Human Resources Research Office

Interim Bibliography of Publications

1 July to 31 December 1966

Human Resources Research Office

Interim Bibliography of Publications

1 July to 31 December 1966

March 1967

The George Washington University
HUMAN RESOURCES RESEARCH OFFICE
operating under contract with
THE DEPARTMENT OF THE ARMY

The Human Resources Research Office is a nongovernmental agency of The George Washington University, operating under contract with the Department of the Army (DA 44-188-ARO-2). HumRRO's mission is to conduct studies and research in the fields of training, motivation, and leadership.

Requests for information concerning items in the *Bibliography* or other aspects of HumRRO work should be addressed to the Director's Office or to the Director of Research of a Division. The addresses are listed below.

Director, Human Resources Research Office, 300 North Washington Street, Alexandria, Va. 22314

Director of Research, HumRRO Division No. 1 (System Operations), 300 North Washington Street, Alexandria, Va. 22314

Director of Research, HumRRO Division No. 2 (Armor), Fort Knox, Ky. 40121

Director of Research, HumRRO Division No. 3 (Recruit Training), Post Office Box 5787, Presidio of Monterey, Calif. 93940

Director of Research, HumRRO Division No. 4 (Infantry), Post Office Box 2086, Fort Benning, Ga. 31905

Director of Research, HumRRO Division No. 5 (Air Defense), Post Office Box 6021, Fort Bliss, Tex. 79916

Director of Research, HumRRO Division No. 6 (Aviation), Post Office Box 428, Fort Rucker, Ala. 36360

Director of Research, HumRRO Division No. 7 (Language and Area Training), 300 North Washington Street, Alexandria, Va. 22314

Published
March 1967
by
The George Washington University
HUMAN RESOURCES RESEARCH OFFICE
300 North Washington Street
Alexandria, Virginia 22314

Distributed under the authority of the
Chief of Research and Development
Department of the Army
Washington, D.C. 20310

INTERIM BIBLIOGRAPHY

The *Interim Bibliography of Publications* has been compiled to provide information about recent publications (1 July to 31 December 1966) of the Human Resources Research Office. It is supplemental to the *HumRRO Bibliography of Publications, As of 30 June 1966* and will be integrated with the annual cumulative listing as of 30 June 1967.

Publications in the *Interim Bibliography* are listed chronologically under the alphabetized Work Unit code words if they relate to a specific effort; Exploratory Studies and Basic Research Studies are arranged by number. Items in the general section are grouped in chronological order according to whether they are HumRRO publications or professional presentations and publications. The Defense Documentation Center's accessions (AD) numbers have been included in appropriate citations.

WORK UNITS

AREA–Division No. 7 (Language and Area Training) (Ongoing) Sub-Unit
Development of Concepts and Techniques for Area Training

"New Perspectives in Training and Assessment of Overseas Personnel," by Jack Danielian and Edward C. Stewart, paper read at Counterinsurgency Research and Development Symposium, Institute for Defense Analyses, Arlington, Va., June 1966. II

Lack of knowledge of what constitutes successful performance in paramilitary roles abroad is a major barrier to developing valid selection procedures or appropriate training techniques. One approach to the problem is to focus on and attempt to cultivate individual qualities of personnel as elicited in a live simulated advisory situation. Using trained foreign participants in prepared role-playing scripts, a simulated cross-cultural encounter was constructed which provided a realistic face-to-face encounter with a counterpart. In addition, the simulation permitted the conceptualization of a number of interrelated intervening criteria susceptible to measurement and useful to assessing the performance of the trainee. It is concluded that the specific discovery potential and heuristic value of the technique are distinct assets in this new area of research.

***An Analysis of Human Relations Training and Its Implications for Overseas Performance*, Technical Report 66-15, by Robert J. Foster, August 1966.** AD-639 611 I

Evidence indicates that the nature of overseas work requires an increased emphasis on the people-related functions of job performance. The importance of these functions is further accentuated by the contrast between American and non-American values, assumptions, and perceptions, upon which effective communications and interpersonal behavior depend. Existing knowledge and experience in human relations training is reviewed in order to determine its relevance to preparing personnel for the cross-cultural aspects of overseas assignments. The training techniques of training groups (T-groups), role-playing, and case study are examined. Each is treated with respect to (a) a general description, (b) evidence as to its effectiveness, (c) its applications in area training, and (d) possible modifications for its use in training people for overseas work.

"An Approach to Cultural Self-Awareness," by Edward C. Stewart and John B. Pryle, paper read at Symposium, meeting of APA, New York, 1966; also issued as HumRRO Professional Paper 14-66, December 1966. AD-646 980

An approach for training Americans to work overseas is outlined. It is very important that the American understand himself as well as the people in another culture since communication between them invokes the personal and cultural predispositions of both. Various concepts for constructing a schemata of American culture with which trainees could identify as individuals are discussed. Role-playing exercises may be used to simulate cross-cultural communication between Americans and the idealized type of Contrast American.

CIVIC–Division No. 7 (Language and Area Training) (Ongoing) Sub-Unit
Guidelines for Civic Action Advisors

"Food Habits and the Introduction of New Foods," by Arthur H. Niehoff, paper read at meeting of American Association for the Advancement of Science, Washington, December 1966.

COMTAC–Division No. 4 (Infantry) (Ongoing)
Tactual Communication as a Medium for Increasing Control in Small-Unit Operations

"Recognition Thresholds and Accuracy for Differing Body Regions as a Function of Electrode Number and Spacing," by R.L. Brown, R.A. Spern, K. Schmitt, and A. Solomon, *Percept. Mot. Skills*, vol. 23, no. 3, December 1966. I

Recognition thresholds and maximum accuracy levels were established on 12 subjects as a function of number of electrodes (2, 3, 4, and 5) and inter-electrode distance for various body regions (chest, abdomen, and back). There was little systematic difference among body regions with respect to the threshold and accuracy data; however, the number of electrodes proved to be significant. The abdomen appeared to be a slightly more favorable electrode site with a 5-electrode array.

"Stimulus Parameter Considerations and Individual Differences in Cutaneous Sensitivity to Electropulse Stimulation," by R.L. Brown, R.A. Spern, K. Schmitt, and A. Solomon, *Percept. Mot. Skills*, vol. 23, no. 3, December 1966. I

The two experiments described were concerned with defining the optimal parameter values for an electropulse stimulus and the extent of subject differences. In Experiment I, touch and pain threshold variations were established on 12 subjects as a function of pulse number (1, 4, 8) and pulse duration (0.5, 1.0 msec.). Significant support was obtained for use of a single pulse of 0.5-msec. duration. In Experiment II, touch and pain thresholds were obtained on 20 subjects coincident with body region and session variation. The abdomen and chest appear to be ideal electrode sites. Subject differences over time were discussed.

ECHO–Division No. 6 (Aviation) (Ongoing) Sub-Unit

Synthetic Flight Training Programs and Devices

"The Importance of Training Requirements Information in the Design and Use of Aviation Training Devices," by Wallace W. Prophet, HumRRO Professional Paper 8-66, December 1966; previously listed as a presentation at annual International Air Safety Seminar, Athens, Greece, November 1963. AD-648 961

Too often people in education and training tend to forget that a simulator does not train; the training program trains. The simulator is potentially one of the most useful tools for training, but it is just that—a tool for the training program. The best sequence of procedures for new devices and training programs is examined. The presentation includes examples of psychologists applying their skills to development of training devices and working with engineers to produce the best simulator for the particular purpose.

"Helicopter Trainee Performance Following Synthetic Flight Training," by Paul W. Caro, Jr., and Robert N. Isley, *J. Amer. Helicopter Soc.*, vol. 11, no. 3, July 1966; also issued as HumRRO Professional Paper 7-66, November 1966. AD-646 157 II

In a study to determine whether the use of a synthetic helicopter flight training device would improve the subsequent primary flight performance of trainees at the U.S. Army Primary Helicopter School, two groups were trained to "fly" a captive helicopter mounted on a ground effects machine. The device had the approximate handling characteristics of a free-flying vehicle, yet it allowed the trainees to obtain "aeronautical experience" not otherwise possible at their level of training. It was found that the device-trained subjects, when compared with non-device-trained controls, were significantly less likely to be eliminated from subsequent primary helicopter training for reasons of flight skills deficiency. Further, measures of relative performance during primary flight training indicated the device-trained group soloed the helicopter earlier and made better flight grades during the pre-solo phase of training than did the controls.

HIGHLEAD–Division No. 4 (Infantry)

Training for Leadership at Senior Levels of Command

"The View From the Top: The Demands of Organizational Leadership," by Joseph A. Olmstead, paper read at Symposium, meeting of APA, New York, 1966.

INGO–Division No. 5 (Air Defense) Sub-Unit

Methods for Deriving Instructional Objectives

"Deriving, Specifying, and Using Instructional Objectives," HumRRO Professional Paper 10-66, December 1966; previously listed as a symposium at SWPA, 1966. AD 646 976

"In Defense of Instructional Objectives," by William H. Melching.

"Some Important Ways in Which Performance Objectives Can Vary," by Harry L. Ammerman.

"The Content Validity of Instructional Objectives," by Paul G. Whitmore.

"Instructional Objectives and Measuring Success of Instruction," by John A. Cox.

LEAD–Division No. 4 (Infantry) (Ongoing)

Development of Training for Improving the Combat Skills of Leaders in Small Infantry Units

"Fundamentals of Tracking," by LTC Frank L. Brown (USA Ret.), *Infantry*, vol. 56, no. 4, July-August 1966. I

"Pass on that Combat Lore," by LTC Frank L. Brown [USA Ret.], *Army*, vol. 16, no. 9, September 1966. I

***The Effect of Programed Instruction Response Conditions on Acquisition and Retention*, Technical Report 66-20, by Thomas J. McCrystal and T.O. Jacobs, December 1966.** II
AD-646 347

The objective was to evaluate the effect on criterion scores of programed instruction requiring subjects either to write or not to write their responses, under either constructed or prompted conditions, with military tactics as the content. One hundred and twenty Infantry lieutenants in groups of 30 used the programed booklet instruction with the four response conditions: constructed-overt, constructed-covert, prompted-overt, and prompted-covert. Two control groups were also tested. Although test scores from conventional lecture and programed instruction methods did not differ significantly, the lecture method required twice the average training time of the fastest programed method. The similarity in effectiveness resulting from the disparate response conditions suggests that, for content of this nature and length, constructed responses (either overt or covert) may be dispensed with in favor of prompted-covert responses, which require less learning time without compromising the training effectiveness of programed instruction.

LOWENTRY–Division No. 6 (Aviation)

Sub-Unit

Methods for Improving Navigation Training for Low-Level Flight

***Speed and Accuracy of Addition in Normal Time and Decimal Time Systems*, Technical Report 66-17, by T. Harrison Gray, T. Gary Waller, and Robert H. Wright, October 1966.** II

AD-642 697

The study compared the efficiency of decimal and sexagesimal, or normal, time systems in the solution of addition problems, using the time required to reach a solution and the number of errors as dependent variables. Twelve subjects solved sets of addition problems composed of 8, 16, or 24 digits, using the decimal and sexagesimal time systems. When the conversion process required by the sexagesimal system was included in the analysis, the results clearly showed that addition using the sexagesimal system required significantly more time (1½ to 2½ times as much) and produced significantly more errors (1½ to 3 times as many). When the conversion process required by the sexagesimal system was excluded from the analysis, there was no significant difference between the two time systems on either dependent variable.

"Some Comments on the Display of Cartographic Information for Very Low Level Flight," by Robert H. Wright, paper read at Symposium on Aeronautical Charts and Map Displays, Office of Naval Research, Department of the Navy, Washington, November 1966.

MAP–Division No. 7 (Language and Area Training)

(Ongoing)

Development of Guidelines for Training Personnel for Military Assistance Advisory Duties

"The Design of Cross-Cultural Training for Military Advisors," by Arthur J. Hoehn, paper read at Symposium, meeting of APA, New York, 1966; also issued as HumRRO Professional Paper 12-66, December 1966.

AD-646 977

This paper deals with the design of training for military advisors, with particular attention to the objectives toward which the training should be directed and the kinds of content coverage needed. Factors that make the advisor's assignment quite different from typical military assignments include the unusual physical and cultural setting, the unfamiliar functions to be performed, and the complex intercultural, international, and interpersonal aspects of the job. Adequate preparation requires high-order knowledges and skills that can be developed only by adoption of new perspectives for area training. These new perspectives relate not only to objectives and content but also to the overall plan for programing area training into the larger pattern of education and training spanning the military officer's career.

METHOD–Division No. 1 (System Operations) Sub-Unit
Research for Programed Instruction in Military Training

"Effects of Written Verbalization and Timing of Information on Problem Solving in Programed Learning," by Robert J. Seidel and Iris C. Rotberg, HumRRO Professional Paper 6-66, November 1966; previously listed as an article in *J. Educ. Psychol.*, vol. 57, no. 3, June 1966. II

AD-644 223

MOSAIC–Division No. 1 (System Operations) (Ongoing)
Studies on Organization and Operation of Electronics Maintenance Units

***A Description and Analytic Discussion of Ten New Concepts for Electronics Maintenance*, Technical Report 66-23, by Edgar L. Shriver and Robert C. Trexler, December 1966.**

AD-647 229

Ten new concepts of electronics maintenance are described and analyzed in this report. These concepts differ from the conventional approach in that they advocate an equipment analysis for troubleshooting be made once by experts, then transmitted to the repairman, with appropriate supporting data, to obviate the need for repeated analyses by maintenance personnel on the job. Evidence from experimental evaluations of some of the concepts indicates the potential for marked increases in proficiency and/or decreases in training time as compared to current practice. Comparative evaluation of these concepts should consider system-wide implications rather than any single index, such as reduced training time or cost of preparation of manuals. It would appear that some maintenance situations would be best served by a combination of features from several of the new approaches; in other cases it is possible that one of the concepts is uniquely suited to the particular circuitry or equipment configuration.

NCO–Division No. 3 (Recruit Training) Sub-Unit
Training of Potential Noncommissioned Officers

"The Apprentice Leader–Preparation for a Role," by Paul D. Hood, paper read at Symposium, meeting of APA, New York, 1966.

***Automation of a Portion of NCO Leadership Preparation Training*, Technical Report 66-21, by Morris Showel, Elaine Taylor, and Paul D. Hood, December 1966.** AD-646 771 III

A method of presenting roughly one-seventh of the Army's two-week Leader Preparation Course (LPC) through automated instruction was developed. The automated instruction method included the use of tape-recorded lectures, supported by visual aid frames, and programed workbooks. Automated presentation proved to be at least as effective as conventional instruction in imparting the leadership knowledge covered by automation. In addition, those students who learned through the automated method appeared to retain their knowledge better than the conventionally trained students. The automated method also exhibited practicality in reduction of instructor requirements, flexibility of scheduling, and consistency of level of presentation. The automated program was adopted for use at Army Training Centers presenting the LPC.

OFFTRAIN–Division No. 4 (Infantry)
Studies in Leadership and Leadership Training

"The Man in the Middle–A Mixed Role," by T.O. Jacobs, paper read at Symposium, meeting of APA, New York, 1966.

RIFLEMAN–Division No. 3 (Recruit Training)
Improvement of the Combat Proficiency of the Light Weapons Infantryman

"A Case Study of the Development of an Individual Combat Training Program," by Joseph S. Ward, paper read at Army Human Factors Research and Development Conference, Fort Benning, Ga., October 1966. III

Some frequently encountered problems in curriculum engineering are discussed, and a step-by-step illustration of the actual development of a training program is presented.

ROCOM–Division No. 4 (Infantry) (Ongoing) Sub-Unit

Development of Methods and Techniques for Improving the Output of ROTC

***An Analysis of Initial Active Duty Assignments of Army ROTC Graduates*, Technical Report 66-16, by Joseph W. Scott, Theodore R. Powers, and Paul Sucansky, October 1966.** I

AD-801 363L

To determine the nature and range of initial duty assignments of Army ROTC graduates, an analysis was conducted of Items 1 through 14 of the Officer Efficiency Report (DA Form 67-5) of 1,898 junior officers serving in 10 different branches. At least 520 different principal duties were identified that may be assigned to junior officers, although no one duty appeared in the total sample more than 12% of the time. Seven essential training dimensions were designated under which some 83% of the principal duties identified could be grouped.

"The Foundations for Leader Training," by Theodore R. Powers, paper read at Army Human Factors Research and Development Conference, Fort Benning, Ga., October 1966.

UNIFECT–Division No. 4 (Infantry) (Ongoing)

Procedures for Increasing the Effectiveness of Small Infantry-Type Units

"The View From the Underside–Task Demands and Group Structures," by Clay E. George, paper read at Symposium, meeting of APA, New York, 1966.

"Training for Coordination Within Rifle Squads," by Clay E. George, paper read at Army Human Factors Research and Development Conference, Fort Benning, Ga., October 1966.

EXPLORATORY STUDIES

Exploratory Study 12–Division No. 2 (Armor)
Tactical Command Decision Making

***A Tentative Organizational Schema for Decision-Making Problems*, Technical Report 66-14, by William C. Osborn and Barbara Ettinger Goodman, July 1966.** AD-638 724

To take into account the psychological complexity of most real-life decision problems, and to develop a tentative organization of decision behavior that will embrace the many, highly diverse types of problems which are presumed to result in "decision," an attempt was made to delineate the component response processes that lead to these decisions. The procedure followed was (a) to identify and descriptively define the relevant stimulus and organismic factors, and (b) especially to schematize the response dimensions involved, in such a way as to derive a tentative response matrix. The result is an organizational schema for use in analyzing the response aspects of the decision-making process in terms of the pertinent psychological dimensions of decision behavior.

Exploratory Study 20–Division No. 1 (System Operations)
Driver Training

"An Experimental Evaluation of a Driver Simulator for Safety Training," by A. James McKnight and Harold G. Hunter, paper read at Symposium, meeting of APA, New York, 1966; also issued as HumRRO Professional Paper 9-66, December 1966. AD-645 962

Two groups of experienced drivers were administered a 20-hour driver safety course. One group received eight hours of instruction in a motion picture automobile simulator, while the other received similar material by conventional methods. Measures of driving knowledge, habits, and attitudes were administered following training. The simulator group was slightly superior on those knowledges and habits emphasized in simulator films. The conventional group was slightly superior in other driving knowledges. No differences were observed on the remaining measures. It was concluded that existing simulator programs are not well suited to the needs of experienced drivers.

Exploratory Study 43–Division No. 1 (System Operations) (Ongoing)
Alternate Combinations of Necessary Elements of Effective Training

"The Formulation of Training Problems," by Harold G. Hunter, Part I of "Training Models," HumRRO Professional Paper 13-66, December 1966; previously listed as a presentation at Military Operations Research Symposium (Human Factors Working Group), Monterey, Calif., May 1966. AD-646 978

Exploratory Study 44–Division No. 5 (Air Defense)
Training Methods for Forward Area Air Defense Weapons

***The Performance of Ground Observers in Detecting, Recognizing, and Estimating Range to Low-Altitude Aircraft*, Technical Report 66-19, by A.D. Wright, December 1966.** AD-648 537

The purpose of this test was to determine man's capability to visually detect, recognize, and estimate range to low-altitude aircraft. Twenty-seven Army enlisted men served as observers. The results indicate that man can detect and recognize low-altitude aircraft at a considerable range under near-optimum field conditions. The value of binoculars for aircraft detection was found to be dependent upon (a) observer offset from the aircraft flight path, (b) accuracy of early warning, (c) aircraft speed, and (d) exhaust smoke trail characteristics of the aircraft. Under the test conditions employed, binoculars reduced the detection range on the most potentially threatening targets, high-speed, head-on jet aircraft. The data show that large range estimation errors occurred. Filmed simulation of the recognition task appears promising as a training tool.

BASIC RESEARCH STUDIES

Basic Research 6–Division No. 3 (Recruit Training)
Integrating and Systematizing the Findings of Military Psychotechnology

"Group Consensus and Judgmental Accuracy: Extension of the Asch Effect," by Jack M. Hicks, Richard A. Monty, and Thomas I. Myers, HumRRO Professional Paper 11-66, December 1966; previously listed as published in *Psychonomic Science*, vol. 5, no. 4, 1966. AD-646 158

Basic Research 9–Division No. 2 (Armor) (Ongoing)
Shaping of Skills

***Pursuit Rotor Performance: II. Effects of Reinforcing Successively Longer Intervals of Continuous Tracking Over Practice Sessions*, Technical Report 66-22, by Richard W. Sheldon and John F. Bjorklund, December 1966.** AD-646 799

The objective was to determine whether pursuit rotor performance would be facilitated, and the level of achievement sustained, with the use of the reinforcement technique of shaping. The procedure used in this study was progressively lengthening, from session to session, the continuous target contact required to obtain a reinforcement, keeping the duration requirement constant within each session. Two groups of four subjects each practiced under the experimental conditions for ten 15-trial sessions. Reinforcement was provided during Sessions 2-7. Half of the experimental subjects improved appreciably during the reinforced practice. When reinforcement was withdrawn, the differences between the mean performance levels of the experimental subjects and a control group of eight subjects, who practiced without any reinforcement, were negligible.

TECHNICAL ADVISORY SERVICE

"The Soldier in Nuclear Combat," by Saul Lavisky, *Army Dig.*, vol. 21, no. 8, August 1966. (Dir. Off.)

GENERAL

(Items Not Directly Related to Specific Elements in the Work Program)[1]

HumRRO Publication

***The Design of Instructional Systems*, Technical Report 66-18, by Robert G. Smith, Jr., November 1966. (Dir. Off.)** AD-644 054

This report, based on an extensive survey of current literature, describes and discusses a system approach to designing training and considers factors bearing on training effectiveness. An efficient instructional system is conceived as one in which the components form an integrated whole, achieving maximum effectiveness at the least possible cost. Components considered in this report include presentation media, student management, techniques for practicing knowledge and performance, knowledge of results, directing student activities toward the goals of the training program, and testing and evaluating the system in terms of efficiency and cost.

Professional and Military Publication

"Factors Influencing the Visual Detection and Recognition of Low-Altitude Aircraft," by A.D. Wright, *Percept. Mot. Skills*, vol. 23, no. 3, Part 1, December 1966. (Div. 5)

Presentations

"Dimensions of Simulation," by Meredith P. Crawford, *Amer. Psychol.*, vol. 21, no. 8, August 1966; issued as HumRRO Professional Paper 5-66, October 1966; previously listed as a presentation at meeting of APA, Los Angeles, 1965. AD-642 806

The uses of simulation in research and development training as well as in the broader field of education are explored. The major uses of simulation are discussed, with special

[1]Items in this section either are not directly related to specific elements of the Work Program, or are related to several elements.

emphasis on the perceptual structuring of environments in relation to occupations prefacing a discussion of the uses of simulation for training and the measurement of its outcomes. Some suggested psychological dimensions of simulations emerge from the discussion.

"HumRRO Techniques in Course Development," by Meredith P. Crawford, HumRRO Professional Paper 15-66, December 1966; based on a paper read at Administrator's Training Seminar, Bureau of Personnel, U.S. Navy, Washington, May 1966. (Dir. Off.) AD-646 979

After a short description of HumRRO and its research program, techniques that have evolved for developing an effective training program are described. The steps are: (a) Analyze the military system in which the job is located; (b) analyze the particular job and its place in the system; (c) develop proficiency measures; (d) specify the knowledges and skills needed by the individual in the job; (e) determine training objectives; (f) construct the training program; and (g) test the program.

"Models *of* and *for* Training," by Eugene A. Cogan, Part II of "Training Models," HumRRO Professional Paper 13-66, December 1966; presented at Military Operations Research Symposium (Human Factors Working Group), Monterey, Calif., May 1966. (Dir. Off.) AD-646 978

"Individualization of Instruction," by Howard H. McFann, paper read at Army Human Factors Research and Development Conference, Fort Benning, Ga., October 1966. (Div. 3)

This presentation reviews the trend—in research and practice—away from individualized instruction in the Army (i.e., away from training programs geared to the individual learner). Approaches to meeting the conditions of individualized instruction are suggested in terms of specification of training objectives, assessment, and instructional methods and media. A break away from the fixed time, single treatment training program is advocated.

"Training for Modern Combat Operations," by T.O. Jacobs, paper read at Army Human Factors Research and Development Conference, Fort Benning, Ga., October 1966. (Div. 4)

"The Utility of Data From Field Performance Measurement," by A. James McKnight, paper read at meeting of Human Factors Society, Anaheim, Calif., November 1966. (Div. 1)