job are not available.
102. Soldiers in your work group/unit express a strong interest in an Army career and display primarily positive behaviors on the job.
103. Good performers are "punished" by being given extra work to do.
104. Your immediate supervisor has a real interest in your personal welfare.
105. The place where you work is not safe.
106. You are sent to additional training to keep up-to-date in your MOS.
107. You cannot see the importance of your tasks/job to the Army.
108. Good performance is rewarded in your work group.
109. You are doing the kind of job the Army promised you.
110. The written materials you receive about your job are accurate.

1	2	3	4	5
Very Seldom or Never	Seldom	Sometimes	Often	Very Often or Always

Appendix C

Instrument Administered in the Concurrent Validation

ARMY ENVIRONMENT QUESTIONNAIRE

Sponsoring Organization:

**U.S. Army Research Institute
Alexandria, Virginia**

ARMY ENVIRONMENT QUESTIONNAIRE

Overview

Your job performance is the result of many things. Not only do your skill and motivation affect your performance, but the situations you encounter at work can affect how well you do your job. Some situations allow you to get your work done quickly and easily. At other times the work environment may hinder your good performance.

In this questionnaire we would like you to tell us about your job situation. We are interested in identifying the factors in the Army work environment that affect your productivity. This questionnaire is designed to identify these factors. You will be asked to answer questions that will give us a description of your job and work group.

Please answer all questions carefully and honestly. Your answers will be kept completely confidential, and will be used for research purposes only. None of your individual responses will be disclosed to anyone, nor will they be used to evaluate your performance.

Describing Your Work Environment

On the following pages you will find a number of statements describing different situations or events that can occur on a job. We would like to know how often each situation occurs on your job. Some of the situations may rarely or never happen on your job, while some may happen quite often. We would like for you to tell us how often each of the situations happens on your present job.

Use the following scale to rate how often each situation occurs on your present job. On the answer sheet provided, fill in the circle that contains the number representing your rating for each statement.

Very Seldom or Never	Seldom	Sometimes	Often	Very Often or Always
1	2	3	4	5

- . If the situation happens all of the time, or almost all of the time on your job, fill in the circle containing the "5" for that statement.
- . If the situation happens quite often, or most of the time on your job fill in the circle containing the "4" for that statement.
- . If the situation happens sometimes, or about half of the time on your job, fill in the circle containing the "3" for that statement.
- . If the situation happens seldom, or less than half of the time on your job, fill in the circle containing the "2" for that statement.
- . If the situation never happens, or hardly ever happens on your job, fill in the circle containing the "1" for that statement.

1. Unscheduled interruptions make it hard to complete your tasks on time.
2. Your job is made harder because you are not given enough of the necessary materials, supplies, or parts to complete a job.
3. You are expected to perform new job tasks without sufficient time to practice or learn the actual task.
4. If the physical conditions where you work were better, you could do a better job (e.g., noise, lighting, temperature, etc.).
5. The tools/equipment you need for your job work very well.
6. When you are disciplined because of inappropriate or negative behavior, you are told specifically why you were disciplined.
7. There is enough time to finish your duties without rushing.
8. Your job is made harder because what your supervisor tells you disagrees with written information (e.g., TMs).
9. You are supervised by persons who do not adhere to Army regulations.
10. Your work is really not needed because there are enough other people assigned to the same job.
11. Important equipment changes or substitutions are made on your job without much advance notice.
12. Other personnel give you the cooperation that you need to complete assignments.
13. Your supervisor provides feedback on how to improve your job performance.
14. The technical manuals and other written materials you need for your job are not available.
15. You cannot get your job done on time because you are not notified in advance of schedule/deadline changes.
16. You have to follow the instructions of others even though you are in a better position to know what should be done.
17. If you need help, you can depend on your co-workers to help you perform your required job tasks.
18. Good performance is ignored in your work group.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

19. You are assigned to work you were not trained for in AIT.
20. In your unit discipline is administered fairly.
21. You have a lot of respect for officers in your unit.
22. When a squad member has a personal problem, your supervisor doesn't want to hear about it.
23. Having to get approval from others slows down your work.
24. In your unit, changes in job procedures are introduced with little or no explanation.
25. There is not enough time to complete your assigned work.
26. When a squad member is having problems coping with Army life or the job, your supervisor tries to help him/her.
27. Other soldiers receive either no discipline or a milder form of discipline, while you are severely disciplined for the same offense.
28. The tasks you perform are important to you and to others.
29. You have leaders in the Army who display low standards of job performance.
30. You are assigned to do the kind of work the Army trained you to do.
31. In your job, changes in equipment are introduced with little or no explanation.
32. There are unscheduled activities to work on which keep you from getting your job done.
33. Your supervisor provides discipline that is appropriate (i.e., not overly severe or extremely lenient) for the offense committed.
34. Your supervisor supports soldiers who are attending rehabilitation programs (e.g., alcohol abuse treatment).
35. You get recognition from supervisors for the work you do.
36. The tasks you perform do not require much skill--"anyone" could do them.
37. You have the opportunity to practice or use the skills that are specific to your MOS.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

38. Your supervisor keeps you up-to-date on procedural/policy changes that affect your job.
39. The soldiers in your work group help each other out when they have personal problems.
40. Your job is made harder because the equipment you must work with is out-of-date.
41. Your skills and abilities are important for getting the job done.
42. You have enough authority to carry out your assignments.
43. There are not enough people to do all the necessary work on your job.
44. You respect NCO in your unit.
45. Your job is made easier because the necessary materials, supplies or parts are available.
46. When you have difficulty performing your job tasks, you receive guidance and support from your immediate supervisor.
47. You are assigned to a job that is outside of your MOS.
48. You can rely on your work group to help you out on the job during difficult times.
49. Soldiers in your work group/unit express a strong interest in an Army career and display primarily positive behaviors on the job.
50. Your immediate supervisor has a real interest in your personal welfare.
51. You cannot see the importance of your tasks/job to the Army.
52. Good performance is rewarded in your work group.
53. The written materials you receive about your job are accurate.
54. Your supervisor understands your problems and needs.
55. When plans change, your supervisor fails to tell you.
56. When someone does something wrong, your supervisor yells at them in front of other people.

1	2	3	4	5
Very Seldom	Seldom	Sometimes	Often	Very Often
or Never				or Always

57. Your supervisors set a good example for you to follow.
58. Before you start a task, you are told what has to be done and when it needs to be finished.
59. Your supervisor avoids problems by planning ahead.
60. You are given responsibility for important tasks.
61. Your supervisor teaches you to "troubleshoot" so that you can solve problems on your own.
62. Your supervisors are hard to find when you need them.
63. You can count on your supervisor to back you up if you really need it.
64. You are told what is expected of you.
65. You know how satisfied your supervisors are with your work.
66. If you need help on a task and your supervisor is busy, he/she finds the time to help you.
67. You are permitted to use your own judgment in solving problems.
68. You are encouraged to learn new MOS skills.
69. Your supervisor punishes people too severely.
70. You can count on your supervisors to give you good advice on work-related problems.
71. Your supervisor takes action if deadlines are not met.
72. After your supervisor teaches you something new, he/she watches you to make sure you learned how to do it right.
73. Your supervisor is available when you need to ask him/her a question.
74. If you knew of a better way to do a task, you would feel free to share your ideas with your supervisors.
75. If you had to work much later than usual to complete a task, your supervisor would try to give you some time off.
76. You are given reasonable goals and standards to meet.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

77. Your supervisor praises others more than you, even though their work isn't any better than yours.
78. If needed, your supervisor would try to arrange time off for you to take care of a personal problem.
79. You are given too much work to do, while others in your unit don't have enough to do.
80. When your supervisor tells someone to do something he/she makes sure that it gets done.
81. Your supervisor praises you when you don't deserve it.
82. Your supervisors are inconsistent in the use of discipline.
83. Your supervisor makes you want to give your best effort.
84. When people in your unit perform poorly, your supervisor ignores it.
85. Your supervisor takes the time to show people the correct procedure, so that they can work effectively on their own.
86. Your supervisors fail to let you know about events that affect you.
87. Your supervisor punishes people without hearing them out.
88. Your supervisors watch you closely to make sure you get your work done.
89. You are given clear standards of performance.
90. Your supervisor follows up to make sure that assignments are completed.
91. You have some say and influence over what goes on in your job.
92. Your supervisor disciplines people without giving a clear reason or explanation.
93. Your supervisor praises you when you do a good job.
94. Your supervisor wants to know when work is not going as planned.
95. Your supervisor tells you what is going on.
96. You are given more work than you can possibly finish.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

97. Your responsibilities are clearly explained to you.

98. Your supervisor makes you enthusiastic about assignments.

99. Your supervisor tells people when they perform poorly.

1
Very Seldom
or Never

2
Seldom

3
Sometimes

4
Often

5
Very Often
or Always

Appendix D

Assignment of Items to Scales on the AWEQ

SCALE 1: RESOURCES/TOOLS/EQUIPMENT

Item Number: 6, 13, 59, 79, 85, 95, 101

SCALE 2: WORKLOAD/TIME AVAILABILITY

Item Number: 2, 15, 47, 58, 64, 66, 76, 92

SCALE 3: TRAINING IN MOS SKILLS/OPPORTUNITY TO IMPROVE MOS SKILLS.

Item Number: 1, 4, 12, 23, 36, 49, 54, 69, 72, 91, 106

SCALE 4: PHYSICAL WORKING CONDITIONS

Item Number: 5, 9, 11, 35, 42, 105

SCALE 5: JOB RELEVANT AUTHORITY

Item Number: 16, 21, 25, 28, 43, 90

SCALE 6: JOB RELEVANT INFORMATION

Item Number: 17, 24, 27, 40, 51, 70, 80, 110

SCALE 7: PERCEIVED JOB IMPORTANCE

Item Number: 19, 37, 52, 75, 87, 98, 107

SCALE 8: WORK ASSIGNMENT

Item Number: 3, 45, 53, 56, 60, 78, 89, 97, 109

SCALE 9: CHANGES IN JOB PROCEDURES AND EQUIPMENT

Item Number: 8, 20, 26, 46, 61, 82, 83, 93

SCALE 10: REWARD SYSTEM (REWARDS/RECOGNITION/POSITIVE FEEDBACK)

Item Number: 10, 31, 63, 71, 84, 103, 108

SCALE 11: DISCIPLINE

Item Number: 14, 33, 38, 50, 65, 73

SCALE 12: INDIVIDUAL SUPPORT

Item Number: 7, 34, 41, 48, 62, 68, 77, 81, 100

SCALE 13: JOB SUPPORT

Item Number: 22, 29, 32, 57, 86, 96, 99, 104

SCALE 14: ROLE MODELS (FOR JOB AND SOCIAL BEHAVIOR)

Item Number: 18, 30, 39, 44, 55, 67, 74, 88, 94, 102