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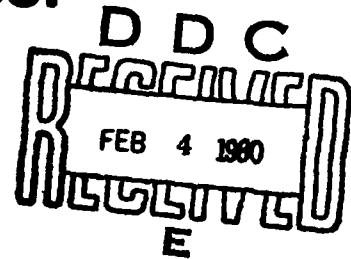
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**AN ANNOTATED BIBLIOGRAPHY OF
DOD-FUNDED REPORTS CONCERNING**

PSYCHOLOGICAL STRESS:

1950-1978



DDC FILE COPY

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AN ANNOTATED BIBLIOGRAPHY OF DOD-FUNDED REPORTS CONCERNING
PSYCHOLOGICAL STRESS: 1950 - 1978

James T. Lester
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I. Introduction

The presentation of this bibliography stems from a long and continuing interest in the phenomena conceptualized as psychological stress. Increasingly, nonclinical psychologists have taken an interest in "stress," and the present collection of references reflects an attempt to keep track of the burgeoning literature. The Department of Defense (DoD) is one of the government agencies most likely to be a producer as well as a consumer of knowledge about stress, and it seemed worthwhile to document its studies on the subject. The majority (76%) of the reports found in this collection are not available in the general psychological literature, which provides another reason for documenting their existence.

The source of this bibliography was the set of abstracts obtained from the Defense Documentation Center (DDC) by requesting the Center to print out all the information it has on reports relating to "psychological stress." This request produced 581 references extending from 1950 into 1978. However, a number of these had to be excluded, either because they did not in fact fit the notion of psychological stress (many for example were almost pure physiology) or because they were not actually done nor funded by the DoD (e.g., English summaries of European studies, studies done by the Federal Aviation Administration, or by the Civil Aeromedical Institute). The number of references remaining after these exclusions was 356, and this is the set presented in the bibliography. All these references are on file with, and thus are available through, the DDC; the necessary AD numbers are provided with each. In addition, some 87 of the total (24%) were also published in the psychological literature; where this fact applies it is indicated.

The summaries given with each reference are based on the abstracts provided by the DDC (often written by the author). In many cases the

abstract was used exactly as it appeared in the computer printout, but a number of the summaries were either shortened or edited in an attempt to make the essential information more salient.

The references are grouped by year of appearance (but alphabetized by author within each year), simply because of my prejudice that the sequence in which different topics have been given emphasis is of considerable interest. Users who want to enter the bibliography with a particular author's name should address the Author Index.

Following the bibliography is an annotated listing of currently-in-progress DoD-funded projects concerning psychological stress, as provided by the DDC.

The user who wants to know something about the broad outlines of the work the DoD has sponsored on the topic of psychological stress may find the following sections useful. They attempt to highlight certain aspects of the mountain of information contained in this bibliography, and to provide a general and manageable answer to the question about broad outlines. They are based on a careful reading and cataloging of all abstracts provided by the DDC (but not necessarily of the original reports or books themselves). For the most part they discuss the number of reports that fall into various categories (e.g., date of issue, source, main subject).

II. Extent of DoD Interest in Stress

If "extent of interest" may be indexed by a simple tally of number of reports, then Table 1 (which groups the number of reports issued by five-year periods) shows that DoD interest increased rather steadily over the period from 1950 through 1974. For example, the decade 1950-59 produced 15% of the total issued, while the decade 1965-74 produced 51% of the total. Over the whole time period (1950-78) in-house DoD laboratories provided slightly fewer reports (48%) than did contractors (52%), but there has been a general trend over time toward a greater proportion of reports from in-house sources (Table 2).

TABLE 1

Number of Reports Appearing in Successive Five-Year Periods

<u>Period</u>	<u>#</u>	<u>%</u>
1950-54	18	05
1955-59	35	10
1960-64	87	24
1965-69	88	25
1970-74	94	26
(1975-78)	(34)	(10)

TABLE 2

Number of Reports Produced In-house and by Contractors
by Five-Year Periods

<u>Period</u>	<u>In-house</u>	<u>% (Of Period Total)</u>	<u>Contract</u>	<u>% (Of Period Total)</u>
1950-54	5	28	13	72
1955-59	15	43	20	57
1960-64	34	39	53	61
1965-69	35	40	53	60
1970-74	60	64	34	36
(1975-78)	21	62	13	38

III. Range of Investigators and Institutions

A tally of the Author Index shows that some 412 authors are represented in this set of references. Only 24 of these authors are associated with 4 or more references; clearly the great majority of investigators considered here wrote no more than one paper on psychological stress (for the DoD). The few authors whose names stand out as associated with the largest number of reports are shown in Table 3.

TABLE 3

List of Salient Authors Represented in Bibliography

<u>Author</u>	<u># References Authored</u>
Rahe, R. H.	22
Gunderson, E. K. E.	17
Myers, T. I.	13
Rubin, R. T.	13
Smith, S.	13
Arthur, R. J.	12
Solomon, P.	10
Rossi, A. M.	9
Murphy, D. B.	8
Cohen, S. I.	7
Helmreich, R. L.	7
Hicks, S. A.	7
Johnson, J. H.	7
Sarason, S.	7
Haythorn, W. W.	6
Silverman, A. J.	6
Weybrew, B. B.	6
Applezweig, M. H.	5
Chiles, W. D.	5
Melton, C. E.	5
Sells, S. B.	5
Shmavonian, B. M.	5
Smith, R. C.	5
Biderman, A. D.	4
Klausner, S. Z.	4
McGrath, J. E.	4
Pugh, W. M.	4
Thackray, R. I.	4

With regard to the subset of contracted studies, the 186 reports (52% of the total) emerged from 93 different institutions, 62% academic and 38% nonprofit research activities. The picture is much the same as with the authors: most institutions are associated with only one report. The institutions associated with the largest number of reports are shown in Table 4.

TABLE 4

List of Salient Contracting Institutions
Represented in Bibliography

<u>Institution</u>	<u># Reports</u>	<u>Range of Years</u>
Human Resources Research Organization (HUMRRO), George Washington University	13	1954-68
Harvard Medical School	11	1960-67
Bureau of Social Science Research, Inc. (BSSR)	8	1961-68
University of Texas at Austin, Psychology Department	7	1967-71
Duke University, Psychology Department	6	1958-66
University of Kentucky, Performance Research Laboratory	5	1968-74
University of Washington (Seattle), Psychology Department	4	1978

With regard to the subset of 170 in-house reports, Navy sources provided 53%, Army 25%, and Air Force 22%. These proportions, however, showed a trend in their changes over time. From 1950 through 1974 Navy laboratories increased their relative contributions while Army and Air Force laboratories showed a general decline in their (relative) contributions; in fact, for the period 1970-74 Navy sources, and one in particular, contributed 72% of all in-house DoD stress-related reports. Both the Army and the Air Force hit their peak productivity (as measured by number of reports issued)

in the early '60s, while the Navy did so in the early '70s. Army work reflects an emphasis on the effects of various stressors (especially noise, restricted environments, temperature, and vibration) on weapon system performance; Air Force work has emphasized studies of confinement, isolation, and sensory deprivation; and Navy efforts have concentrated heavily on studies of "life stress" as it relates to health. For each service one particular source stands out as the stress-specializing center. For the Navy it has been the Naval Health Research Center in San Diego (49% of the Navy report total through 1977); for the Army the Human Engineering Laboratory at Aberdeen (28% of the Army report total); and for the Air Force, the Aero-Medical Research Laboratory at Wright-Patterson AFB (40% of the Air Force total).

IV. Focus of DoD Interest in Stress

The question addressed here is, what kinds of information about stress do these 356 reports make available? This is essentially a question concerning the clustering of reports into content categories. To achieve a "broad and manageable" answer to this question, I read all the abstracts carefully and then invented a set of categories for describing their various contents (see Table 5). With this set of categories I attempted to (1) capture the natural groupings among reports (as seen by a psychologist), and (2) reflect the range of interests that might exist among potential users of the information. The main idea was to save users some time and effort, by indicating where to look first for certain kinds of subject matter. There are no doubt many other ways one might slice this pie, depending on special interests, and I can only hope that this way of doing it will be generally useful.

Section VII lists those specific references providing information on each of the topics indicated in Table 5.

TABLE 5

DoD References / ustered by Content Area Included

<u>Category #</u>	<u>Category Name</u>	<u># Reports</u>	<u>% of Total</u>	<u>Rank</u>
1	reviews/discussion	88	25	2
2	theory	14	04	11
3	methodology	61	17	5
4	task/performance	128	36	1
5	cognitive factors	64	18	4
6	social processes	58	16	6
7	coping strategies	12	03	12
8	personality	48	13	7
9	health	44	12	8
10	intervention	15	04	10
11	life events	28	08	9
12	confinement, deprivation	87	24	3

It may be worthwhile to articulate several highlights of the information contained in Table 5. First a word about how it was produced. Once the categories had been invented, each abstract was reread and received a check in one or more of these categories, to profile the information that might be found in each. (Note that the categories are not mutually exclusive and a given report will often appear in the lists for several categories.) Tallying the number of checks in each category gave the information shown in Table 5.

It is clear that the content area touched on by the largest number of DoD-funded reports (128, or 36% of the total) is Task Performance. The topic reflected in the second largest number of reports is Reviews (88, or 25%). Near the bottom of the list are reports which concentrate on Theory (4%) and on Interventions (4%), and at the absolute bottom is a topic area which I believe is now coming into the foreground in the stress research field in general: Coping Strategies (3%). Social Processes (16%) and Cognitive Factors (18%) have been given moderate and nearly equal emphasis in this set of reports.

Most of these 12 categories reveal nearly equal proportions of in-house and contract work. However, in-house work significantly predominates in two closely related and overlapping categories, Health and Life Stress, while contract work clearly predominates in these categories: Theory, Reviews, Cognitive Factors, and Coping Strategies.

V. Bibliography

The items are clustered by year of issue, and alphabetized by author within the year. Each item is identified by two numbers: the first is a simple sequential number (1 - 356) to allow easy referencing in future technical reports concerning this bibliography; the second (AD-) the number required for access to the report via the DDC.

1950

- 1 Deese, James; Bowen, Hugh M.
AD- 660 022 Johns Hopkins University, Psychological Lab
The Effect of Task-Induced Stress on Code Learning Dec 1950
15p

The effect of rapid pacing was to impair performance on a code-learning task; the degree of impairment appears to interact with the level of difficulty of the material. A practice session intervened between the first and second test, and there was no evidence on the second of the stress impairment seen on the first.

1951

- 2 Lazarus, Richard S.; Deese, James; Osler, Sonia F.
AD-A010 669 Air Force Personnel and Training Research Center, Lackland
AFB, TX
Review of Research on Effects of Psychological Stress upon
Performance Dec 1951 18p

The effect of emotional or psychological stress on human performance is an important consideration in many activities. A combat situation represents an outstanding example. Stress is induced in many other activities, for example, in accelerated training programs where great emphasis is placed on completing a difficult course successfully in limited time. Since not too much is known regarding the specific effects of psychological stress on various types of human performance, this problem presents a fruitful and challenging area for human resources research. This bulletin represents a review of past investigations of the effects of stress.

1952

- 3
AD- 3 307 Coonan, Thomas J.; Cofer, Charles N.
University of Maryland, Dental School
Inhibition of Thought Categories Under Stress: An Exploratory
Study Sep 1952

(No abstract available)

- 4
AD- 496 014 Deese, James; Lazarus, Richard S.
Johns Hopkins University
The Effects of Psychological Stress Upon Perceptual-Motor
Performance Jun 1952 21p

In the laboratory situation studied here, the results suggest that when psychological stress is introduced before a perceptual-motor task is relatively well learned, the result may be a deterioration of performance; whereas after performance on the task is relatively well established, introduction of stress may actually result in improvement of performance.

- 5
AD- 224 248 George, Alexander L.
Rand Corporation, Santa Monica, CA
Emotional Stress and Air War. A Lecture given at the Air War
College Air University, 28 November 1951 May 1952 27p

(No abstract available)

1953

- 6
AD- 615 705 (No author available)
Army Medical Service Graduate School, Washington, DC
Symposium on Stress (16-18 March 1953) Mar 1953 341p

A partial listing of contents: Metabolic responses in acute and chronic stress; stress in combat zones; psychological transactions in stress situations; common psychological defense to stressful situations and the patterns of breakdown when they fail; interpersonal communication of anxiety; group behavioral changes denoting strain; cultural perspectives on stress; reciprocal relations between incentives, motivation, and strain in acute and chronic stress; role of the leader in prevention of disease; influence of drugs on certain stressful states; experimental evocation of stress; implications of stress in psychological warfare.

- 7
AD- 30 779 Andrews, T. G.; Ross, Sherman
University of Maryland
Indicators of Behavior Decrements 1953

(No abstract available)

- 8
AD- 29 591 McGehee, Charles R.; Sabeh, Raymond; Chiles, W. Dean
Aerospace Medical Research Labs, Wright-Patterson AFB, OH

Operator Fatigue and Fighter Range Extension Oct 1953

(No abstract available)

9
AD- 41 773 Miller, James G.; Bouthilet, Lorraine; Eldridge, Carmen
Psychological Research Associates, Inc., Arlington, VA
A Bibliography for the Development of Stress - Sensitive
Tests Oct 1953

(No abstract available)

10
AD- 30 587 Versace, John
University of Maryland
A Study of Level of Aspiration Under Conditions of Stress
Sep 1953

(No abstract available)

1954

11
AD- 47 108 Applezweig, Dee G.; Applezweig, Mortimer H.
Connecticut College
I-The Behavior Interpretation Inventory, Stress, and Behavior
Aug 1954

(No abstract available)

12
AD- 34 039 Carlson, Virgil R.; Lazarus, Richard S.
Johns Hopkins University
A Repetition of Meyer Williams' Study of Intellectual Control
Under Stress and Associated Rorschach Factors Apr 1954

(No abstract available)

13
AD- 33 777 Domanski, Thaddeus J.
School of Aviation Medicine, Randolph AFB, TX
Physiological Recognition of Strain in Flying Personnel.
Eosinopenia in B-29 Training Operations Apr 1954

(No abstract available)

14
AD- 625 919 Hammock, Joseph C; Prince, Albert I.
Human Resources Research Office, George Washington University
A Study of the Effects of Manifest Anxiety and Situational
Stress on M-1 Rifle Firing Oct 1954 58p

Soldiers scoring at the extremes of a scale of manifest anxiety were test
fired on the M-1 rifle under "normal" and "stress" conditions. The firing

procedure for normal conditions was substantially the same as in conventional record fire. The stress condition was similar but involved a series of explosions going off successively closer to the firing. False instructions were given which stated that a charge directly in front of the firer's position would be detonated eventually if the firer did not make three bull's-eyes in the time allotted.

15 Riich, David McK.
AD- 111 001 Walter Reed Army Institute of Research, Washington, DC
 Problems of Preventive Psychiatry in War Oct 1954

(No abstract available)

16 Simon, Charles W.
AD- 55 977 Antioch College
 Effects of Stress on Performance in a Dominant and a Non-
 Dominant Task Jun 1954

(No abstract available)

17 Taylor Jean G.
AD- 34 311 Research Analysis Corporation, McLean, VA
 Symposium on the Role of Stress in Military Operations 1 and
 2 May 1955 Apr 1954

(No abstract available)

18 Woessner, Barbara L.
AD- 50 780 University of Maryland
 Effects of Stress and Display-Control Relationships on
 Response Discrimination Feb 1954

(No abstract available)

1955

19 Applezweig, M. H.
AD- 64 998 Connecticut College
 Motivation and Psychological Stress Apr 1955

(No abstract available)

20 Kinsey, Jack L.; Murphree, Henry B.
AD- 72 945 Naval Medical Research Lab, New London, CT
 Claustrophobic Reactions to Some Stresses of the Submarine
 Service Apr 1955

(No abstract available)

21 Kohn, Hugh B.
AD- 841 759 Crew Research Lab, Survival Research Field Unit, Stead AFB, NV
 Toward a Theory of Psychological Stress: An Interim Report
 Jan 1955 6p

An attempt to inaugurate a series of investigations into reaction to psychological stress, oriented toward implications for training of Air Force personnel. Presents initial thinking toward a generalized theory of psychological stress and implications for survival. Theorizes that the quality of performance under stress is improved when habit structure is such that a minimum of task irrelevant responses have been built during Ss lifetime, and vice versa. Failure stress evokes habit structures pertaining to the self concept, while distraction stress is more closely related to the autistic ego-defense mechanisms.

22 Meade, R. D.; Tckenrode, R. T.
AD- 78 084 Frankford Arsenal, Pitman-Dunn Research Labs, Philadelphia, PA
 Psychological and Physiological Effects of Gun Blast with
 Special Reference to Recoilless Rifles. A Preliminary
 Literature Survey Sep 1955

(No abstract available)

23 Paradise, Noel
AD- 488 597 Human Resources Research Office, George Washington University
 An Investigation of Two Measures of Palmar Sweat Under Field
 Conditions May 1955 14p

It is concluded that in its present state of development the finger clamp technique for measuring palmar sweat should not be used under field conditions except for further study of the technique itself.

24 Voas, Robert B.; Bair, John T.; Ambler, Rosalie K.
AD- 77 747 Naval School of Aviation Medicine, Pensacola, FL
 The Relationship Between Behavior in a Stress Situation and
 Later Separation from Flight Training with Expressed
 Anxiety Toward Flying Jun 1955

(No abstract available)

1956

25 Bach, L. M. N.; Sperry, C. J., Jr.
AD- 111 076 Tulane University
 Studies and Investigations of the Effects of Flickering Light
 on Human Subjects Apr 1956

(No abstract available)

26 Bach, L. M. N.; Sperry, C. J., Jr.; Roy, J. T.
AD- 111 077 Tulane University
Studies on the Effects of Flickering Light on Human Subjects
Jun 1956

(No abstract available)

27 Harris, William; Mackie, Robert R.; Wilson, Clark L.
AD- 103 779 Human Factors Research, Inc., Los Angeles, CA
Performance Under Stress: A Review and Critique of Recent
Studies Jul 1956

(No abstract available)

28 Lifton, Robert J.
AD- 124 316 Walter Reed Army Institute of Research, Washington, DC
Brainwashing in Perspective: A Psychiatric Appraisal of
Chinese Communist Thought Reform Oct 1956

(No abstract available)

1957

29 (No author available)
AD- 126 845 Army Medical Research Lab, Fort Knox, KY
The Influence of Intense Noise on Performance of a Precise
Fatiguing Task Apr 1957 11p

(No abstract available)

30 Applezweig, Mortimer H.
AD- 158 085 Connecticut College
Psychological Stress and Related Concepts: A Bibliography
Dec 1957

(No abstract available)

31 Applezweig, Mortimer H.; Moeller, George
AD- 125 278 Connecticut College
The Role of Motivation in Psychological Stress Jan 1957

(No abstract available)

32 Asher, J. W.; Doty, L. A.; Hanley, R. D.; Steer, M. D.
AD- 639 107 Purdue University
A Study of the Effects of Stress on Speaking and Listening
Abilities Feb 1957 15p

Ss were required to perform a listening and repeating task either alone, while doing a simple psychomotor task, or while doing a complex psychomotor task (three levels of stress). There was decrement in all conditions; the more complex the task the greater the decrement, and the more likely the individual was to show signs of emotional stress.

33 Bonner, R. H.
AD- 142 256 Aerospace Medical Research Labs, Wright-Patterson AFB, OH
 The Effects of Stress on Uropepsin Excretion Dec 1957

(No abstract available)

34 Chiles, W. Dean
AD- 130 942 Aerospace Medical Research Labs, Wright-Patterson AFB, OH
 Psychological Stress as a Theoretical Concept Jul 1957

(No abstract available)

35 Garvey, W. D.
AD- 143 374 Naval Research Lab, Washington, DC
 The Effects of "Task-Induced Stress" on Man-Machine System
 Performance Sep 1957 11p

(No abstract available)

36 Meeland, Tor; Egbert, Robert L.; Miller, Irwin
AD- 800 675 George Washington University, Human Resources Research Office
 Field Stress: A Preliminary Study of its Structure, Measure-
 ment, and Relationship to Combat May 1957 132p

In groups of 19 to 28, 148 Fort Ord trainees underwent 5 consecutive days of psychological testing and performance on 7 experimental stress situations involving fire, darkness, height, distraction by explosives, fatigue, and electric shock. Factor analysis of 50 diverse measures of stress performance yielded 6 major factors. Relationships between life history and personality characteristics of stress performers and combat performers were analyzed.

37 Smith, Robert G., Jr.; Cox, John A., Jr.
AD- 98 922 Personnel Research Lab, Lackland AFB, TX
 Methods of Reduction of Psychological Stress Due to Radia-
 tion Feb 1957

(No abstract available)

1958

38 Applezweig, Mortimer H.
AD- 158 086 Connecticut College
 Psychological Stress and Related Concepts: Indices to a
 Bibliography Jan 1958

(No abstract available)

39 Chiles, W. Dean
AD- 151 083 Aerospace Medical Research Labs, Wright-Patterson AFB, OH
 Effects of Shock-Induced Stress on Verbal Performance
 Jun 1958 15p

(No abstract available)

40 Cohen, Sanford I.; Silverman, Albert J.
AD- 253 126 Duke University
 Practical and Theoretic Difficulties in Isolation Studies
 Dec 1958

Sensory deprivation and isolation involves a large number of variables related to (1) the subject, (2) the experimenter, and (3) the situation. These variables are listed and described. Some examples suggest the difficulties which may be created if these are not assessed. Systematic interdisciplinary studies may be essential to fully realize the impact of stress and the kind of changes which may occur. Two preliminary studies on 14 subjects are presented with the kind of theoretical problems which were provoked by the results. A multidisciplinary approach may permit a detailed investigation of mechanisms mediating psychophysiological relationships and clarify factors responsible for observed responses.

41 Kerle, Robert H.; Bialek, Hilton M.
AD- 489 875 Human Resources Research Office, George Washington University
 The Construction, Validation and Application of a Subjective
 Stress Scale Feb 1958 39p

A scale was constructed, based on the Thurstone scaling technique, to provide a statistically manipulable measure of an S's affective reaction under field experimental conditions. Efforts were made to utilize both contrived and natural situations in order to test application of the scale, which in fact detected significant affective changes in those situations judged stressful by the experimenters (but independent assessment of the situations was not obtained). Rapidity and ease of administration in addition to the interpretive possibilities encourage further applications of the scale.

42 Murray, Edward J.
AD- 226 482 Walter Reed Army Institute of Research, Washington, DC
 Conflict and Repression During Sleep Deprivation May 1958 7p

(No abstract available)

43 Notterman, Joseph M.; Trumbull, Richard
AD- 740 272 Princeton University
 Note on Self-Regulating Systems and Stress Sep 1958 6p

(No abstract available) (See Behavioral Science, 1959, 4, no. 4, 324-327.)

1959

44 (No author available)
AD- 228 001 University of Washington, School of Medicine
 Physiological Stress and Food Consumption Jul 1959 13p

(No abstract available)

45 (No author available)
AD- 255 487 Massachusetts Mental Health Center, Boston
 Symposium, Sensory Deprivation: Facts in Search of a Theory,
 Held at the Annual Convention of the American Psychological
 Association in Cincinnati, September 1959 Dec 1959

(No abstract available) (See Journal of Nervous and Mental Disease, 1961,
132, 17-43.)

46 Austin, Frank H.
AD- 248 343 Poroloy Equipment, Inc., Pacoima, CA
 Physiological Instrumentation of Pilots for Test and Opera-
 tional Flights in Navy High Performance Jet Aircraft,
 Phase I. Preliminary Investigations May 1959 3p

Information is presented on the electrocardiogram and respiratory rate during spin tests of a supersonic carrier fighter airplane. Also presented are the accelerations encountered by a pilot, measured concurrently on the airplane seat frame and on his helmet during catapult launch, rapid accelerations and decelerations and rolls and under actual instrument flight conditions. Analysis of accelerations during actual instrument approaches may lead to better understanding and solution of the vertigo accident problem. An oximeter pick-up based on a new concept of operation and packaged with a miniaturized tape recorder for in-flight data link, now under development for flight test, is described.

47 Blyth, Carl S.
AD- 229 723 University of North Carolina
 Influence of Physical Characteristics, Psychological Factors,
 and Drugs on the Capacity of Man to Work in the Heat
 Nov 1959 16p

(No abstract available)

48 Freedman, Sanford J.; Greenblatt, Milton
AD- 231 290 Massachusetts Mental Health Center, Boston
Studies in Human Isolation Sep 1959 46p

(No abstract available)

49 Jeantheau, Gabriel
AD- 233 460 Ohio State University, Research Foundation, Lab of Aviation
Psychology
The Differential Effects of Speed and Load Stress on Task
Performance Jul 1959

(No abstract available)

50 Silverman, A. J.; Cohen, S. I.; Shmavonian, B.
AD- 253 128 Duke University
Selection Techniques for Space Crews Sep 1959

(No abstract available)

51 Weybrew, Benjamin B.
AD- 489 232 Naval Medical Research Lab, New London, CT
Bibliography of Sensory Deprivation, Isolation and Confine-
ment May 1959 6p

This report compiles a bibliography of publications in the area of sensory deprivation, isolation, and confinement, for use in connection with studies of stress in connection with long continued submerged cruises in submarines, as expected in ICBM submarines, for example.

52 Weybrew, Benjamin B.; Alves, D.
AD- 232 983 Naval Medical Research Lab, New London, CT
An Exploratory Study of the Relationship of Autonomic
Resiliency to Manifest Anxiety and Selected Personality
Traits Mar 1959

(No abstract available)

53 Wheaton, Jerrold L.
AD- 226 325 School of Aerospace Medicine, Brooks AFB, TX
Fact and Fancy in Sensory Deprivation Studies Aug 1959 60p

(No abstract available)

1960

54 Burns, Neal M.; Ziegler, Ralph B.
AD- 242 158 Naval Air Engineering Center, Aerospace Crew Equipment Lab,
Philadelphia, PA

Environmental Requirements of Sealed Cabins for Space and
Orbital Flights - A Second Study. Part 3. Effects of
Long Term Confinement on Personality and Perception
Jul 1960

(No abstract available)

- 55 Capretta, Patrick J.; Berry, James L.; Kerle, Robert H.;
AD- 478 381 Lamonaca, Hugh L.
 Human Resources Research Office, George Washington University
 Validity and Reliability of Certain Indicators of Psycho-
 logical Stress Jun 1960 6p

Report on Task Fighter. Exposure of humans to an apparently affect-
producing situation produced concomitant performance effects on backward
digit memory span tested during the situation but not on subsequent per-
formance of other tasks. Habituation reduced both the affective and
behavioral response.

- 56 Cohen, Sanford I.; Silverman, Albert J.; Shmavonian, B. M.
AD- 245 460 Duke University
 Psychophysiological Mechanisms of Stress Responsivity
 Oct 1960

(No abstract available)

- 57 Davis, John M; McCourt, William F.
AD- 262 642 Harvard Medical School
 Sensory Deprivation. The Role of Social Isolation Dec 1960

Two series of experiments were conducted to test the effect of social con-
tact in a standardized sensory deprivation situation. In the first, five
pairs of male strangers were tested, each of a pair being in his own tank-
type respirator, not seeing one another but permitted to converse. In
the second, 11 married couples were tested similarly. The results indi-
cated that social contact, provided in this manner, did not eliminate the
effect of sensory deprivation, but it did ameliorate it.

- 58 Ekman, Paul
AD- 239 489 Walson General Hospital, Fort Dix, NJ
 Psychological Reactions to Basic Training Jun 1960

(No abstract available)

- 59 Ekman, Paul
AD- 241 653 Walson General Hospital, Fort Dix, NJ
 Psychological Reactions to Basic Training Aug 1960

(No abstract available)

60 Elmadjian, Fred
AD- 239 377 Worcester Foundation for Experimental Biology, Shrewsbury, MA
The Effects of Stress and Steroids on Metabolism of Epinephrine and Norepinephrine Jun 1960

(No abstract available)

61 Flaherty, Bernard E.; Flinn, Don E.
AD- 245 416 School of Aerospace Medicine, Brooks AFB, TX
Psychiatry and Space Flight Sep 1960 23p

(No abstract available)

62 Green, Norman E.
AD- 239 461 Air Force Cambridge Research Center, Operational Applications Lab, Washington, DC
Fatigue and Tension in Sage Operator-Team Performance: A Sociological Analysis May 1960

(No abstract available)

63 Hicks, Samuel A.
AD- 238 340 Human Engineering Labs, Aberdeen Proving Ground, MD
The Effects of Four Hours Confinement in Mobile Armored Personnel Carriers on Selected Combat Relevant Skills. A Pilot Study Sep 1960

(No abstract available)

64 Klier, Sol; Linskey, Joseph W.
AD- 253 068 New York University, School of Engineering and Science
Selected Abstracts from the Literature on Stress Nov 1960

This report is the result of a comprehensive literature search for information on stress pertinent to the training problem. It provides a source of background information from which specific hypotheses and variables will be delineated for study in a research program aimed at the introduction of stress in training devices and training programs. From the literature on stress and anxiety, 397 articles were selected and abstracted. In general, selection was made on the basis of the relevance of the study for determining and/or measuring the effects of stress or anxiety on human behavior.

65 Plotnikoff, Nicholas; Birzis, Lucy
AD- 249 091 Stanford Research Institute, Menlo Park, CA
Drug Enhancement of Performance Sep 1960

(No abstract available)

66 Rasmussen, A. F.
AD- 261 688 Naval Medical Research Unit No. 2, Taipei (Taiwan)
Emotional Stress and Susceptibility to Infectious and
Allergic Diseases Dec 1960

(No abstract available)

67 Ray, Wilbert S.
AD- 235 021 Bethany College
Repetition of Two Experiments on Mild Stress and Problem
Solving Apr 1960

(No abstract available)

68 Reidy, Joseph J.
AD- 294 087 Arctic Aeromedical Lab, Fort Wainwright, AK
Fletcher's Ice Island: A Psychiatric Report Jan 1960

A study of the first nine months of the occupancy of Fletcher's Ice Island was conducted by interviews with men stationed there and supporting personnel, together with a visit by the author to the island. In general, qualified personnel were selected for duty there, and they adjusted well except for two members. Research in the Polar regions is now carried out under circumstances which differ greatly from those prevailing during the classic exploratory expeditions. Procedures for the selection and indoctrination of personnel should be formulated in the light of present day conditions.

69 Rohrer, John H.
AD- 246 610 Georgetown University
Human Adjustment to Antarctic Isolation Sep 1960

(No abstract available)

70 Solomon, Philip
AD- 262 641 Harvard Medical School
Sensory Deprivation: A New Technique in Psychopharmacology
Dec 1960

The evidence indicates that regressed, primitive primary process reactions are released. Sensory deprivation thus provides a unique opportunity for studying the effects of drugs upon subjects under conditions in which primary and secondary process material can be differentiated. In our laboratory, human volunteers are being tested under conditions of sensory deprivation with tranquilizers, energizers and placebos. Each subject serves as his own control. Particular interest is being shown in the quantification of imagery, with attention being paid to such elements as clarity, intensity, complexity, affective concomitants, efforts to control, insight, etc.

71 Strope, W. E.; Etter, H. S.
AD- 237 130 Naval Radiological Defense Lab, San Francisco, CA
 The Shelter Occupancy Test of 3-17 December 1959 May 1960

(No abstract available)

72 Weybrew, Benjamin B.; Parker, James W.
AD- 234 102 Naval Medical Research Lab, New London, CT
 Bibliography of Sensory Deprivation, Isolation and Confinement
 Jan 1960

(No abstract available)

73 Weybrew, Benjamin B.; Youniss, Richard P.
AD- 255 575 Naval Medical Research Lab, New London, CT
 The Relationship of Breath-Holding Ability, Manifest Anxiety,
 and Past Aquatic Experience to Performance in the Pressure
 Chamber and Escape Training Tank Jan 1960

Ss were 900 enlisted volunteers for submarine school. Breath-holding ability was higher for those passing the pressure criterion and for those passing the tank criterion than for those failing either. Scores on the Personal Inventory Barometer were higher (more "neurotic") for those who failed pressure but not for those who failed the tank. More of those who failed the tank learned to swim at a younger age, and more of those failing pressure reported a past history of near-drowning. More failing pressure reported inability to swim any great distance under water.

1961

74 Biderman, Albert D.
AD- 257 325 Bureau of Social Science Research, Inc., Washington, DC
 Cultural Models of Captivity Relationships Feb 1961

The behavior of captives is in large measure dependent upon their conceptions of what social roles are appropriate to the unfamiliar situations they encounter. These situations are also shaped in important ways by cultural conceptions of the captor regarding the status of his captives. The present report reviews some of the historical and traditional elements of the cultures of captor and captives that have important direct effects on these role conceptions.

75 Biderman, Albert D.; Heller, Barbara S.; Epstein, Paula
AD- 253 964 Bureau of Social Science Research, Inc., Washington, DC
 A Selected Bibliography on Captivity Behavior Feb 1961

The bibliography lists titles reviewed during a study of the implications for the social sciences of knowledge developed in studies of prisoners of war, political prisoners, concentration camp prisoners, and civilian

internees. The bibliography attempts comprehensive coverage of scientific and scholarly material relating to Americans captured during the Korean War, and of other events since 1940. Significant studies of earlier events and illustrative autobiographical, journalistic, and propagandistic accounts are also listed.

76
AD- 253 365 Biderman, Albert D.; Schein, Edgar H.
Bureau of Social Science Research, Inc., Washington, DC
The Relevance for the Social Sciences of Knowledge Derived
from Studies of Stressful Captivity Mar 1961

The report presents an outline of topics treated in works on stressful captivity that are relevant to the social sciences. The outline has been employed in a larger work (in preparation) which attempts to analyze and integrate the present and potential contributions of studies of stressful captivity situations to social science knowledge. The focus is on studies of American prisoners during the Korean War. These studies are considered in relation to reports of other prisoner-of-war, concentration camp, and political prisoner experiences.

77
AD- 263 609 Cope, Freeman W.
Naval Air Development Center, Aviation Medical Acceleration
Lab, Johnsville, PA
An Automated System for the Study of Mental Function in the
Human Subjected to Acceleration Stress Sep 1961

The subject is given the task of adding two random numbers which are given to him via his earphones every three seconds. The subject is told to press a right- or left-hand switch according to whether the answer is even or odd. A continuous readout is presented by a small combination analog-digital computer system. The steepness of the slope of the output record indicates the speed and/or accuracy of the subject's mental functioning. Preliminary studies using the above method showed that mental functioning seems to be slowed during acceleration stress. For acceleration studies, the method has the advantage of giving an indication of mental function independence of changes in vision occurring during greyout.

78
AD- 270 003 Fiedler, Fred E.; McGrath, Joseph E.
University of Illinois
Interpersonal Perception and the Psychological Adjustment of
Group Members Dec 1961

Studies are being conducted on: (1) identification of intrapersonal correlates of quasitherapeutic personality attributes; (2) investigations utilizing experimental manipulation of interpersonal perception; (3) investigation of task and situational variables which affect group member adjustment; and (4) development of methods for group management which will lead to quasitherapeutic interpersonal relations among group members. These include as Bly (sic), role training, and situational manipulations leading to the development of adjustive interpersonal relations.

79 Goldberger, Leo; Holt, Robert R.
AD- 268 172 Research Center for Mental Health, New York University
 A Comparison of Isolation Effects and Their Personality
 Correlates in Two Divergent Samples Aug 1961

Two groups of Ss (14 undergraduates and 16 unemployed actors) were put through an intensive multiform assessment (a battery of objectively scorable tests plus qualitative data from projective techniques, interview, and autobiography) and then underwent a sensory deprivation experience, reactions to which were judged from verbalizations during the confinement (14 dependent variables were so derived); these were then intercorrelated, and both the individual variables and their syndromes were related to the variables from the assessment. Implications for space flight are discussed.

80 Goldberger, Leo; Holt, Robert R.
AD- 268 782 Research Center for Mental Health, New York University
 Studies on the Effects of Perceptual Alteration Aug 1961

Three separate studies explored facets of sensory alteration (sensory deprivation). One study focused on the role of a diffuse, homogeneous visual field (Ganzfeld) in promoting visual images; the second compared performance on a cognitive test battery immediately following eight hours of perceptual isolation with performances under a drug (100 gamma of LSD-25) and a placebo condition; the third study dealt with the effects upon cognitive functioning of an eight-hour isolation experience, during which constant auditory vigilance was required of the subjects.

81 Goodman, B. D.
AD- 252 434 System Development Corporation, Santa Monica, CA
 The Psychological and Social Problems of Man in Space: A
 Literature Survey Mar 1961

The purpose of this bibliography is to bring together the reports, books, and periodical articles published through January 1961 in the specific area of behavioral science related to space flight, or as it is sometimes called space psychology. This area includes social and sensory isolation, psychological assessment and training, fatigue, confinement, performance under stress, work schedules, motivation, weightlessness, disorientation, emotional stability and the day-night cycle.

82 Hartman, Bryce O.; McKenzie, Richard E.
AD- 261 553 School of Aerospace Medicine, Brooks AFB, TX
 Systems Operator Proficiency, Effects of Speed Stress on
 Overload Performance Jun 1961

(No abstract available)

- 83 Hicks, Samuel
AD- 252 338 Human Engineering Labs, Aberdeen Proving Ground, MD
 The Effects of Twelve Hours Confinement in Static Armored
 Personnel Carriers on Selected Combat Relevant Skills:
 Study III Feb 1961

Changes in general combat relevant performance as a result of sustained confinement in armored personnel carriers (APCS) were determined as a result of 12 hours' confinement in static (stationary) APCS. It was also intended to determine the extent to which subjects' activity level contributes to the observed decrements. Forty enlisted men were tested both before and after confinement on tests designed to measure stamina, eye-arm coordination, gross motor coordination and rifle accuracy. The 12-hour confinement period resulted in statistically significant losses in 5 areas.

- 84 Hicks, Samuel A.; Randall, Russell B.
AD- 258 224 Human Engineering Labs, Aberdeen Proving Ground, MD
 The Effects of Twelve Hours Confinement in Mobile Armored
 Personnel Carriers on Selected Combat Relevant Skills:
 Study IV May 1961 11p

This study, the 4th in a series investigating changes in general combat relevant performance as a result of sustained confinement in armored personnel carriers, studied changes as a result of 12 hours' confinement in mobile APCs. Forty enlisted men were tested before and after confinement on stamina, eye arm coordination, locomotor coordination, equilibrium, and hand-arm steadiness. The 12 hour confinement resulted in statistically significant losses in stamina and locomotor coordination.

- 85 Lutsker, Daniel R.
AD- 261 749 Walston General Hospital, Fort Dix, NJ
 Psychological Reactions to Infantry Basic Training. II.
 Are the Changes Stable? Aug 1961

An earlier study (see #s 58, 59) attributed personality changes to basic training. Were these stable or merely situational stress reactions? Seventy-nine of the original 92 Ss were retested with the MMPI at least 6 months after basic training, with equivocal results. Some differences remained, others did not, still others were new. No conclusion can be drawn at the present time regarding the effects of basic training on personality. A larger scale study controlling more variables which may be relevant (religion, urban rural residence, social class, etc.) seems to be needed.

- 86 Myers, Thomas L.; Murphy, Donald B.; Smith, Seward
AD- 478 520 Human Resources Research Office, George Washington University
 Progress Report on Studies of Sensory Deprivation Mar 1961
 28p

Task Endorse began in 1956 at a time when interest in the effects of sensory deprivation was high. The research task proposed at that time was subject to close scrutiny due to concern that the experimental conditions might have

harmful effects. A pilot study, using staff experimenters themselves as Ss and utilizing crudely constructed devices and methods, demonstrated the feasibility of the project, at least with regard to safety from severe physical and mental hazard. Considerable time was devoted to extensive planning re the type of laboratory (abstract interrupted here).

87 Ormiston, Donald W.; Finkelstein, Beatrice
AD- 272 181 Aerospace Medical Research Labs, Wright-Patterson AFB, OH
The Effects of Confinement on Intellectual and Perceptual
Functioning Oct 1961

Ten S were individually confined in a small capsule for 48 hours and required to work intermittently on intellectual (arithmetic, digit memory, confusing sentences, nonsense syllables, verbal analogies, same opposite word meanings, logical reasoning), perceptual (warning-light monitoring, embedded figures, form discrimination, aerial reconnaissance), and compensatory tracking tasks. No decrement was observed in intellectual performance, and only one in perceptual performance (aerial reconnaissance). No significant performance effects were attributable to a special diet designed for consumption in a space vehicle.

88 Poe, R. H.; Davidson, F. T.; Brieger, G.
AD- 265 968 Army Medical Research Lab, Fort Knox, KY
The Physiological Responses of Men Wearing Chemically
Impregnated Protective Clothing in a Hot Dry Climate
Sep 1961 8p

(No abstract available)

89 Robins, James E.; McKendry, James M.; Hurst, Paul M.
AD- 667 272 HRB-Singer, Inc., State College, PA
Task - Induced Stress: A Literature Survey Oct 1961 104p

An attempt is made to define psychological stress in terms of the published material bearing the label "stress" and thus provide an overview of the field. In the review individual difference material is treated separately from treatment effects. A formulation is presented of the relationships believed to be involved in task-induced stress. A model is presented concerning the "emotional" component of psychological stress and a hypothesis is put forward for how this component and information overload combine to produce performance effects. Implications for control are derived from these conceptualizations.

90 Sells, S. B.
AD- 276 829 Arctic Aeromedical Lab, Fort Wainwright, AK
Military Small Group Performance Under Isolation and Stress.
An Annotated Bibliography. III. Environmental Stress and
Behavior Ecology Oct 1961

(No abstract available)

1962

- 91 (No author available)
AD- 478 300 Human Resources Research Office, George Washington University
Collected Papers Related to the Study of the Effects of
Sensory Deprivation and Social Isolation Feb 1962 69p

This report concerns Task Pioneer. Contents:

- a preliminary study of the effects of controlled isolation
- the reliability of a modified digit span procedure
- visual sensations experienced in the dark as a function of instruction and prior verbalization
- some basic factors in sensory deprivation research
- a technique for studying attitude change
- a simple tracking apparatus for classroom or experimentation

- 92 Berkun, Mitchell M.
AD- 469 091 George Washington University, Human Resources Research Office
Experimental Studies of Psychological Stress in Man 1962
39p

A simulated, but apparently real, approach allows for the study of the possible different effects of serious threats to life, as compared with the effects of laboratory "stresses" such as information overload, electric shock, or achievement failure. To evaluate the adequacy of a simulation, three criteria are proposed: (1) on a checklist Ss must indicate a significantly greater mean negative affect than a control group; (2) the distribution of scores of experimental Ss must differ either in location or shape from that of control Ss on the performance of a threat relevant task. (Third criterion not in abstract.) (See Psychological Monographs: General & Applied, 1962, 76, no. 15.)

- 93 Braun, J. R.; Sells, S. B.
AD- 286 516 Texas Christian University
Military Small Group Performance Under Isolation and Stress,
Critical Review. 111. Environmental Stress and Behavior
Ecology Jun 1962

(No abstract available)

- 94 Chambers, Randall M.
AD- 275 830 Naval Air Development Center, Aviation Medical Acceleration
Lab, Johnsville, PA
Problems and Research in Space Psychology Apr 1962

The scientific literature on the psychological aspects of space flight is reviewed in the following areas: (A) Psychological requirements for man in space, (B) Sensing and perceiving, (C) Perceptual and motor skill performance, (D) Cognitive processes and other higher mental abilities, (E) Personality and emotional behavior, (F) Psychological aspects of astronaut selection, and (G) Psychological conditioning and training.

95 Cohen, Sanford I.; Silverman, Albert J.; Shmavonian, B. M.
AD- 400 093 Duke University
Neurophysiological, Humoral, and Personality Factors in the
Response to Sensory Deprivation Dec 1962

(No abstract available)

96 Cohen, Sanford I.; Silverman, Albert J.; Shmavonian, B. M.
AD- 406 452 Duke University
Psychophysiological Studies in Altered Sensory Environments
Oct 1962 23p

(No abstract available) (See Journal of Psychosomatic Research, 1962, 6,
no. 4, 259-281.)

97 Hicks, Samuel A.
AD- 283 555 Human Engineering Labs, Aberdeen Proving Ground, MD
The Effects of Twenty-Four Hours Confinement in Mobile
Armored Personnel Carriers on Selected Combat Relevant
Skills: A Follow Up Jun 1962

(No abstract available)

98 Hunt, Darwin P.
AD- 284 047 Aerospace Medical Research Labs, Wright-Patterson AFB, OH
Decision Making and Stress May 1962

Similarities between decision making and stress. Distinction between
situations where receipt of stress stimulus is independent of organism's
response and those in which it is response dependent. Utility of retain-
ing an existing state as opposed to a change of state. Influence of
stress on information activities.

99 Klier, Sol
AD- 283 105 New York University, School of Engineering and Science
Effects of Induced Stress on Learning Performance Mar 1962

Three experiments were conducted. Results indicate that the introduction
of stress (shock) during learning causes adaptation, and this adaptation
carries over to a later situation where both the same type of stress and
a different type are encountered.

100 Klier, Sol; Schneider, Wallace
AD- 284 679 New York University, Bronx School of Engineering and Science
Effects of Induced Stress in a Naval Training School Jul
1962

Students in a U.S. Navy Parachute Rigger school were studied. For the experimental condition stressful conditions were introduced during a three-week period, and these Ss compared with a no-stress control group with regard to (1) grades on the practice, performance, and written tests and (2) performance in a later stressful situation (written test just prior to a free-fall parachute jump). Experimental groups obtained significantly higher test grades during the three-week period; there was no difference in performance in the later stressful situation; and the stress did not have different effects on Ss judged of high and low ability (by school entrance test scores).

101 Leiderman, P. Herbert
AD- 282 853 Harvard Medical School
 Imagery and Sensory Deprivation, an Experimental Study
 May 1962

The effect of repeated exposure of the same individual to short periods of sensory deprivation and isolation was evaluated. Behavioral and physiological responses were measured and their relationship to modification of visual input determined. The results suggest that physiological adaptation to isolation continues over several sessions. The presence of visual imagery in a subject appeared to be related to the individual personality, and not to the condition of deprivation. Auditory and somesthetic imagery appeared to be related to the type of deprivation. Body movement response was negatively related to the amount of imagery.

102 Mitchell, M. S.
AD- 277 148 Aeronautical Systems Division, Wright-Patterson AFB, OH
 Time Disorientation and Estimation in Isolation Apr 1962

Thirty-four Air Force Ss including ten test pilots were isolated individually and followed a scheme for indicating estimates of the passage of time, both with lights on and off, during a two-hour period. Eight subjects did a similar task while in dark isolation for 48 hours. All time periods from one second to four hours (except five seconds) tended to be underestimated. The eight most accurate Ss scored significantly higher than others on the Edwards Order scale.

103 Myers, Thomas I.; Murphy, Donald B.; Smith, Seward; Windle,
AD- 653 786 Charles
 George Washington University, Human Resources Research Office
 Experimental Assessment of a Limited Sensory and Social
 Environment: Summary Results of the HUMRRO Program
 Feb 1962 43p

Soldier volunteers were confined for four days in dark quiet cubicles, otherwise physically comfortable. Comparing the experiences and behavior of cubicle and control subjects it was concluded that dark quiet isolation

can be a formidable experience. Cubicle Ss evidenced feelings of boredom, restlessness, anger, stress, anxiety, disorientation, and vague physical symptoms rare in the control group. Evidence of intellectual inefficiency in the cubicle group was obtained, and cubicle Ss reported vivid and complex visual sensations absent in controls.

104 Orne, Martin T.; Scheibe, Karl E.
AD- 438 384 Massachusetts Mental Health Center, Boston
The Contribution of Nondeprivation Factors in the Production
of Sensory Deprivation Effects: The Psychology of the Panic
Button Oct 1962 10p

From the premise that both social cue factors, or demand characteristic, and sensory deprivation operations combine in producing commonly observed effects of sensory deprivation, an experiment is reported which tests the hypothesis that sensory deprivation effects can be produced by manipulating demand characteristics while holding the effect of the physical environment constant. (See Journal of Abnormal & Social Psychology, 1964, 68, no. 1, 3-12.)

105 Peryam, David R.
AD- 284 317 Quartermaster Food and Container Inst. for the Armed Forces,
Chicago, IL
Food Attitudes in an Unusual Environment. A Second Study
Mar 1962

A questionnaire survey among enlisted men at Camp Fistlench, Greenland, in 1960 confirmed results of a similar study on foods in 1959. Attitudes toward most aspects of the feeding situation were very favorable, although specific foods were not rated high. The presence of psychological stress was not demonstrated. The hypothesis that food has a generalized 'comfort' function was neither rejected nor confirmed.

106 Ray, Wilbert S.
AD- 644 550 Bethany College
Mild Stress and Problem-Solving Jun 1962 9p

Three experiments are described. One was a repetition of a previously reported experiment in which a personal condition interfered with problem-solving as compared with an impersonal condition. The replication failed to find a difference between the conditions. In another experiment a set for speed inhibited problem-solving, as did frustration in the third. It was suggested that, above a minimal level necessary to produce work at the problem, further increase of drive-level would produce increasing inhibition of problem-solving, the effect being greater with complex problems. (See American Journal of Psychology, 1965, 78, 227-234.)

107 Rossi, Ascanio M.; Sturrock, John B.; Solomon, Philip
AD- 403 914 Harvard Medical School
 Suggestion Effects on Reported Imagery in Sensory Depriva-
 tion Nov 1962 6p

The study is considered a first step in testing the validity of verbal reports of experienced imagery in sensory deprivation research. In particular, this study attempts to examine the extent to which these reports are affected by suggestion. It does not attempt to replicate the results of other studies which have investigated the relationship between suggestibility as a personality trait and reactions to sensory deprivation. (See Perceptual & Motor Skills, 1963, 16, 39-45.)

108 Scrimshaw, Nevin S.
AD- 288 149 Massachusetts Institute of Technology
 Effect of Stress on Nutrient Requirements of Man Oct 1962
 11p

(No abstract available)

109 Sells, S. B.
AD- 286 518 Texas Christian University
 Military Small Group Performance Under Isolation and Stress.
 Critical Review V. Psychological Principles of Management
 and Leadership Jun 1962 43p

A critical discussion and interpretation of principles of leadership and management with particular reference to the problems of ACGW sites in Alaska is presented, which is based on a review of scientific research in the fields of psychology, sociology and management science, primarily. The major topics covered include relations of management and leadership, group-centered vs. production-centered management, organizational relations, organizational control, and leadership in formal organizations. Selected references are cited and reference is made to an annotated bibliography containing abstracts of significant studies: AAL reports 61-18 to 61-24, inc.

110 Shannon, Ira L.; Isbell, Gerald M.
AD- 289 518 School of Aerospace Medicine, Brooks AFB, TX
 Stress in Dental Patients. Effect of Time of Day on the
 Adrenocortical Response to Oral Surgery Aug 1962

The effect of time of day on the serum 17-OHCS response was studied in 120 adult males undergoing oral surgery. Urinary steroid excretion studies were carried out on an additional 117 comparable subjects. The anticipation of tooth removal was again found to produce significantly increased serum steroid concentrations. When surgery was delayed until later in the day, the level of these concentrations was reduced. The effect of the exodontic procedure on urinary steroid excretion was not positively established.

111 Thackray, Richard I.
AD- 284 048 Aerospace Medical Research Labs, Wright-Patterson AFB, OH
The Measurement of Activation Level in Stress Research
Jun 1962

(No abstract available)

1963

112 (No author available)
AD- 600 064 University of Georgia, Psychological Labs
Shelter Occupancy Studies at the University of Georgia 1962-
1963 Dec 1963 262p

(No abstract available)

113 Culver, Charles M.; Cohen, Sanford I.; Silverman, Albert J.;
AD- 444 259 Shmavonian, B. M.
Duke University, School of Medicine
Recent Advances in Biological Psychiatry, Volume VI, Chapter
12. Cognitive Structuring, Field Dependence-Independence,
and the Psychophysiological Response to Perceptual Isola-
tion Jun 1963 10p

Ss (field-dependent or -independent) underwent a two-hour perceptual isolation experience, under one of two conditions (low prior information or high). All Ss showed more GSR nonspecifics under the low information condition. Differences in heart rate which only approached significance suggested possible different patterns of physiological arousal in the two subject groups. (See Proceedings of the Eighteenth Annual Convention and Scientific Program of the Society of the Biological Psychiatry 7-9 June 1963, Atlantic City, NJ, 119-128.)

114 Gunderson, E. K. Eric
AD- 656 133 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Emotional Symptoms in Extremely Isolated Groups May 1963
7p

Study was concerned with emotional reactions among scientists and Navy men under prolonged isolation at scientific stations in the Antarctic. Most marked and consistent changes involved sleep disturbances, depression, and irritability. Wide individual differences existed and possible group differences were noted. The study of adaptation in such environments requires development of simple, practical techniques of assessment; the value of a simple questionnaire approach is suggested. (See Archives of General Psychiatry, 1963, 9, 362-368.)

- 115 Hanna, T. D.; Burns, N. M.; Tiller, P. R.
AD- 297 820 Naval Air Engineering Center, Aerospace Crew Equipment
Lab, Philadelphia, PA
Objective Measurements of the Fatiguing Effects of Wearing
a Full Pressure Suit. Behavioral and Physiological Re-
sponses to Varying Periods of Sensory Deprivation Feb
1963

Sensory deprivation for periods of 4, 8, 12, and 24 hours in 6 volunteer subjects. Techniques for measuring behavioral and physiological responses.

- 116 Hicks, Samuel A.
AD- 455 874 Human Engineering Labs, Aberdeen Proving Ground, MD
The Effects of Repeated Confinement on the Performance of
Men in a Hot-Wet Climate Jan 1963 19p

This study (7th in a series investigating sustained confinement in armored personnel carriers) examined the effects of repeatedly confining 11 enlisted men in a hot-wet environment. Ss took tests of choice reaction time, hand steadiness, equilibrium, and running speed before and after confinement. The last three variables showed significant losses, and significant results deriving from repeated exposure to treatment were obtained.

- 117 Isbell, G. M.; Shannon, I. L.
AD- 407 570 School of Aerospace Medicine, Brooks AFB, TX
Stress in Dental Patients. Effect of Local Anesthetic
Procedures May 1963 4p

Effect was evaluated via serum-free 17-OHCS response. Ss were 258 systemically healthy young men. Three groups were injected with different solutions, one underwent needle insertion with no injection, and the last group shared all conditions but without needle insertion. All groups were equivalent on pre-operative serum-free 17-OHCS, and all groups increased significantly post-operatively. There were no significant differences among groups in amount of increase; thus, psychologic factors are of primary importance in the adrenocortical hyperactivity associated with intraoral injections.

- 118 Murphy, Donald B.; Myers, Thomas I.; Smith, Seward
AD- 439 431 George Washington University
Reported Visual Sensations as a Function of Sustained Sensory
Deprivation and Social Isolation Nov 1963 138p

(No abstract available)

- 119 Myers, Thomas I.; Smith, Seward; Murphy, Donald B.
AD- 439 432 George Washington University
Pioneer VI. Vigilance as a Function of Sensory Deprivation
and Social Isolation 1963 90p

(No abstract available)

120 Wing, John; Touchstone, Robert M.
AD- 404 913 Aerospace Medical Research Labs, Wright-Patterson AFB, OH
A Bibliography of the Effects of Temperature on Human
Performance Feb 1963 19p

This bibliography lists technical reports and journal articles dealing with human performance under both high and low ambient temperatures. The articles and reports have been grouped into sections covering five major performance areas: (1) sensory thresholds and simple reaction time, (2) attention and perception, (3) psychomotor performance, (4) heavy or prolonged physical work, and (5) mental performance. A sixth section of the bibliography lists references which review portions of the literature.

1964

121 (No author available)
AD- 489 989 Walter Reed Army Institute of Research, Washington, DC
Symposium on Medical Aspects of Stress in the Military
Climate 22-24 April 1964 1964 622p

A prior symposium in the same area was held in 1953. The present program was divided into two parts: (1) organism-environment and interaction: psychobiological factors, and (2) psychophysiological and endocrinological factors in diseases, infection, and trauma. Much new material is covered in the present symposium. Probably the most important development in recent years is that of the chemical methods for quantitative measurement of the hormones in the blood.

122 Abbott, H. M.; Pierce, C. M.
AD- 480 909 Lockheed Missiles and Space Co., Palo Alto, CA
The Measurement of Human Performance Under Stress: An
Annotated Bibliography Aug 1964 170p

Covers 272 references pertinent to measurement of performance under stress induced by task loading, task speed requirements, and extreme environmental conditions. "Performance" includes: (1) manipulation of external devices, (2) symbolic behavior, (3) sensory acuities, and (4) maintenance of posture and balance. Environmental conditions include isolation, weightlessness, radiation and atmospheric composition pressure, and temperature (but not high G, vibration, or sensory deprivation). Emphasis is placed on techniques used to measure the stress and on special performance tests developed as measuring instruments.

123 Abbott, H. M.; Pierce, C. M.
AD- 479 799 Lockheed Missiles and Space Co., Palo Alto, CA
The Measurement of Human Performance Under Stress: An
Annotated Bibliography Oct 1964 45p

These 66 references contain information pertinent to the measurement of performance under stress induced by task loading, task speed requirements,

and extreme environmental conditions. Emphasis was placed on the techniques used to measure the stress and on special performance tests that have been developed as measuring instruments.

124 Alluisi, Earl A.; Chiles, W. Dean; Hall, Thomas J.
AD- 606 214 Lockheed Aircraft Corporation, Marietta, GA
Combined Effects of Sleep Loss and Demanding Work-Rest
Schedules on Crew Performance Jun 1964 78p

In several studies, USAF pilots were confined for 12 days to a simulated advanced-system crew compartment, and while on duty were tested with a battery of six performance tasks, two of which required crew interactions. The schedules of four hours on and four off vs. four on and two off were compared. Performance was generally inferior on the four-two schedule, and the stress of a period of sleep loss produced greater decrements on the four-two schedule.

125 Anthony, Alastair; Walker, Norman K.; Desocio, Elizabeth
AD- 600 601 Walker (Norman K) Associates, Inc., Bethesda, MD
The Accuracy of the Azon Guided Bomb as Affected by Battle
Conditions in World War II May 1964 67p

The accuracy achieved with the Azon human operator guided bomb in WWII is investigated and compared with German experience on similar missiles. Considerable degradation from the training results occurred in heavy combat and although the results are not conclusive they do suggest that the degradation for this particular system (acceleration control with 0.9 seconds lag) is serious and increases steadily with the intensity of combat. In particular cases with no opposition there was no degradation.

126 Cannon, Dennis; Drucker, Eugene; Kessler, Theodore
AD- 634 037 Human Resources Research Office, George Washington University
Summary of Literature Review on Extended Operations Dec
1964 58p

The material is organized into the following topics relating to performance: sleep loss, temperature, nutrition, prolonged performance, drugs, stress, vibration, confinement, rest and personnel replacements, noise, radiation, and clothing. In addition, a brief summary of vigilance literature is included. The inconclusive nature of the reviewed research precludes supporting or denying the thesis that troops can be expected to remain effective for 48 hours or longer. Endurance limits may vary significantly from one task to another. For this reason, suggestions for research are included.

127 Fedor, Janet H.; Russell, Roger W.
AD- 614 752 Indiana University
 Gastrointestinal Reactions to Response-Contingent Stimula-
 tion Oct 1964 22p

Three parameters of the electrophysiological manifestations of gastro-intestinal activity were studied: amplitude, displacement, and peak response time. Mean amplitude increased significantly only when avoidance of the aversive stimulus was unsuccessful. These and earlier results together suggest that the differences in effects of response-contingent and of nonresponse-contingent conditions cannot be accounted for in terms of the physical characteristics of the aversive stimulus, of sensory processes per se, or of motor output. (See Psychological Reports (Monograph Supplement 1), 1965, 16, 95-113.)

128 Gruber, Alin; Dunlap, Jack William; Sanders, Jerrell L.
AD- 452 787 Dunlap and Associates, Inc., Darien, CT
 Identification of Important Tasks of Combat Infantry. Report
 of Results from a Further Refinement. Phase II. Develop-
 ment of Methodology for Measuring Effects of Personal
 Clothing and Equipment on Combat Effectiveness of Individual
 Soldiers Nov 1964 64p

A final sample of 208 highly qualified (combat-experienced) veterans rated the relative importance of 27 selected combat tasks using a triad comparison technique. A high degree of agreement was found among veterans from the same and from different theaters and a reliable ranking of the relative importance of the 27 definable combat tasks was established.

129 Hicks, Samuel A.
AD- 463 918 Human Engineering Labs, Aberdeen Proving Ground, MD
 The Effects of Confinement on the Performance of Combat
 Relevant Skills Dec 1964 39p

This report summarizes the results of the U.S. Army Human Engineering Laboratories program on confinement in armored personnel carriers. The report relates individual studies to one another and discusses the results as they apply to the goals of the overall program. Vehicle design deficiencies are cited and discussed.

130 Hicks, Samuel A.
AD- 450 714 Human Engineering Labs, Aberdeen Proving Ground, MD
 The Effects of Repeated Confinement on the Performance of
 Men in a Temperate Environment Aug 1964 22p

This study (8th in a series investigating sustained confinement in armored personnel carriers) examined the effects of confining Ss for a 12-hour period on each of 5 successive days (N = 90 enlisted men). Before and during confinement Ss were tested for equilibrium, stamina, gross motor

coordination, and marksmanship. Repeated exposure to confinement produced decrements in all areas, which however decrease until after the 5th session Ss were back to pre-confinement performance levels. Effects are thus transient, presumably due to an adaptation effect.

131 Klausner, Samuel Z.
AD- 608 633 Bureau of Social Science Research, Inc., Washington, DC
Rationalism and Empiricism in Studies of Behavior in Stressful
Situations Oct 1964 34p

This empirical paper examines the extent to which empiricistic and rationalistic orientations are found in research reports concerning human behavior in stressful situations. The tendency to be empiricistic increases when a researcher is working in a field not his own, when he is a younger professional, when his personality tends to be introverted, when he is a non-Catholic and when he is politically conservative. All these are associated with the lack of the attitude of "certitude." Greater use of theoretical terms (i.e., the rationalistic orientation) is associated with the reverse of these characteristics, i.e., with "certitude."

132 Rossi, Ascanio M.; Furhman, Allan; Solomon, Philip
AD- 450 895 Harvard Medical School
Sensory Deprivation: Arousal and Rapid Eye Movement Correlates
of Some Effects Jul 1964 5p

Three Ss in sensory deprivation were continuously monitored by electroencephalographic (EEG) and electrooculographic (EOG) recordings. Retrospective reports of their mental states were given upon receipt of a signal. Ratings of report contents were compared with EEG determined levels of arousal and with the occurrence of rapid eye movements (REMS). Results indicate that the incidences of hallucinations and thought disorganization vary inversely with level of arousal, and hallucinations are not accompanied by REMS as occurs during dreaming. (See Perceptual and Motor Skills, 1964, 19, 447-451.)

133 Rossi, Ascanio M.; Solomon, Philip
AD- 438 769 Harvard Medical School
Button-Pressing for a Time-Off Reward During Sensory Deprivation: I. Relation to Activity Reward: II. Relation to Descriptions of Experience Jan 1964 6p

(No abstract available) (See Perceptual and Motor Skills, 1964, 18, 211-216.)

134 Rossi, Ascanio M.; Solomon, Philip
AD- 443 476 Harvard Medical School
Button-Pressing for a Time-Off Reward During Sensory Deprivation: III. Effects of Varied Time-Off Rewards May 1964
4p

Ss were given the opportunity to button-press for three different amounts of promised time-off reward during a three-hour sensory deprivation (S-D) session. The promised rewards were 1 min., 2 min., and 3 min. off the scheduled S-D session of every 200 button-presses. Ss produced significantly more button-presses for greater amounts of promised time-off reward. (See Perceptual and Motor Skills, 1964, 18, 794-796.)

135
AD- 450 894 Rossi, Ascanio M.; Solomon, Philip
Harvard Medical School
Button-Pressing for a Time-Off Reward During Sensory Deprivation: IV. Relation to Change in Ratings of Well-Being
Jun 1964 3p

Fifteen Ss were given the opportunity to button-press for a promised time-off reward during a three-hour sensory deprivation session. Ss rated their well-being (semantic differential scale) before and after the session. Experimental and control Ss did not differ before the session, but button-pressing was associated with significant decreases in well-being during the session (ρ of 0.60). (See Perceptual and Motor Skills, 1964, 19, 520-522.)

136
AD- 453 582 Rossi, Ascanio M.; Solomon, Philip
Harvard Medical School
Button-Pressing for a Time-Off Reward During Sensory Deprivation: V. Effects of Relatively Comfortable and Uncomfortable Sessions
Sep 1964 5p

Ten Ss underwent two 3-hour sensory deprivation sessions one week apart, a "comfortable" session and one designed to be potentially more "uncomfortable." During both sessions Ss were given the opportunity to button-press for a promised time-off reward. Button-pressing was significantly more frequent during the "uncomfortable" session. (See Perceptual and Motor Skills, 1964, 19, 803-807.)

137
AD- 604 866 Seibel, Robert; Christ, Richard E.; Teichner, Warren H.
Institute of Environmental Psychophysiology, University of Massachusetts, Amherst
Perception and Short Term Memory Under Work Load Stress
Jun 1964 52p

The primary purpose of these studies was to explore the question of whether a performance which is critically dependent upon short-term memory breaks down with input rate increases when performance is measured in absolute terms. In simpler terms, will S report more correct items when there is less to be recalled than when there is too much to be recalled?

138
AD- 432 823 Smith, Ewart E.
Serendipity Associates, Los Angeles, CA
Research on Mechanisms for the Control of Stress Jan 1964
60p

(No abstract available)

- 139 Spreen, Otfried
AD- 615 360 Iowa State University
 The Position of Four Response Variables in a Factor Analysis
 and Their Relationship to Anxiety and Stress. (Die Stellung
 von Vier Motorischen Variablen in Einer Faktoren Analyse
 und Ihre Beziehungen zu Angst und Stress) Apr 1964

(Abstract in German) (See Psychologische Forschung, 1964, 27, 403-418.)

- 140 Walker, Norman K.; Shectman, Fred; De Socio, Elizabeth
AD- 450 861 Washington School of Psychiatry, DC
 Further Work on the Use of Tracking Tasks as Indicators of
 Stress Oct 1964 150p

Zero input tracking analysis provides a reliable measure of tracking performance; tracking degrades severely under the stress of auditory shadowing; Ss differ considerably in sensitivity. Auditory shadowing appears to produce effects similar to combat and may be a suitable laboratory substitute, which can be used to define the sensitivity of any control system to combat degradation or to examine the sensitivity of Ss. Mild electric shocks were quite ineffective stressors.

1965

- 141 Freedman, Sanford J.
AD- 628 717 Tufts University, Institute for Psychological Research
 Experimental Deafferentation in Man 1965 11p

The problem-oriented studies seem to have been the most successful. It has been found that social interaction helps ward off effects, that having a task to perform limits perceptual disorientation and probably wards off most cognitive effects, and that certain kinds of training are relevant.

- 142 Haythorn, W. W.; Lanzetta, J. T.
AD- 630 453 University of Delaware
 Research on Psychiatric Effectiveness of Future Weapons
 Systems Crews Aug 1965 25p

In Project Argus, three classes of stress are discussed as of primary importance: (1) sensory reduction, (2) social isolation, and (3) interpersonal friction.

- 143 Stoningfeld, Alfreda R.
AD- 640 161 Human Engineering Labs, Aberdeen Proving Ground, MD
 Group Behavior in Confinement: Review and Annotated Bibliography Oct 1965 110p

Field and laboratory confinement studies were reviewed to evaluate existing information and to identify areas where future research is needed. The

studies reviewed deal with confining two or more people in a restricted space for a prolonged period of time: particular attention was devoted to how such conditions degrade performance. Few of the studies bear on the Army's chief interest in confinement: how men will perform during and after prolonged confinement in armored vehicles. The review concludes by recommending ways to make future studies of confinement more directly relevant to the Army's interest.

144 Borowitz, Mardi J.
AD 621 336 Clinical Investigation Center, Oakland, CA
Depersonalization in Spacemen and Submariners. Nov 1965
7p

The report describes the syndrome of depersonalization and documents that it may be a threat to the psychologic well being and effectiveness of persons in strange, isolated, and stressful environments. Several techniques which focus on the potential problems of depersonalization are described. (See Military Medicine, 1964, 129, no. 11, 1058-1060.)

145 Klausner, Samuel J.
AD 621 135 Bureau of Social Science Research, Inc., Washington, DC
The Quest for Self-Control, Classical Philosophies and
Scientific Research. 1965. 401p

Revised drafts are given of papers presented at a conference on self-control under stressful conditions (September 1962). Part One: Self Control in the Perspective of History. Part Two: in a Sociological Perspective. Part Three: in Psychological Perspective. Part Four: in a Psychiatric Perspective. Part Five: concerns scientific hermeneutics. (Available from The Free Press, 60 Fifth Avenue, New York, NY 10011.)

146 Menwese, Willem; Friedler, Fred E.
AD 616 327 University of Illinois, Group Effectiveness Research Lab
Leadership and Group Creativity Under Varying Conditions of
Stress. Mar 1965. 59p

Twenty-four small discussion groups, composed of senior cadets of the Army and Navy ROTC programs, were studied. Leader's ability and interpersonal attitudes (IPC) were the independent variables; dependent variable was group performance. Internal stress was engendered by a task which induced coercive attitudes in groups where Army and Navy cadets had to work together; external stress, by having senior Army field officers closely watch and rate the Army cadets while they were working. Two tasks were used, on the first, low IPC (more directive, managing) had better performance groups under no stress. High IPC (permissive, relationship oriented) had better groups under internal stress.

147 Orne, Martin L.
AD 621 100 Massachusetts Mental Health Center, Boston
Psychological Factors Maximizing Resistance to Hypnosis. 1965
Special Reference to Hypnosis. 166p

A survey of hypnosis is presented. It is pointed out that hypnosis has a positive effect in providing an increase in motivation. A number of other psychological factors which contribute to an individual's ability to tolerate stress are also instrumental in increasing motivation. The future question of which factors contribute more to the individual's ability to tolerate stress requires empirical clarification.

148 Rossi, Ascanio M.; Solomon, Philip
AD- 619 629 Harvard Medical School
Note on Reactions of Extroverts and Introverts to Sensory
Deprivation May 1965 2p

Eleven extroverts and seven introverts were scheduled for two sessions of sensory deprivation. During both sessions, introverts produced more button-presses for a promised time-off reward, and they scored higher on a discomfort index derived from before-after self-ratings of well-being. Of the five Ss who did not complete the study, three were extroverts who quit during a session and two were introverts who quit between sessions. Interest in these results is attributed to their similarity to those obtained in a previous study by another investigator.

149 Tiemann, Harry A., Jr.
AD- 751 062 University of Colorado
Performance of Abstract and of Concrete Subjects During
Conditions of Sensory Deprivation Under High and Low
Authority Experimenters 1965 49p

Evidence was presented to suggest that short-term patternless stimulation of vision and hearing has virtually no effect upon intellectual functioning required for a moderately difficult performance test. Differences in concreteness--abstractness, often interacting with differences in experimenter authority, produced several differences in subject performance.

150 Weybrew, Benjamin B.
AD- 624 783 Naval Submarine Medical Center, Groton, CT
Selection of Men for Hazardous Duty from Indices of Individual
Differences in Autonomic Nervous System Reactivity Feb
1965 17p

Integrates results from a series of studies. Based largely upon palmar electrodermal indices, autonomic displacement and recoverability to laboratory-induced stress has moderate to high predictive validity with respect to submariner adjustment ratings.

151 Wherry, Robert J., Jr.; Curran, Patrick M.
AD- 624 450 Naval School of Aviation Medicine, Pensacola, FL
A Study of Some Determiners of Psychological Stress Jul
1965 43p

Used a four-choice discrimination task and various levels of electric shock to study possible determiners of anticipatory stress, and individual differences in resulting performance decrements (which were large). Disruption increases as the threat comes closer, as its perceived probability increases, as perceived unpleasantness increases. There are indications that anticipatory physical threat stress has a curvilinear relationship to performance, with low amounts of threat enhancing performance.

1966

152 Altman, Irwin; Haythorn, William W.
AD- 642 599 Naval Medical Research Institute, Bethesda, MD
 The Effects of Social Isolation and Group Composition on
 Performance 1966 61p

The study examined performance on two group tasks and one individual task. Dyads were formed according to a Greco-Latin square design with composition differences on Dogmatism, need Achievement, need Affiliation, and need Dominance. Nine dyads lived in a small room for ten days with no outside contact, with matched controls on the same schedule but not isolated. Effects on performance were accounted for within an inverted U-shaped performance-stress function: single sources of mild stress (either isolation or dyad composition) produced enhanced performance, while combined stresses led to a lessening of performance effectiveness.

153 Back, Kurt W.; Bogdonoff, Morton D.
AD- 640 569 Duke University
 Buffer Conditions in Experimental Stress Sep 1966 16p

Reactions of subjects to the experimental situation was investigated by means of plasma free fatty acid level. Stress at entry can be called experimental stress, and variations within the experiment, manipulated stress. A series of conditions which insulate the subject socially, psychologically or physically from the situation diminish experimental stress and obliterate the differences in manipulated stress. They are: previous acquaintance, previous work together as a group, commitment to the experiment, and low height-weight ratio.

154 Clemes, Stanley R.
AD- 488 633 Mental Research Institute, Palo Alto, CA
 Stress From Suspension of Training, Jan 1966 25p

During a period when basic training had been discontinued, 85 cadre in 2 training brigades at Fort Ord were interviewed and given a stress questionnaire. Several control groups were selected in which the cadre were engaged in training. The results showed that although the inactive group did not show more stress than the control groups, both groups were probably under some stress, but from different sources. The inactive group disliked the lack of structure as well as the performance of low status details. The control groups were stressed by the long hours, and

disapproved of the pampering of the trainees brought about by the meningitis control program.

155 Curran, Patrick M.; Wherry, Robert J., Jr.
AD- 635 205 Naval Aerospace Medical Institute, Pensacola, FL
Some Secondary Determiners of Psychological Stress May
1966 21p

Simulated flight over hostile country was combined with a four-choice color discrimination task and electric shock to study three secondary determiners of anticipatory physical threat stress. Findings suggest that all three (perceived time since situation started, perceived time until event occurs if it occurs, and elapsed time since warning of the event) are significant components of the perceived proximity of the unpleasant event and that they interact in a complex manner. A measure was devised to reflect differences in individual susceptibility to anticipatory physical threat stress.

156 Datel, William E.; Engle, Elizabeth O.; Barba, Melvin A.
AD- 644 270 Walter Reed Army Institute of Research, Washington, DC
Affect Levels in a Company of Basic Trainees Sep 1966 7p

Five platoons with 28 Ss each were repeatedly administered the weekly form of the Multiple Affect Check List (MAACL) throughout the Basic Combat Training process. Scales, Occasions, and Scales x Occasions were statistically significant; there was no main or interaction effect of platoons. Reliable affect changes do occur in basic training and these are similar across platoons. (See Psychological Reports, 1966, 19, 903-909.)

157 Gunderson, E. K. Eric
AD- 635 615 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Criterion Measures for Extremely Isolated Groups 1966 22p

A factor analysis of supervisor and peer evaluations revealed that three factors corresponding to three hypothesized behavior components--emotional stability, task motivation, and social compatibility--accounted for a large proportion of the variance in a general performance criterion. Data from new samples were analyzed to determine convergent and discriminant validities of the three behavior factors measured by the two methods (supervisor ratings and peer nominations). Results provided substantial evidence for convergent validities of the three factors but only partial confirmation of discriminant validities. (See Personnel Psychology, 1966, 19, no. 1, 67-80.)

158 Haythorn, William W.; Altman, Irwin; Myers, Thomas I.
AD- 649 888 Naval Medical Research Institute, Bethesda, MD
Emotional Symptomatology and Subjective Stress in Isolated
Pairs of Men 1966 20p

This experiment demonstrated the importance of group composition to functioning in isolated environments and perhaps to other stressful situations. Four personality characteristics--need Achievement, need Affiliation, need Dominance, and Dogmatism--were studied by selecting dyads to represent homogeneous high, homogeneous low, and heterogeneous on each of the characteristics. Ss were 36 Navy recruits, half of whom were controls. On Dominance, homogeneous dyads experienced more stress than heterogeneous; this relationship was reversed for Achievement. Stress appears to be a function of interpersonal needs. (See Journal of Experimental Research in Personality, 1966, 1, 290-305.)

159 Howell, William C.; Johnston, William A.; Goldstein, Irwin L.
AD- 481 509 Ohio State University, Human Performance Center
 Influence of Stress Variables on Display Design Mar 1966
 42p

Nine exploratory studies and five formal experiments were conducted to determine (1) whether stress decrements occur in a complex display monitoring situation; (2) if so, what variables contribute most to these decrements; and (3) what conditions may be introduced to reduce such decrements. Serious decrements do occur but these are not simple monotonic functions over time; they are most severe under conditions of high display density and low signal frequency; performance does not deteriorate over weeks or months of daily monitoring sessions; decrements are reduced by displays in which classes of information are separated spatially.

160 Kern, Richard P.
AD- 637 312 Human Resources Research Office, George Washington University
 A Conceptual Model of Behavior Under Stress, With Implications for Combat Training Jun 1966 81p

An hypothesized sequential pattern of behavioral reactions is described, reflecting the manifestations of a stress process. This pattern would be expected to apply to anyone in any severe physical harm threat. Rate of development of this pattern reflects the individual's stress resistance. A model is proposed to describe the operation of key attitudinal variables and environmental stressor variables in producing this behavioral pattern and dealing with individual differences in stress resistance. Design of training to increase stress resistance in combat or other hazardous jobs is discussed.

161 Lauterbach, Carl G.; Vielhaber, David P.
AD- 482 219 Army Hospital, Medical Research Project, West Point, NY
 Rifle Performance Under Conditions of Stress (US33) May
 1966 10p

Contents:

- Pretraining correlates of trainfire marksmanship.
- Personality-leadership correlates of trainfire marksmanship.
- An effort to identify stress-prone and stress-resistant cadets.

162 Myers, Thomas I.; Murphy, Donald B.; Smith, Seward; Goffard,
AD- 636 478 S. James
Human Resources Research Office, George Washington University
Experimental Studies of Sensory Deprivation and Social Isolation
Jun 1966 79p

One hundred and seventy-six randomly selected volunteers spent four days in dark soundproofed cubicles while an equal number of randomly selected volunteers followed a normal routine. Both groups were given psychological tests before, during, and after isolation. One-third of cubicle subjects requested early release. Cubicle Ss were better than controls on simple intellectual tasks and on auditory vigilance, but were worse on more complex intellectual tasks. Other findings are reported. Deprivation and isolation do have psychological effects but they are neither simple nor clear-cut.

163 Roessler, Robert; Burch, Neil R.
AD- 660 128 Houston State Psychiatric Institute, Psychophysiology
Division, TX
Psychophysiological Correlates of Human Information Processing
Under Altered States of Consciousness Jun 1966 49p

Work was focused on two main areas: basic stress research (analyses of the skin resistance, heart rate, pulse wave velocity, and catecholamines); polygraph study (polygraph study design, measures, and physical situation).

164 Rossi, A. Michael; Furchman, Allan; Solomon, Philip
AD- 654 835 Boston City Hospital, Psychiatry Service, MA
Arousal Levels and Thought Processes During Sensory Deprivation
Jan 1966 8p

Bioelectric recordings and verbal reports of mental activities were collected from ten Ss during a six-hour sensory deprivation experience. Ss and three experts independently rated the reports for type of thought process, level of thought organization, and Ss rated their own level of arousal during the period covered by the report. The majority of thought disorganizations and nonreality-oriented thought processes occurred during low levels of arousal; thus it appears that deprivation does not disrupt the normal relationship between arousal level and thinking, but in the absence of usual environmental cues Ss may misinterpret their mental experiences. (See Journal of Abnormal Psychology, 1967, 72, no. 2, 166-173.)

165 Rossi, A. Michael; Solomon, Philip
AD- 645 530 Boston City Hospital, Psychiatry Service, MA
Effects of Sensory Deprivation on Introverts and Extraverts:
A Failure to Find Reported Differences Apr 1966 12p

The two groups of Ss were exposed to sensory deprivation (SD) for three hours. They were compared on these variables: numbers who quit prematurely; verbal reports; observations and visible movements during SD; self-ratings

of well-being on a semantic differential type rating scale both before and after SD; scores on the MMPI. No statistically significant results emerged, which is at odds with results from a very similar earlier study. The experimental time period may have been too short, or the expected relationship though real may be unstable in small samples due to interaction with unknown variables. (See Journal of Psychiatric Research, 1966, 4, 115-125.)

166 Smith, Seward; Myers, Thomas I.
AD- 645 611 Naval Medical Research Institute, Bethesda, MD
 Stimulation Seeking During Sensory Deprivation Oct 1966 16p

Thirty-six volunteer Naval enlisted men underwent isolation for 48 hours during a study of conditions of 'relaxation.' Each S spent 24 hours alone in dark quiet sensory deprivation (SD) and 24 hours in a control condition (C) providing a virtual stimulus cafeteria. The amount of time S listened to a boring stock market report during one hour each day was used as an index of stimulation-seeking need. Significantly more listening occurred while Ss were in SD than in the C condition. Stimulation-seeking results were compared with various pre-isolation predictor tests, criterion measures during isolation and with post-isolation reports of isolation symptomatology. (See Perceptual and Motor Skills, 1966, 1151-1163.)

167 Smith, Seward; Myers, Thomas
AD- 641 258 Naval Medical Research Institute, Bethesda, MD
 Stimulation Seeking During Sensory Deprivation 1966 29p

Thirty-six volunteer Naval enlisted men underwent isolation for 48 hours. Each S spent 24 hours alone in dark quiet sensory deprivation (SD), and 24 hours in a control condition (C). The amount of time S listened to a boring stock market report during one hour each day was used as an index of stimulation-seeking need. Stimulation-seeking results were compared with various pre-isolation predictor tests, during-isolation criterion measures and with post-isolation reports of isolation symptomatology. (See Perceptual and Motor Skills, 1-29.) (sic)

168 Thompson, William D.; Kirk, Roger E.; Flynn, John C.
AD- 648 546 Baylor University, Primate Behavior Lab
 An Exploratory Study in Comparative Psychophysiology Sep
 1966 83p

Psychophysiological reaction patterns (GSR, heart rate, respiratory rate) to a single stress learning task were studied in three species (chimpanzee, Java monkey, man). Findings indicate differences among species in autonomic reactivity to the stress task, but no significant differences in such reactivity as the learning process progresses. When the Law of Initial Value holds, the Lacey autonomic lability score is a more sensitive measure of reactivity than is a difference score.

169 Weitz, Joseph
AD- 633 566 Institute for Defense Analyses, Research and Engineering
Support Division, Arlington, VA
Stress Apr 1966 43p

Stress is discussed in terms of the stimuli leading to it and the responses to it. Stimuli include speeded information processing, overloading, environmental factors, perceived threat, physiological stimulation, isolation, confinement, blocking and frustration, and group pressures. Responses: performance decrement, immobilization, inappropriate responses, physiological changes, verbal report, and performance enhancement. An attempt is made to suggest research areas which may prove useful in better understanding the stress mechanism and its effect.

170 Wright, G. H.; Fenstermacher, N. H.
AD- 642 315 HRB-Singer, Inc., State College, PA
The Psychological Environment of Protective Shelters Jul
1966 10p

The research here summarized has attempted to study the dynamics of behavior during a period of isolation, with an eye to answering questions about the psychological environment in public fallout shelters: Will there be problems? What kinds? What preventative measures are available? Carefully controlled methods were used to establish criteria for identifying the psychological environment, efforts were aimed at discovering changes in behavior during confinement, and methods, techniques, and bases for future research were developed.

171 Wright, G. H.; Fenstermacher, N. H.
AD- 642 296 HRB-Singer, Inc., State College, PA
The Psychological Environment of Protective Shelters Jul
1966 146p

The study was designed to cross-validate measuring instruments, provide a refinement of methodology for future studies, investigate specific shelter-relevant stresses, and approximate a standard for evaluation of indices of psychosocial stresses occurring in shelter confinement. Method was to compare the reactions of two equivalent confined groups, one under selected stresses and the other not, on ratings forms, tests, and experimental tasks. Among the results: the group given psychological supports showed more acceptance of confinement, and certain behaviors appear to be important at the beginning of and following a period of confinement.

172 Zimmer, Herbert
AD- 641 814 University of Georgia, Bioelectronic Computer Lab
Psychophysiological Variables as Indications of Emotional
Stress Sep 1966 622p

The report covers the physiological responses of the human and means of achieving maximum discrimination between critical and neutral stimuli. Consideration is given to the social context in which the response is

solicited, the selection of the most useful psychophysiological variable, methods of recording and analyzing the data by computers and the limits imposed by the existing knowledge. The appendix contains a rationale of those physiologic measures which have been employed by other investigations to study emotional reactions to stimuli of short duration.

1967

173 Altman, Irwin; Haythorn, William W.
AD- 665 520 Naval Medical Research Institute, Bethesda, MD
 The Effects of Social Isolation and Group Composition on
 Performance 1967 29p

The study investigated the effects of social isolation and group personality composition on individual and team performance. Performance was studied longitudinally, over a ten-day period, to explore the onset and course of impact of isolation and composition effects. (See Human Relations, 1967, 20, no. 4, 313-340.)

174 Angermeier, W. F.; Stevens, E. I.
AD- 653 973 Florida Presbyterian College, Neuro-Sciences Lab
 Perceived Stress, Performance, Personality and Biochemical
 Factors in Humans May 1967 129p

A total of 250 naive human subjects, both males and females, white and colored, ranging in age from 15 to 22 years were used as subjects to study relationships which might exist between (1) perceived stress, (2) scores on the California Psychological Inventory, (3) IQ (Otis test), (4) a match-to-sample block test, (5) an analogy problem-solving test under stress, (6) change in pupil size, (7) change in heart rate under stress, and (8) galvanic skin response during and after sound-shock conditioning. Possible biochemical differences as they may exist among various subgroups and their possible modification by a program of cultural, perceptual, and dietary enrichment were also investigated.

175 Barger, A. Clifford
AD- 824 187L Harvard Medical School, Department of Physiology
 Effects of Physical and Emotional Stress on Renal Blood Flow
 Dec 1967 6p

These experiments demonstrate that renal cortical ischemia can be produced in the unanesthetized dog by psychological or physical stress, and that the changes are mediated by the sympathetic nervous system. Evidence is accumulating that these conclusions are applicable to the human subject.

176 Biderman, Albert D.
AD- 651 845 Bureau of Social Science Research, Inc., Washington, DC
 Life and Death in Extreme Captivity Situations 1967 41p

The report discusses social and cultural factors affecting survival in extremely deprivational captivity situations and criticizes normative implications that have been attached to survival. Comments on the paper, made by several participants in the Conference on Psychological Stress at which it was originally presented, are included. (See Psychological Stress, 1967, 242-266.)

177 Cohen, Sanford I.
AD- 649 956 Duke University, Medical Center
Body and Field Perceptual Dimension and Altered Sensory
Environments 1967 52p

Reviews a series of studies concerned with field dependence and independence and their correlates. Differences between the two "types" were noted in personality and integrative neurological dimensions. Field Dependents were more influenced by external than by internal cues in making judgments. The two groups also showed differences in central and autonomic NS responses to low sensory input environments, the administration of sedative, stimulant and placebo capsules, insulin induced hypoglycemia, and in peripheral physiological responses during conditioned reflex studies. Other relationships observed are discussed. (See Psychological Stress, 1967, 77-122.)

178 Fischer, Robert I.; Teevan, Richard C.
AD- 654 475 Bucknell University
Fear of Failure and Autonomic Responsivity in Achievement
Situations May 1967 30p

Nineteen Ss were assigned to each of two groups: high and low fear of failure (FF), by scores on the Hostile Press scoring of the TAT. Hypothesis was that high FFs would react to stress with patterns of autonomic responsivity similar to those of "anger-out" Ss (Funkenstein et al, 1957). Heart rate was measured in individual testing sessions inducing stress related to achievement motivation. Results showed no mean differences between high and low FF groups, although the highs were more variable in heart rate. Results are interpreted in terms of possible defensive postures available to the high FF S in achievement situations.

179 Frajola, Walter J.; Soliday, Stanley M.
AD- 808 358L North American Aviation, Inc., Columbus Division, Columbus, OH
Simulation of Low Altitude High Speed Mission Performance
Volume I, Part VI, Biochemical and Psychophysiological
Analyses of Pilots' Responses to Stresses of Simulated Low
Altitude, High Speed Flight Feb 1967 30p

Ss were 16 Air Force jet pilots; 4 were tested with the E2 type terrain-following display and 6 each with the Autonetics HUD and the Sperry Gyroscope Co. HUD. Biochemical parameters were measured before and after simulated flights, and psychophysiological parameters during the flights. VMA excretion increased from beginning to end of the flights made at the high acceleration intensity level. Respiratory rate . . .(abstract discontinued here)

180 Gunderson, E. K. Eric
AD- 661 364 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
 Emotional Health in Extreme and Normal Environments 1967
 8p

Certain demographic and social background factors (esp. age and education), tend to have constant relationships to amount of symptomatology, regardless of variations in environmental conditions. However, under the prolonged group isolation and confinement experienced at Antarctic scientific stations a number of relationships appeared, between social background or personality characteristics and emotional symptoms, which were not present under less extreme conditions. (See Proceedings of International Congress on Occupational Health, 19-24 September 1966, N.D., 631-634.)

181 Gunderson, E. K. Eric
AD- 738 012 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
 Group Compatibility in Restricted Environments 1967 19p

Likeability and compatibility are considered important concepts in predicting group effectiveness in isolated environments. In the Antarctic setting group compatibility and group accomplishment are highly related. Formality of group structure had a nonlinear relationship with group compatibility; groups which were either clearly formal or informal were more compatible than groups of apparently ambiguous or inconsistent structure. Analyses of the interactions of role, personality, and group attributes in predicting group compatibility have suggested useful approaches to study of the group assembly problem in isolated environments.

182 Gunderson, E. K. Eric
AD- 681 294 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
 Mental Health Problems in Antarctica Dec 1967 10p

Incidences of common symptoms, reflecting insomnia, anxiety, depression, and hostility increased significantly during the winter months in three recent antarctic expeditions. A number of personal history and personality variables correlated significantly with two criteria of emotional adjustment: (1) supervisor and peer ratings, and (2) symptom scores from a questionnaire filled out twice during the winter. Psychiatric screening information showed variable relations with adjustment criteria, depending on occupational group, specific criterion measure, and time of year. (See Archives of Environmental Health, 1968, 17, 558-564.)

183 Harris, William
AD- 648 999 Human Factors Research, Inc., Goleta, CA
 The Object Identification Test: A Stress-Sensitive Perceptual
 Test Feb 1967 31p

The Object Identification Test (OIT) consists of items, each of which is an ordered series of seven line drawings: the first is ambiguous but details are added to each successive frame until the last one shows an

easily recognizable common object. Score is the drawing on which S correctly identifies the object. There is evidence that OIT performance is affected by noise exposure, noxious stimulation of test-related stimuli, and extended close confinement; these are assumed to affect the central perceptual processes on which performance depends. This study aimed at developing additional items for the test.

184 Hartman, Bryce O.
AD- 660 103 School of Aerospace Medicine, Brooks AFB, TX
MOL: Predicting Four-Hour Levels of Psychomotor Performance
from the Initial Half Hour Jun 1967 15p

In a space-oriented nutrition study, two experimental Ss were confined in a small (300 cu. ft.) altitude chamber operated at 27,000 feet with an atmosphere of 70% oxygen and 30% helium. Psychomotor testing was conducted in four-hour sessions, three times a day on every other day. It was concluded that a daily half-hour psychomotor test of space crews is probably not sufficiently stable to meet biomedical monitoring requirements.

185 Haythorn, William W.
AD- 657 862 Naval Medical Research Institute, Bethesda, MD
Project Argus 1967: Five Year Review and Preview Aug 1967
60p

Summarizes research progress for the period October 1965 to June 1967, and presents plans for the five years 1968-1972. The accomplished research reported includes work on groups in isolation, social penetration, ecological aspects of behavior, sensory reduction, affect measurement, comparative monotony, activity measures, social comparison processes, behavioral contagion, project Sealab, expectancy confirmation, and stress. The report summarizes research described in more detail in 55 journal articles, chapters, and presentations to professional societies. The project plans for the next five years envision continuing efforts in most of the above areas, with an increased emphasis on training, computer modeling, and larger isolated groups.

186 Hecker, Michael H. L.; Stevens, Kenneth N.; Von Bismarck,
AD- 660 595 Gottfried; Williams, Carl E.
Bolt, Beranek, and Newman, Inc., Cambridge, MA
The Effects of Task-Induced Stress on Speech Aug 1967 81p

Stress was induced by having ten Ss read six meters and report the sum of the readings along with a test word; duration of the meter display was varied. Tapes containing the same test word spoken while under stress and while relaxed were obtained; listeners could identify the stressful responses of some Ss with 90% accuracy and of others at only a chance level. Most of the speech changes due to stress are attributable to modifications in the amplitude, frequency, detailed waveform of the glottal pulses. Manifestations of stress varied considerably from S to S, but there was consistency with each S from word to word.

187 Helmreich, Robert L.
AD- 650 310 University of Texas, Department of Psychology
Attitudinal Effects of Stress and Justification: A Replication and Extension Apr 1967 24p

Investigated the effects of stress, justification, and timing of justification on liking for a dull task, in a 2x2x2 factorial design. Under high fear (stress) no significant effects for justification or timing were found. Under low fear, interacting effects appeared: when justification was given after the task, the lower the justification the greater the liking; when justification was given after the task, the lower the justification the less the liking. There was a main effect for fear: high fear Ss expressed greater liking for the task than low fear Ss, which is here interpreted as a dissonance effect.

188 Helmreich, Robert L.
AD- 651 974 Yale University
Prolonged Stress in SEALAB II: A Field Study of Individual and Group Reactions 1967 96p

An investigation of individual and group reactions to extreme prolonged stress in a field situation. Twenty-eight divers completed personality and demographic questionnaires prior to submersion and while underwater filled out checklists and were continuously monitored by closed-circuit audio and TV. Among the findings reported: self-reported fear and arousal were higher during than before submersion, and were correlated with performance criteria; 1st born and only children showed more fear and poorer performance; age and maturity were the only characteristics associated with being chosen as a leader; a multiple regression equation with six variables accounted for 50% of objective performance variation.

189 Jex, H. R.
AD- 728 521 Systems Technology, Inc., Hawthorne, CA
Two Applications of a Critical-Instability Task to Secondary Work Load Research Aug 1967 5p

Secondary tasks, used to load or stress an operator performing a primary task, fall into two categories which this report discusses: (1) those that do not involve the same form of manual control activity as the primary task, and (2) those involving similar psychomotor activity as the primary task. In the latter case the distinctions between a secondary task and a multi-loop control situation are not sharp and depend primarily on the relative emphasis placed on secondary task performance by the procedures or practiced by the operator. (See IEEE Transactions on Human Factors in Electronics (Communications), 1967, HFE8, no. 4, 279-282.)

190 Klausner, Samuel Z.
AD- 660 910 Bureau of Social Science Research, Inc., Washington, DC
The Intermingling of Pain and Pleasure: The Stress-Seeking Personality in its Social Context 1967 39p

Stress-seeking is defined as behavior designed to increase the intensity of emotion or level of activation of the organism. The term is retained to draw attention to people who seek arousal in ways that expose them to fear and to disabilities. Evidence is presented to show that both fearful and pleasant emotions draw upon the same energetic reservoir. The degree of arousal, activation, or emotional intensity may be assessed from behavioral measures of gross movement and task engagement, or by physiological measures such as those based on the galvanic skin response or electroencephalogram.

191 Rahe, Richard H.
AD- 695 576 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Life Crisis and Health Change Feb 1967 38p

Prediction of health change, particularly illness, may be improved through careful study of life changes in a person's recent experience. Samples of a medical center's resident physicians, sailors at sea, and men undergoing stressful training, show that confidence in a method of approach is possible, and that reasonable relationships can be obtained.

192 Schwartz, Barry K.
AD- 665 517 Naval Air Development Center, Aerospace Medical Research
Department, Johnsville, PA
An Investigation of the Effects of Isolation on Time Perception
and its Physiological Correlates Nov 1967 94p

The experiment was based on a review of the literatures on physiological correlates of time perception, effects of drugs on time perception, and changes in time perception due to sensory deprivation. Twenty Ss each spent three hours in an extremely restricting isolation environment; the task was to estimate intervals of one, five, fifteen, and thirty seconds. Heart and respiratory rate, and axillary and skin temperature, were recorded immediately before each trial. Results appeared somewhat complex.

193 Sigall, Harold; Helmreich, Robert
AD- 668 335 University of Texas, Department of Psychology
Opinion Change as a Function of Stress and Communicator
Credibility Nov 1967 21p

It was predicted that differences in communicator credibility would lead to differences in opinion change under low stress, and that under high stress opinion change would not be affected significantly by differences in communicator credibility. The results of this experiment supported these predictions.

194 Smith, Seward; Meyers, Thomas L.; Johnson, Eugene, III
AD- 660 192 Naval Medical Research Institute, Bethesda, MD
Stimulation Seeking Throughout Seven Days of Sensory Deprivation Jul 1967 13p

Forty Ss lived in small, dark quiet rooms with little to do (sensory deprivation). Another 20 served in a live in the lab control group with access to lights, recreational materials, and intercom conversation with another S if mutually desired. Nineteen deprivation Ss but only one control requested early release. In a test of stimulation seeking, boring stock reports could be heard during a one hour period on days one, four, and seven. Deprivation Ss elected to listen significantly more than controls on days four and seven. Day one listening (about six hours after isolation began) predicted who would later request release. Currently available stimulation seeking data are summarized and integrated. (See Perceptual and Motor Skills, 1967, 25, 261-271.)

195 Smith, Seward; Myers, Thomas L.
AD 660 275 Naval Medical Research Institute, Bethesda, MD
 Time Shared, Perceptual Motor Skills During 7 Days of
 Isolation Oct 1967 4p

Forty Ss attempted to remain in dark, quiet sensory deprivation (SD) for seven days. Twenty Ss lived individually in a live in the lab control condition affording much recreational activity. Nineteen deprivation Ss but only one control requested early release. Deprivation Ss outperformed controls on a time shared perceptual motor task which involved tracking, turning off location coded tones, and turning off a noise. These data are further evidence that performance enhancement sometimes occurs during sensory deprivation. (See Psychonomics Science, 1967, 9, 99-100.)

196 Smith, Seward; Myers, Thomas L.; Johnson, Eugene; McIstettu,
AD 655 290 Steven L.; Walsh, J. Michael
 Naval Medical Research Institute, Bethesda, MD
 Procedural Details for Project COMONOT Jun 1967 64p

COMONOT (comparative monotony) is an experimental assessment of various conditions of boredom and monotony, at one extreme requiring a seven day stay in a totally dark soundproof cubicle. The paper focuses on (1) rationale, (2) experimental conditions, (3) subject population, (4) details of the test program, and (5) how factors affecting experimental "set" were dealt with. It is intended to provide the sorts of procedural details usually omitted from journal articles.

197 Smith, Seward; Myers, Thomas L.; Murphy, Donald B.
AD 658 940 Naval Medical Research Institute, Bethesda, MD
 Restlessness and Life Sustaining Activities During Four Days
 of Sensory Deprivation 1967 4p

Ss undergoing four day dark, quiet sensory deprivation (SD) showed more restlessness and life sustaining activity during the day than at night. These results contrast with retrospective reports of disrupted diurnal cycles. Daytime restlessness increased over days. Day two daytime restlessness predicted later requests for release and, among early release (ER) Ss, correlated inversely with time in isolation. ER Ss were more restless the hour before termination than were all other Ss during that hour. (See Psychonomics Science, 1967, 8, no. 12, 525-524.)

198 Smith, Seward; Myers, Thomas L.; Murphy, Donald B.
AD- 654 492 Naval Medical Research Institute, Bethesda, MD
Vigilance During Sensory Deprivation Jul 1967 8p

In two studies, isolated Ss (N = 59), while undergoing four days of dark, quiet sensory deprivation (SD), exhibited superior auditory vigilance compared with that shown by nondeprived controls (N = 76). This finding contrasts with the usual reports of performance decrements attributed to SD. There are indications that performance on such tests may be quite different when measured post-isolation rather than during isolation. Reasons for the apparent differences are discussed, as are the concepts of arousal, stimulus hunger, and distractibility, which appear to be useful in understanding these vigilance results. (See Perceptual and Motor Skills, 1967, 24, 971-976.)

199 Townsend, John C.
AD- 906 336f Catholic University of America
Effects of Vertical Vibration on the Well Being of Surface
Effect (SES) Ship Personnel: Literature Survey Mar 1967
93p

In the frequency range of interest, 0.2 to 5 cps, the major body areas affected are the head and thoracic-abdominal regions. For accelerations and amplitudes which might be experienced during SES operation, Ss suffer general discomfort as well as specific symptoms (such as shortness of breath, chest pains, and degradation of visual acuity and manual dexterity). Vibrational tolerance levels are suggested, and an extensive bibliography is given.

200 Korchel, Philip
AD- 655 75d University of Texas, Department of Psychology
Displacement and the Summation of Frustration Jul 1967 10p

The experiment consisted of a 2x2x1 factorial design: sex x self ideal discrepancy x frustration. On the basis of the results a sensitization theory of aggression displacement was proposed. (See Journal of Experimental Research in Personality, 1966, 1, no. 4, 256-261.)

1968

201 Boyles, Wiley R.
AD- 674 943 George Washington University, Human Resources Research Office
Background and Situational Confidence: Their Relation to
Performance Effectiveness Jun 1968 19p

Inventories designed to measure confidence in dangerous situations were administered to about 3,000 potential Army aviation warrant officers from January to December 1967. Military performances of the men are subjected to longitudinal analysis to determine the relationship of scores on these inventories to various criterion performances. In this paper relationships

of scores on two of these inventories--the background activities inventory and the situational confidence inventory--to peer ratings, attrition during flight training, and accident information, are presented.

202 Coates, Givan D.; Alluisi, Earl A.
AD- 835 6011 University of Louisville, Performance Research Lab
Behavioral Effects of Infectious Diseases Apr 1968 32p

The report presents brief summaries of research activities under six major headings: (1) sustained performance, (2) psychophysiological and bio-medical correlates, (3) personality, social, and subjective correlates, (4) technical studies and supporting laboratory research, (5) methodological and theoretical formulations, and (6) liaison activities.

203 Demos, George T.; Hale Henry B.; Williams, Edgar W.
AD- 683 271 School of Aerospace Medicine, Brooks AFB, TX
Anticipatory Stress and Flight Stress in F-102 Pilots Nov
1968 13p

A battery of urinary determinations (epinephrine, norepinephrine, 17 OHCS, urea, phosphorus, magnesium, potassium, sodium, and creatinine) was run on samples collected under four conditions: (1) during pretraining briefings for an unaccustomed flying mission, (2) during the first refueling training flight, (3) on the first leg of the actual mission, and (4) on the second leg of the mission. At all four times there was evidence of metabolic hyperactivity suggesting nonspecific stress. Only during (2) was there an increase in 17-OHCS excretion, and effects during (4) were less numerous than during (3) suggesting adaptive change.

204 Drabek, Thomas E.
AD- 678 929 University of Denver, Department of Sociology
Theory and Methods in the Study of Organizational Stress
Nov 1968 16p

A conceptual framework for the analysis of organizational stress was constructed and used to analyze data collected on three simulated police communication teams subjected to stress. The model and the findings were critically reviewed by specialists at the Symposium on Organizational Stress (January 1968, Denver). This summary of the proceedings is grouped under three general headings: theory, method, and future research needs. Simulation as a bridge between the laboratory and field is briefly discussed, as are major problem areas related to the study of organizational stress.

205 Haas, Paul M.; Kandel, Edward J.; McDonald, Robert D.;
AD- 667 630 Monty, Richard A.; Murphy, Donald B.
George Washington University, Human Resources Research Office
Collected Papers Prepared Under Work Unit Endorse: Effects
of Controlled Isolation on Performance Mar 1968 41p

Reports on specific phases of this research, including such elements as:

- a complex discrimination task in response to an auditory stimulus;
- influence of positive and negative instructions concerning visual sensations;
- effects of misinformation on the counting of auditory stimuli;
- effects of sensory deprivation and social isolation on reception of complex instructions;
- study of an auditory vigilance technique;
- development of a simple motor task to indicate efficiency of reception of instructions in complete darkness after sensory or social deprivation.

206 Helmreich, Robert; Hamilton, John
AD- 668 333 University of Texas, Department of Psychology
 Effects of Stress, Communication Relevance and Birth Order
 on Opinion Change Mar 1968 15p

Subjects under high or low fear were presented with a communication: those under high fear showed significantly greater change on topics both relevant and irrelevant to the source of fear. There was a nonsignificant tendency for first-born Ss to show more change. Fear manipulation was confirmed by two stress measures, mood adjective checklist and palmar sweat index.

207 Klausner, Samuel Z.
AD- 688 758 Bureau of Social Science Research, Inc., Washington, DC
 Why Man Takes Chances, Studies in Stress-Seeking 1968
 278p

This volume contains the contributions of psychologists, sociologists, anthropologists and literary professionals to a conference entitled Self-Control Under Conditions of Stress, which was particularly concerned with the aspects of stress which men seek as desirable, challenging, exciting, and stimulating. Such questions were considered as: What types of men and what societies are apt to seek stress, and under what conditions? What has society done to promote and control stress-seeking? When is stress-seeking aggressive and when is it creative? (Paper copy available from Doubleday and Co., Inc., Garden City, NY.)

208 Levine, Murray D.; Gordon, Thomas P.
AD- 837 143 Human Engineering Labs, Aberdeen Proving Ground, MD
 Emotional Response of Rhesus Monkeys to Chronic Psychological
 Stress 1968 12p

Summarizes the results of some recent investigations in the area of emotional responsiveness of rhesus monkeys to psychological stress. The similarity between these data and that obtained in recent work with humans under stress has led to an examination of the significant variables accounting for the data, and to a proposal for a multidisciplinary research approach in this area.

209 Montalvo, Frank Flores
AD- 710 830 University of Southern California, School of Social Work
Family Separation in the Army: A Study of the Problems
 Encountered and the Caretaking Resources used by Career
 Army Families Undergoing Military Separation Jun 1968
 277p

The study focused on the problem-solving experiences of 55 career Army families in which the husbands and fathers were absent due to their military assignments overseas. It was addressed primarily to learning the nature of the resources that were used by these families when they encountered problems in maintaining vital ongoing family functions while living in civilian communities within the San Francisco Bay area.

210 Prunkl, Peter R.; Boyles, Wiley R.
AD- 675 380 George Washington University, Human Resources Research Office
A Preliminary Application of the Critical Incident Technique
 to Combat Performance of Army Aviators Jun 1968 15p

This study was undertaken as part of research on aviator stress to obtain information on the varieties of ineffective combat performance peculiar to Army aviation and to obtain a preliminary list of combat aviation effectiveness criteria. A small sample--62 Vietnam returnees--completed a critical incident survey in which they described, in narrative form, their combat reactions and those of other pilots. Incidents of ineffective behavior occurring both in the air and on the ground were obtained and were categorized using Kern's conceptual model of behavior under stress.

211 Quarantelli, E. L.
AD- 669 818 Ohio State University, Disaster Research Center
The Disaster Research Center Simulation Studies or Organizational Behavior Under Stress Feb 1968 98p

Summarizes research undertaken 1964-67 and indicates the direction of new investigations. Chapter 1 describes the original research projections, the initial theoretical model, and physical facilities. Chapter 2: the pilot study. Chapter 3: the major laboratory work of the four years (a realistic simulation of a policy dispatching room). Chapter 4: quantitative experimental tests of the revised theory. Chapter 5: an analogue study relating to the laboratory simulations. Chapters 6 and 7 discuss cross-cultural studies of communication done in an attempt to focus on interactional aspects of groups under stress, and discuss the range of work projected for the future.

212 Rahe, Richard H.
AD- 689 019 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Life-Change Measurement as a Predictor of Illness 1968
 5p

Enlisted men and officers aboard three cruisers at sea completed a questionnaire (Schedule of Recent Experiences) which identified life crises. A high-risk group had 90% more illnesses than a comparable low-risk group. Life change data accounted for some of the variance, but race, age, anxiety over health, and location aboard ship were important factors. Combat and fleet training periods and time immediately after deployment were associated with higher illness rates. (See Proceedings of the Royal Society of Medicine, 1968, 61, no. 11, 1124-1126 (Section of Psychiatry, 44-46).)

213 Rahe, Richard H.; Arthur, Ransom J.
AD- 670 423 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Biochemical Correlates of Behavior (A Digest of Selected
Studies) 1968 7p

Selected biochemical studies adjudged to be pertinent to military stress research are reviewed. These studies are in the areas of adrenal cortical functioning, amine metabolism, free fatty and uric-acid metabolism. The possible future relevance of such research to important military medical obligations such as screening of personnel for particular duties and the monitoring of individuals in high stress assignments is emphasized. (See Diseases of the Nervous System, 1968, 29, 114-117.)

214 Rose, Robert M.; Mason, John W.; Bourne, Peter G.
AD- 682 388 Walter Reed Army Institute of Research, Washington, DC
17-OHCS Levels in Combat. Special Forces 'A' Team Under
Threat of Attack Apr 1968 6p

A 12-man Special Forces 'A' team was studied for 3 months in an isolated camp near the Cambodian border in So, Vietnam. This paper reports on urinary 17-OHCS levels before, during, and after an anticipated attack. Mean level of excretion for the two officers was higher than for the ten enlisted men; also on the day of an anticipated attack officers' excretion rose while enlisted excretion fell. It is argued that stress can only be defined in terms of the individual's interaction with the environment, which enables man by altering his perception of reality to make a satisfactory adaptation even to the most threatening situations. (See Archives of General Psychiatry, 1968, 19, 135-140.)

215 Starkweather, John A.
AD- 839 357L Langley Porter Neuropsychiatric Institute, San Francisco, CA
Voice Analysis Techniques for Immediate Assessment Jul
1968 33p

Objectives: (1) develop acoustic measures of the voice to provide a useful monitor of the behavioral and emotional state of a speaker using a voice communication channel; (2) explore and develop computer programs for pattern recognition of complex acoustic data to enable rapid processing, feedback of results, and adjustments of parameters for further work; (3) study the feasibility of on-line equipment for immediate assessment of the behavioral state of personnel at remote locations. Report describes instrumentation developed for acoustic analysis and its connection to a computer providing graphic display and digital magnetic tape.

216 Zalkind, Sheldon S.; Dispenzieri, Angelo
AD- 683 382 Baruch College
 The Effects on Civilian Personnel of an Announcement to
 Close the Brooklyn and Portsmouth Naval Shipyards: First
 Phase. History and Procedures Dec 1968 82p

The research project investigated some of the social psychological consequences of differential stress resulting from the threat of job displacement upon Naval shipyard civilian personnel. The present report gives: the project design; a review of the literature; the major hypothesis; the procedure; a bibliography; and the research instruments administered to employees of the Brooklyn and Portsmouth Naval Shipyards in 1965.

1969

217 Alluisi, Earl A.; Thurmond, John B.; Driscoll, James M.
AD- 860 091L University of Louisville, Performance Research Lab
 Behavioral Effects of Infectious Diseases Apr 1969 38p

The report presents brief summaries of research activities under six major headings: (1) sustained performance, (2) psychophysiological and biomedical correlates, (3) personality, social, and subjective correlates, (4) technical studies and supporting laboratory research, (5) methodological and theoretical formulations, and (6) liaison activities.

218 Boyles, Wiley R.
AD- 688 817 George Washington University, Human Resources Research Office
 Measures of Reaction to Threat of Physical Harm as Predictors
 of Performance in Military Aviation Training May 1969
 20p

This paper reports efforts to develop (1) measures of reaction to threat of physical harm threat, and (2) measures of change in confidence in ability to cope with that threat, for use in the secondary selection process in Army aviation.

219 Cahoon, Richard L.
AD- 687 612 Tufts University
 Physiological Arousal and Time Estimation Jan 1969 10p

Forty students, chosen by scores on the Taylor Manifest Anxiety Scale, estimated short time intervals under two conditions of induced arousal, low and high (threat of shock). Three methods of estimation, and four indices of arousal, were studied. No significant differences in time estimation between induced arousal conditions was found. The meaning of the results for the concept of arousal is discussed. (See Perceptual and Motor Skills, 1969, 28, 259-268.)

220 Datel, William E.; Lifrak, Stephen T.
AD- 685 803 Mental Hygiene Consultation Division, Fort Ord, CA
 Expectations, Affect Change, and Military Performance in the
 Army Recruit Apr 1969 88p

Affective response to basic combat training (BCT) was studied using the Multiple Affect ACL. Expectations of BCT distress measured on arrival were found to be much lower than actual distress levels later reported during BCT. An experiment with eight groups was run to test (1) the immediate effect upon distress expectancy of a training film, and (2) the later effect of such stress preparation on levels actually reported during BCT.

221 Ervin, Frank R.; Mendelson, Jack H.
AD- 707 174 Massachusetts General Hospital, Stanley Cobb Labs for
 Psychiatric Research, Boston
 The Effects of Sensory Deprivation and Varied Sensory Input
 on Electrophysiologic and Metabolic Activities on the
 Central Nervous System Jun 1969 195p

A final report is made for nine years of work done under contract. Advances in the study of sensory deprivation are considered and the direction of experiments within the larger field are outlined.

222 Hall, Earl E.
AD- 700 166 Human Sciences Research, Inc., McLean, VA
 A Model of Society to Use in Systematic Analysis and Manage-
 ment Planning for Societies Under Stress Nov 1969 127p

The proposed model identifies key social and psychological factors crucial for societal system functioning. It is here described in conceptual, diagrammatic equation form, providing a first-order quantitative estimate of values of some key factors. An illustrative example of a systems analysis of society in crisis and in recovery is given. An appendix dealing with the human element problems of repair of a key power plant damaged by nuclear attack is presented.

223 Levine, Murray D.; Gordon, Thomas P.; Peterson, Rolf H.;
AD- 723 273 Rose, Robert M.
 Human Engineering Labs, Aberdeen Proving Ground, MD
 Urinary 17-OHCS Response of High- and Low-Aggressive Rhesus
 Monkeys to Shock Avoidance Dec 1969 13p

A two-part study designed to explore the hypothesis that a rhesus monkey's aggressive behavior is predictive of his adrenal cortical response to shock avoidance (17-OHCS output). Results showed that the high-aggressive monkeys were chronically stressed and slower to learn the task; low-aggressives showed little stress response and learned the task quickly. Part two showed that the stable differences in 17-OHCS output were not due to either initial training time or physiological ability, and can be

interpreted as being a function of the interaction between a particular type of subject and a particular type of task. (See Physiology and Behavior, 1970, 5, 919-925.)

224 McGrath, Joseph E.
AD- 693 328 University of Illinois, Department of Psychology
 Social and Psychological Factors in Human Stress Jun 1969
 18p

The interim report describes studies completed or in progress within Phase I and II of a three-phase program of research on social and psychological factors in human stress. It lists six major substantive propositions and three key sets of methodological issues which were induced from integrative studies of Phase I. These nine issues provide the guiding concepts for a set of eight empirical and one theoretical studies initiated in Phase II. Each study is described in summary form.

225 Milburn, Thomas W.
AD 695 809 Northwestern University, Department of Psychology
 The Utilization of Behavioral Science Research for an
 Applied Problem: The Management of Crises May 1969 49p

The document is concerned with crises, which may be regarded as complex stressors that involve threat, decision pressure, and a need to improvise. It considers some of the stress literature relevant to the study of crises, and refers to laboratory and simulation studies. Crisis management is held to involve information (uncertainty), the selection and training of personnel, and control either for purposes of attenuation or for exploitation.

226 Rubin, Robert T.; Miller, Robert G.; Arthur, Ransom J.;
AD- 703 337 Clark, Brian R.
 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
 Differential Adrenocortical Stress Responses in Naval
 Aviators During Aircraft Carrier Landing Practice Nov
 1969 7p

Serum cortisol levels were measured in nine Navy pilots and their flight officers during aircraft carrier landing practice in the two-man F-48 jet aircraft. The pilots showed an unequivocal adrenocortical stress response; the flight officers did not. The complex and hazardous task of carrier landing appears to be a considerably greater stress on the 'executive' Naval aviator (the pilot in control of the aircraft) than on his passive partner, although both are exposed to the same dangers. (See Psychological Reports, 1970, 26, 71-74.)

227 Shehane, Waymon David, Jr.
AD 738 944 Army Materiel Command, Intern Training Center, Texarcana, TX
 An Evaluation of the Effectiveness of Auditory Flutter Fusion
 as a Measure of Mental Stress May 1969 30p

Auditory flutter fusion is defined as the point at which a pulsed signal becomes fused or sounds continuous. The basis for this study is that the frequency at which the signal becomes fused drops in an amount proportional to the amount of mental stress induced. The object of this paper is to further the study of this technique and to investigate whether or not the deviation between the flutter fusion points taken before a mental task and the points taken immediately following the task replicate over repeated trials of the same subject. The paper also examines whether or not this deviation is statistically the same between different subjects.

228 Taylor, Dalmas A.; Altman, Irwin; Wheeler, Ladd; Kushner,
AD- 697 515 Estelle N.
Naval Medical Research Institute, Bethesda, MD
Personality Factors Related to Response to Social Isolation
and Confinement 1969 11p

The study examines personality factors relating to or predictive of endurance and adjustment to social isolation, and personality and/or perceptual changes occurring under varying conditions of social isolation. Pairs of men were confined for eight days in small rooms without recreational materials of any kind and a minimal work schedule. Multiple conditions of isolation were effected by a factorial combination of mission-length expectation, stimulation, and privacy. (See Journal of Consulting and Clinical Psychology, 1969, 33, no. 4, 411-419.)

1970

229 Bernstein, Irwin S.
AD- 706 240 Emory University, Yerkes Regional Primate Research Center
Status and Stress in Primate Population Apr 1970 11p

A preliminary report covering the 2nd year of work on a program to correlate physiological measures (adreno-cortico-steroid hormone excretion levels) with behavioral measures of stress. Status hierarchy information was collected following group formation in rhesus monkeys and a complete profile of social and related activities was generated for each S. Urine and blood samples were collected and endocrinological measures obtained and correlated against behavioral measures.

230 Biersner, Robert J.; Cameron, Bernard J.
AD- 715 344 Navy Experimental Diving Unit, Washington, DC
Memory Impairment During a Deep Helium Dive 1970 8p

Five-minute and 60-minute memory was tested on 20 divers at 3 intervals during a saturation dive (surface, at 600 feet during descent, and at 100 feet during ascent). Memory impairment was selective (60-minute memory at 600 feet poorer than same at surface or at 100 feet). It is suggested

that this is due to psychological stress rather than to helium narcosis; thus stress may be an important factor influencing performance at extreme depths. (See Aerospace Medicine, 1970, 41, no. 6, 658-661.)

231 Bonsper, Donald Edward
AD- 712 784 Naval Postgraduate School, Monterey, CA
 The Effect of Increased Information Processing on Sinus
 Arrhythmia and Heart Beat Sep 1970 31p

A measure of sinus arrhythmia was developed which considered the area between the electrocardiogram rate curve and the average heart beat line. Simple linear correlation analyses were performed to determine the relationships between heart beat, sinus arrhythmia and information processing rate. Sinus arrhythmia was decreased as a result of increased information processing while heart beat was not significantly affected.

232 Coulter, Xenia
AD- 747 628 Naval Aerospace Medical Research Lab, Pensacola, FL
 The Effect of Performance Relevance and Feedback upon
 Resistance to Anticipatory Stress Aug 1970 27p

The study sought to demonstrate that if occurrence of harm (electric shock) depends on performance and if performance feedback is supplied, resistance to stress will be enhanced. Ss were 80 aviation officer candidates plus 10 similar controls, performing on a subject-paced four-choice discrimination task. Ss anticipated either harm (shock) or nonharm (a bell) and within each of these conditions each of four groups performed the task with a different combination of relevance and feedback: neither, both, and one or the other. Major conclusions: (1) stress is best measured by performance variability; (2) resistance is enhanced by both feedback and relevance.

233 Gunderson, E. K. Eric
AD- 766 385 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
 Individual Behavior in Confined or Isolated Groups Jan
 1970 23p

Psychological studies conducted at Polar stations were reviewed and research conducted at U.A. Antarctic stations during the past decade was summarized. The development of individual performance and adjustment measures was described in some detail, and the evaluation of a wide array of screening assessment methods in this setting was attempted. A high degree of specificity in the relevance of various predictor variables for different performance criteria and different occupational groups was demonstrated. A moderate degree of success has been achieved in identifying biographical and personality data that contributes to prediction of adjustment in Antarctic groups.

- 234 Helmreich, Robert
AD- 716 048 University of Texas, Department of Psychology
Human Reactions to Psychological Stress Nov 1970 27p

Theoretical issues relating stress, self-concept and attitude change are discussed. Differential effects of communicator credibility under high and low stress are described. Methodological problems in stress research are explained.

- 235 Kennedy, Robert S.
AD- 716 967 Naval Aerospace Medical Institute, Pensacola, FL
Two Procedures for Applied and Experimental Studies of Stress
Feb 1970 18p

Two methods are offered to compensate for the low reliability of physiological manifestations of CNS activity. In the first a valid criterion of stress would be determined by experimentation and then predictors of this obtained empirically by correlational techniques and cross-validated. Using the predictors the influences of psychological vs. physiological stress could be separated. A second method is similar but less exact and has already been used in motion sickness studies; it avoids the necessity for a long exploratory program and numerous pilot studies. A procedure for the control and regulation of Ss perception of magnitude of stress is offered and need for control of this factor is discussed.

- 236 McClure, Gary; Forgays, Donald G.
AD- 706 379 University of Vermont, Department of Psychology
Arousal and Repeated Isolation Experiences Mar 1970 10p

The report presents the results of four male adult subjects exposed to sensory isolation through water immersion for three trials totaling about 20 hours. The results presented are EKG frequencies taken before and after time-estimation hacks throughout the runs. EKG frequency taken before time hacks showed a decrease across trials; that taken after time hacks displayed a rather steady picture. These results were viewed as evidence for the notion that stress arousal may be ameliorated with experience while arousability may remain at the same level.

- 237 McClure, Gary; Forgays, Donald G.
AD- 706 380 University of Vermont, Department of Psychology
EKG Changes from Pre- to Post-Time Estimation Period Across
Multiple Sensory Deprivation Trials Mar 1970 11p

The report summarizes data taken from four subjects exposed to multiple sensory deprivation runs. The water-immersion technique of isolation was employed and the subject run for three trials, spending an average of nearly seven hours per trial. Continuous EKG data obtained on each run was partitioned into 5% portions of total run and a constant part of these portions was compared. While earlier analyses had indicated a pattern of decreasing EKG across trials, the present more sensitive analyses shows the importance of an individual analysis.

- 238 McGrath, Joseph E.
AD- 710 097 University of Illinois, Department of Psychology
 Social and Psychological Factors in Stress Jul 1970 366p

The book is the product of a three-day conference on social and psychological factors in stress. The purpose of the conference was to identify crucial issues in this area of stress and to seek potential research approaches to those issues as the focus of the basic contract research program for the sponsor. The document gives a conceptual formulation for research on stress, major substantive and methodological issues, an integrative review of some research on social-psychological factors in stress, and a discussion of strategic considerations for future research on stress. (Published by Holt, Rinehart and Winston, Inc.)

- 239 Miller, Robert G.; Rubin, Robert T.; Clark, Brian R.;
AD- 718 934 Crawford, William R.; Arthur, Ransom J.
 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
 The Stress of Aircraft Carrier Landings. I. Corticosteroid
 Responses in Naval Aviators Apr 1970 8p

Serum and urine cortisol levels were measured in Navy pilots and their flight officers during aircraft carrier landing practice in the two-man F-48 jet aircraft. The pilots showed a considerable adrenal cortical stress response; the flight officers did not. The complex and dangerous task of carrier landing appears to be a greater stress on the pilot in control of the aircraft than on his passive partner. The findings suggest that in acute stress situations, assigned role and responsibility may become dominant factors in the hierarchy of psychoendocrine control of adrenal cortical responses. (See Psychosomatic Medicine, 1970, 32, no. 6, 581-588.)

- 240 Morgan, Ben B., Jr.; Coates, Glynn D.; Rebbin, Thomas J.
AD- 874 892L University of Louisville, Performance Research Lab
 The Effects of Phlebotomus Fever on Sustained Performance and
 Muscular Output Mar 1970 15op

Reports results of the 6th in a series of long-term, multiple-task performance studies of the behavioral effects of infectious diseases. Ss were ten volunteers, eight of whom were infected with phlebotomus fever virus and two of whom were controls. Decrements in performance during the period of illness were measured and are reported in terms of each of six specific tasks as well as a general index of performance. The average effect of each degree rise in temperature is given, as is the range of individual differences and the rate of recovery.

- 241 O'Neil, Harold F., Jr.
AD- 702 125 Florida State University, Computer-Assisted Instruction Center
 Effects of Stress on State Anxiety and Performance in
 Computer-Assisted Learning Jan 1970 139p

The Ss (female introductory college students) were selected on the basis of extreme scores on the A-trait scale of the state-trait anxiety inventory. Stress was induced by feedback concerning performance on a mathematical learning task which was presented by an IBM system. In the stress condition, Ss received negative feedback about performance. The Ss in the nonstress condition were given a brief rest period in place of the negative feedback.

242 Rahe, Richard H.; Mahan, Jack L., Jr.; Arthur, Ransom J.
AD- 720 002 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Prediction of Near-Future Health Change From Subjects'
Preceding Life Changes Feb 1970 9p

Two thousand six hundred and sixty-four men, virtually the entire complement of three Navy cruisers, completed a life changes questionnaire prior to a six- to eight-month cruise. Illness data were then gathered during the cruise on over 90 per cent of those who filled out the questionnaire. Across ships there was a low-order positive relationship between pre-cruise life change intensity and number of reported illnesses at sea. In support of previous (retrospective) pilot studies, there was a linear relationship between life change intensity and cruise period illness rate. (See Journal of Psychosomatic Research, 1970, 14, 401-406.)

243 Rahe, Richard H.; Paasikivi, Juhani
AD- 726 832 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Psychosocial Factors and Myocardial Infarction. II. An
Outpatient Study in Sweden Jul 1970 10p

Thirty Swedish outpatients who had experienced their initial episodes of myocardial infarction between one and four years prior to the present study gave retrospective life changes information about their lives over the previous four years. The subjects uniformly recorded a buildup in life change intensity from approximately 20-30 LCU per year-quarter to approximately 54 LCU over the year and one half prior to their infarctions. A decrease in their year-quarter LCU totals was seen over the year following their infarctions, back to an apparent LCU baseline of 20-30 LCU. No appreciable effect upon LCU reporting seemed to be caused by subjects' differing years of infarction experience. (See Journal of Psychosomatic Research, 1971, 15, 33-39.)

244 Rahe, Richard H.; Pugh, William E.; Erickson, Jeanne M.;
AD- 733 157 Gunderson, E. K. Eric; Rubin, Robert T.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Cluster Analyses of Life Changes: I. Consistency of Clusters
Across Large Navy Samples. II. Method and Replication in
Navy Subpopulations Nov 1970 13p

Describes two studies to identify clusters of life change items within the Schedule of Recent Experience (SRE), a questionnaire for gathering information on stressful life events. Study 1 used responses of 2678 Navy enlisted men on three cruisers; four clusters were identified in each of the three groups: (1) personal and social, (2) work, (3) marital, and (4) disciplinary. There was high consistency in cluster content across groups. Study 2 used enlisted crews of a carrier and a battleship, and again found clusters corresponding to (1), (2), and (3) above. Disciplinary items clustered only for unrated men. (See Archives of General Psychiatry, 1971, 25, 330-339.)

245 Rubin, Robert T.; Miller, Robert G.; Clark, Brian P.; Poland,
AD- 718 937 Russell E.; Arthur, Ransom J.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
The Stress of Aircraft Carrier Landings. II. 3-Methoxy-
4-Hydroxyphenylglycol Excretion in Naval Aviators Apr 1970
9p

As a possible reflection of central norepinephrine metabolism, urine MHPG excretion was measured in Naval aviators during aircraft carrier landing practice, a complex task and a stress of considerable magnitude. Mean urine MHPG was significantly increased after both day and night carrier landings compared to a nonflying control day. These findings suggest that there may be an accelerated metabolism of brain norepinephrine under conditions of heightened arousal and concentration compared to the normal waking state. (See Psychosomatic Medicine, 1970, 32, no. 6, 589-597.)

246 Seymour, George
AD- 735 005 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
The Concurrent Validity of Unobtrusive Measures of Conflict
in Small Isolated Groups Dec 1970 7p

Six unobtrusive measures of group behavior (type of response to a conflict criterion item) and response or not to a sociometric questionnaire were correlated with three criteria reflecting a concurrent validation procedure. Results supported the general hypothesis that the unobtrusive measures used were indicative of conflict in small isolated groups. An unexpected finding indicated that response to stress or conflict may be characterized by apparently opposite types of behavior within groups--either withholding information or making strong negative statements about another. (See Journal of Clinical Psychology, 1971, 27, no. 4, 431-435.)

247 Theorel, Tores; Rahe, Richard H.
AD- 723 501 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Psychosocial Factors and Myocardial Infarction. I. An
Inpatient Study in Sweden Jul 1970 10p

A pilot study, in which 54 Swedish male Ss surviving myocardial infarction (MI) provided life changes information over the 3 to 4 years prior to MI.

Fourteen friends of the patients with no previous history of coronary heart disease (CHD) served as controls. MI Ss with no previous history of CHD showed a significant LCU (life change unit) buildup over the two years prior to MI. MI Ss with recent episodes of CHD or other major illness showed a significant increase in LCU totals during the 2nd year prior to the MI, coincident with the majority of previous episodes of CHD experienced by this group. Control Ss showed no significant changes in LCUs during the investigated period. (See Journal of Psychosomatic Research, 1971, 12, 25-31.)

248 Thurmond, John B.; Driscoll, James M.; Morgan, Ben B., Jr.
AD- 874 820L University of Louisville, Performance Research Lab
Behavioral Effects of Infectious Diseases Apr 1970 40p

Performance was measured with a multiple-task performance battery in a synthetic (rather than simulated) work situation. Six completed and one planned experiments are summarized. Results indicate that the average decrement in performance efficiency during illness will be on the order of 27% to 34% with a severe febrile disease, or 18% to 25% with the less serious self-limiting phlebotomus fever.

249 Walsh, J. Michael; Donenfeld, Ira; Smith, Seward; Haythorn,
AD- 709 075 William W.; Briley, Philip L.
Naval Medical Research Institute, Bethesda, MD
Project RIM: Design and Implementation Apr 1970 103p

RIM is a comprehensive investigation into the psychological and physiological effects of long-term isolation and confinement, begun in Fall 1968. This paper provides comprehensive documentation of the research rationale and procedures; no research data results are included.

250 Wilkins, Walter L.
AD- 764 980 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Isolation Research: The Methodological Context 1970 17p

Research on isolation, including sensory and perceptual isolation, laboratory isolation of dyads and small groups, natural isolation resulting from geographical distance or from disaster, has developed a significant body of knowledge about the behavior of men under stressful conditions. It has also contributed to scientific method. The various contributions of the Roman NATO Symposium validate each other's results in satisfactory ways, and indicate the directions of future research on social isolation.

1971

251 Clemes, Stanley R.
AD- 733 933 Mental Research Institute, Palo Alto, CA
Relationship of Military Environments to Stress and Performance Nov 1971 112p

Describes a study to develop and test a method for assessing social climate in military training companies (the Military Company Environment Index or MCEI) and to use it to determine the relationship between enlisted men's perceptions of their company environments, feelings of stress, and performance. Results underlined the importance of peer support in relation to both stress and performance. It is argued that the MCEI can assist command to assess company environments and develop procedures to increase company effectiveness.

252 Doll, Richard E.; Gunderson, E. K. Eric
AD- 721 974 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Group Size, Occupational Status and Psychological Symptomatology in an Extreme Environment 1971 6p

Investigated the influence, direct or indirect, of group size on depression, insomnia, anxiety, and hostility among Antarctic volunteers. Military vs. civilian occupational status was another independent variable. The only significant result involving group size was that in the military group there was a higher level of hostile feelings at smaller situations, in early winter. Depression and insomnia were higher among the military but unrelated to group size. No differences at all were found on anxiety. (See Journal of Clinical Psychology, 1971, 27, no. 2, 196-198.)

253 Grether, W. F.; Harris, C. S.; Mohr, G. C.; Nixon, C. W.;
AD- 732 617 Ohlbaum, M.
Aerospace Medical Research Lab, Wright-Patterson AFB, OH
Effects of Combined Heat, Noise and Vibration Stress on
Human Performance and Physiological Functions 1971 7p

To better understand combined stress effects, ten men were exposed to heat (120F), noise (105 db), and vibration (5 Hz, 0.30 peak G) both singly and in combination. Measurements included tracking ability, reaction time, mental arithmetic, visual acuity, voice communication, body temperature, heart rate, weight loss, and subjective ratings of stress. On none of these were the effects of combined stress more marked than the effect from the single greatest stressor. (See Aerospace Medicine, 1971, 42, no. 10, 1092-1097.)

254 Harris, C. Stanley; Sommer, Henry C.
AD- 731 146 Aerospace Medical Research Lab, Wright-Patterson AFB, OH
Combined Effects of Noise and Vibration on Mental Performance Aug 1971 20p

Experiment 1: ten Ss were tested, on a combination short memory and subtraction task, during exposure to four different intensities of broadband noise. Another group of ten was tested using the same noise in combination with vertical vibration. Only the highest level of noise combined with vibration affected performance adversely. Experiment 2: the 2nd group of

Ss above was tested while exposed to one of two levels of noise combined with one of four levels of vibration. High noise and vibration combined to affect performance more than either stressor alone.

255 Helmreich, Robert
AD- 721 364 University of Texas, Department of Psychology
 The Tektite II Human Behavior Program Mar 1971 63p

The report describes preliminary findings from a large-scale field research project involving continuous, systematic observations of ten teams of aquanauts over a period of 182 days. Questions of field methodology are discussed, and the development of an effective new predictive instrument, the life history questionnaire, is reported.

256 Helmreich, Robert; Lefan, James; Mach, Richard
AD- 721 363 University of Texas, Department of Psychology
 Behavior Observer's Manual, Project Tektite II Mar 1971
 52p

The report is a training manual for the collection of systematic observational data in a field situation. It is distributed to illustrate a methodology for collecting large amounts of data over long periods of time.

257 Hutcherson, Russell C.
AD- 747 682 Army Materiel Command, Intern Training Center, Texarkana, TX
 Effects of Prolonged Stress on Steroid Levels in Parotid
 Fluid Dec 1971 44p

Ten subjects of approximately the same age, size, and education group, were exposed to an unchanging mental stress for a two-hour period. Using sour candies to stimulate parotid gland activity, parotid fluid samples were collected at 30-minute intervals. Statistical analysis of the steroid levels showed that there was no significant change in cortisol levels in parotid fluid over the two-hour sampling period.

258 McGrath, Joseph E.
AD- 726 667 University of Illinois, Department of Psychology
 Social and Psychological Factors in Human Stress Jun 1971
 17p

The report describes studies completed or in progress within all three phases of a program of research on social and psychological factors in human stress. It lists six major propositions and three sets of methodological issues induced from integrative studies of Phase I. These nine issues provide the guiding concepts for six empirical and theoretical studies initiated in Phase II. Each study is described in summary form. Phase III focused on a field test of a model of stress, a reformulation of the model based on results of the field study, and several further studies designed to test the reformulated model.

259 McKendry, James M.; Hurst, Paul M.
AD- 737 449 Institute for Research, State College, PA
Adaptation to Speed Stress in an Immediate Memory Task 1971
10p

Independent variables were (1) speed of stimulus presentation, and (2) stimulus complexity. Dependent variables were performance latency and accuracy. Results showed that extensive practice reduces the time required to respond accurately to a set of stimulus elements; the more complex the stimuli the smaller the reduction. Whenever the minimal response time was surpassed, both performance accuracy and the amount of information transmitted per minute fell, to a degree that was disproportionately greater than increases in input speed relative to the minimal response time (channel capacity). (See Human Factors, 1971, 13, no. 6, 543-552.)

260 Rahe, Richard H.; Biersner, Robert J.; Ryman, David H.;
AD- 757 290 Arthur, Ransom J.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Psychosocial Predictors of Illness Behavior and Failure in
Stressful Training Apr 1971 8p

Total score on the Cornell Medical Index (CMI) and a unit scale developed from the Schedule of Recent Experience (SRE) were found to be valid predictors of dispensary visits made during stressful Underwater Demolition Team training. The SRE was a better predictor than the CMI of dispensary visits made by those who later quit because of medical problems, while the CMI was a better predictor of visits made by those who later quit voluntarily. (See Journal of Health and Social Behavior, 1972, 13, 393-397.)

261 Rahe, Richard H.; Rubin, Robert T.; Gunderson, E. K. Eric;
AD- 735 193 Arthur, Ransom J.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Psychologic Correlates of Serum Cholesterol in Man: A
Longitudinal Study Feb 1971 15p

Twenty Navy underwater demolition team trainees were repeatedly tested during the first two months of training to obtain data on serum cholesterol concentrations and also on Ss' mood and feeling states. Highest correlations found were between depressed mood and elevated serum cholesterol. At a lower level, negative correlations between feelings of motivation, arousal, and happiness and elevated serum cholesterol were consistent and at times significant. Sources of variability in the various correlations, and the possibility of obtaining misleading results from cross-sectional studies, are discussed. (See Psychosomatic Medicine, 1971, 33, no. 5, 399-410.)

262 Rubin, Robert T.
AD- 732 554 University of California at Los Angeles, Brain Research
Institute
Chemical Index to Fitness Aug 1971 4p

A study of the interrelationships of anterior pituitary hormones in stress situations. It concerns the release of anterior pituitary hormones in normal young adult men during all-night (abstract interrupted here). Plans to continue and extend these studies to determine the characteristics of the release of each of the hormones in subjects under a number of conditions of central nervous system activity, including field stress situations, are in progress. These will include the circadian rhythms in hormone release.

263 Ryback, Ralph S.; Lewis, Oliver F.; Lessard, Charles S.
AD- 730 808 School of Aerospace Medicine, Brooks AFB, TX
Psychobiologic Effects of Prolonged Bed Rest (Study II) in
Young, Healthy Volunteers 1971 9p

The study was divided into control, experimental, and recovery phases of five, five, and six weeks each. Ss were eight young, healthy men. Sleep data including EEG recording, psychological testing, and psychomotor performance were obtained. With the onset of bed rest, an increase in deep sleep (stages three and four) and a decrease in light sleep was observed. Psychological testing showed an increase in anxiety, hostility, and depression just in anticipation of being put to bed, and psychomotor testing showed a decrease in hand grip during bed rest. (See Aerospace Medicine, 1971, 42, no. 5, 529-535.)

264 Ryback, Ralph S.; Trimble, Ralph W.; Lewis, Oliver F.; Jennings,
AD- 730 817 Charles L.
School of Aerospace Medicine, Brooks AFB, TX
Psychobiologic Effects of Prolonged Weightlessness (Bed
Rest) in Young Healthy Volunteers 1971 10p

At the present time prolonged bed rest is the best method for simulating prolonged weightlessness. Eight airmen aged 18 to 22 years participated in the bed rest study. The experiments suggest that prolonged bed rest may be understood as a more subtle form of sensory deprivation. The significance of this study for the acutely bedridden or convalescing patient is seen as the psychological and physiological stress that prolonged bed rest produced. (See Aerospace Medicine, 1971, 42, no. 4, 408-415.)

265 Theorell, Tores; Rahe, Richard H.
AD- 755 294 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Behavior and Life Satisfaction Characteristics of Swedish
Subjects with Myocardial Infarction May 1971 12p

Sixty-two middle-aged Swedish male survivors of their initial MI (myocardial infarction) were matched for age and occupational level with 109 Ss free of CHD (coronary heart disease). Responses of the two groups to a brief "CHD Behavior" questionnaire were compared, and differences found. Post-MI Ss worked more overtime hours, got less satisfaction from their jobs, and felt more hostility when slowed down by others. Normal subjects had more responsibilities at work, more supervision of others at work, more time for

physical and social activities, more time doing work at home, and more dissatisfaction with their financial state. (See Journal of Chronic Diseases, 1972, 25, 139-147.)

266 Weybrew, Benjamin B.
AD- 740 796 Naval Submarine Medical Research Lab, Groton, CT
 Submarine Crew Effectiveness During Submerged Missions of
 Sixty or More Days Duration Oct 1971 30p

Attempts to integrate the literature concerning major factors affecting submarine crew member effectiveness during prolonged submergence. The most significant stressors and the specific adaptive processes correlated with them are delineated (confinement, revitalized air, flattening of circadian rhythms, threat of hyperbaric exposure, sleep deprivation). Performance decrements, debilitating morbidity, and decompensatory trends in crew morale appear to be minimal during long cruises.

267 Williams, Larry W.
AD- 747 671 Army Materiel Command, Intern Training Center, Texarkana, TX
 Evaluating the use of Parotid Fluid Analysis as a Measure of
 Task Difficulty 1971 62p

Parotid fluid was collected for a 30-minute period at each of 3 stress levels for each of 10 subjects. Parotid fluid was analyzed for concentrations of 17-OHCS (corticosteroids). Low stress was rest, medium and high were induced by a 30 and 60 rpm rotary tracking task. There was no change in 17-OHCS level as a result of increased stress level, and this is attributed to using a tracking task lacking sufficient difficulty to produce mental stress.

1972

268 Arthur, Ransom J.
AD-A006 794 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
 Extreme Stress in Adult Life and Its Psychic and Psycho-
 physiological Consequences Nov 1972 16p

Psychoanalytic views that all serious adult maladjustment must have its roots in infantile psychic trauma are undermined by evidence from the study of survivors of prisoner of war and concentration camps. . . It appears that some extreme experiences of adult life can be so painful that they can bring about almost irreversible damage. Implications for treatment of POWs are drawn.

269 Bernstein, Irwin S.
AD- 743 532 Emory University, Yerkes Regional Primate Research Center
 Response to Frustration as Related to Social Status in
 Nonhuman Primates May 1972 7p

High- and low-status animals are tested individually in an operant conditioning situation designed to produce frustration. Completed testing on two high- and two low-status males reveals clear differences when the frustration condition was introduced: marked disruption of performance in high- but not in low-status animals. The work is being replicated.

270 Childs, Jerry M.; Halcomb, Charles G.
AD- 747 797 Texas Technological College, Lubbock Center of Biotechnology
and Human Performance
The Effects of Noise and Response Complexity Upon Vigilance
Performance 1972 24p

Visual vigilance (detection) performance of 140 Ss was investigated with respect to environmental stimulation (noise) and intraorganismic stimulation (simple vs. complex response). Correct detections and false alarms were analyzed. Results are evaluated in terms of the activation hypothesis.

271 Coleman, Alfred E.
AD- 747 862 Texas Technological College, Lubbock Center of Biotechnology
and Human Performance
Heart Rate Responses of Coach and Referee to Selected Events
During a College Basketball Game Jul 1972 11p

Heart rate responses of a coach and a referee were continuously monitored by radio telemetry during a college basketball game. Analysis of data indicated that the heart rate of the coach was higher than that of the official for most of the contest. Events that elicited the highest responses from the coach and referee were turnovers, rebounding, and shooting.

272 Erickson, Jeanne M.; Pugh, William M.; Gunderson, E. K. Eric
AD- 754 700 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Status Congruency as a Predictor of Job Satisfaction and
Life Stress Mar 1972 6p

A status congruency measure was developed and employed as a means of determining the degree to which an individual may be 'in step' with peers within his occupational category relative to duty time, pay grade, age, and marital status. Congruence was found to be significantly and uniquely related to both criterion measures (stress and satisfaction). A viable means for describing status congruency appeared to emerge, and a first step has been taken in analyzing this congruency measure and its relationship to individual attitudes and perceptions. (See Journal of Applied Psychology, 1972, 56, no. 6, 523-525.)

273 Fuller, Fred H., Jr.
AD- 749 301 Decision Control, Inc., Bethesda, MD
Detection of Emotional Stress by Voice Analysis Sep 1972
41p

Develops a methodology for determining emotional stress by voice analysis, based on the ratio of the amplitudes of the 100-120 Hz to the 600-800 Hz ranges in Ss spoken responses. A portable voice analyzer was built which electronically processes a voice signal from either a tape recorder or microphone input. An interrogation and assessment protocol similar to the "zone of comparison" technique used by many polygraph specialists was developed and used to assess the guilt or innocence of five Ss undergoing "zone of comparison" tests. A 95% confidence level was achieved for four of the five subjects.

274 Hackinon, John R.
AD- 748 036 Connecticut College, Department of Psychology
 Development of Techniques for Measuring Performance in the
 Undersea Environment Apr 1972 10p

The overall objective of the project was to develop precise, reliable techniques for monitoring changes in human performance during exposure to unusual environmental conditions. Specifically, this research was designed to provide baseline information on the usefulness of a selected task as an instrument in assessing performance degradation under adverse conditions germane to the diving situation. The task selected for investigation was a modified version of the Stroop color-word interference test (CWIT).

275 Harrazzi, Amedeo S.
AD- 740 666 University of Missouri, Institute of Psychiatry
 Aerospace Stress and Human Reliability Apr 1972 21p

The interneuronal communication process essential to information retrieval and to cerebral integration generally has been the object of extensive study utilizing evoked field, focal, and extra- and intracellular unitary potentials as measures of synaptic output. Experimental findings have been converted into clinical test procedures able to assess "breakdown point" in Ss without actually breaking them down. This could be modified to permit behavioral detection of drug abusers and the lasting consequences of drug abuse.

276 Harris, C. Stanley
AD- 750 043 Aerospace Medical Research Lab, Wright-Patterson AFB, OH
 Effects of Intermittent and Continuous Noise on Serial
 Search Performance Jul 1972 9p

Three groups of 20 Ss each were tested on a serial search task. The first group received continuous broadband noise, the second intermittent noise, and the third was a control group. Performance was measured for 36 minutes continuously on a practice day and 4 test days. Both noise groups gave the same results, finding significantly fewer numbers than the controls on the last two days of testing. Results support the contention that when certain conditions of testing are met a reliable effect of noise on performance can be demonstrated. (See Perceptual and Motor Skills, 1972, 35, 627-734.)

277 Holgate, Stanley H.; Houff, Charles W.; Bucklin, Bruce L.;
AD- 894 932L Tyroler, Jesse
 Edgewood Arsenal, MD
 The Effects of Noise and Flickering Light on Human Behavior
 Mar 1972 44p

The objective was to evaluate the application of noise and flickering light to riot control. In the first two experiments Ss went through an obstacle course and performed tests that measured mental function, manual dexterity, and coordination; loud noise slightly increased rate of performance on some tasks, flickering light slightly impeded performance on some tasks. The third experiment demonstrated that in a dark setting a person's ability to correctly observe events in his environment could be reduced by a bright flashing light. Possible applications to riot control are discussed.

278 Linn, Victor C.
AD- 761 025 Army Materiel Command, Intern Training Center, Texarcana, TX
 The Parotid Fluid Technique for the Evaluation of Mental
 Stress in a Production Situation Jul 1972 105p

The paper presents a method for the evaluation of mental stress in production situations where mental fatigue is considered a significant problem. The level of mental stress which the operator experiences is reflected in the concentration of 17-hydroxycorticosteroid in his parotid fluid. Included is a discussion of the theory behind the technique and its procedural application. The use of the technique to reduce mental stress and the effects of mental fatigue in a production facility is also discussed.

279 Lloyd, Andree J.; Voor, J. H.
AD- 749 447 Army Medical Research Lab, Fort Knox, KY
 The Effect of Training on Performance Efficiency During a
 Competitive Isometric Exercise May 1972 13p

Fifteen male college students participated in a competitive isometric exercise (involving elbow flexion). They practiced individually for eight sessions and continuous EMG recordings were made. For the 9th session the men were randomly grouped into five teams and a prize offered to the team giving the best performance (greatest force over longest time). Highest performance occurred in the final training session; under competition there was a decrease in endurance and an increase in EMG amplitude. Competition was considered a stressful situation that produced an overexpenditure of muscle activity and a resulting decrease in performance.

280 Lovell, Clifton C.; Walker, Norman K.
AD- 904 518L Applied Systems Corporation, Rockville, MD
 The Effect of Pilot Stress on Delivery Accuracy Mar 1972
 135p

This study was conducted to establish a relationship, if possible, between the outcome of laboratory controlled psychomotor tests and the results of pilot performance during the weapons delivery accuracy portion of Project Sparrow Hawk. Fifteen pilots were tested using the 0-input tracking analysis and the complementary auditory discrimination loading task. . . While the study failed to meet its primary objective, it does provide supportive information concerning certain contentions about the difficulty of dive bombing.

281 McDonald, Blair W.; Pugh, William M.; Gunderson, E. K. Eric;
AD- 753 993 Rahe, R. H.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Reliability of Life Change Cluster Scores 1972 6p

Six hundred and sixty-three Naval enlisted subjects aboard an attack aircraft carrier filled out the Schedule of Recent Experience (SRE) questionnaire at the outset and again near the end of a six-month overseas cruise. SRE cluster scales had low to moderate reliabilities, ranging from .34 to .73 with a test-retest reliability for total SRE score of .55. Recommendations for increasing reliability of the SRE are presented. (See British Journal of Social and Clinical Psychology, 1972, 2, 407-409.)

282 Pugh, William M.; Gunderson, E. K. Eric, Rubin, Robert T.
AD- 748 502 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Variations of Illness Incidence in the Navy Population 1972
6p

Crew members of six large combat vessels were studied during overseas deployments. Demographic and test data were obtained at the beginning of an overseas cruise and dispensary visits were recorded during the subsequent six to eight months. Two specialized test instruments, the health opinion survey, and the schedule of recent experience provided assessments of self-reported symptomatology and recent life stress. Deviations from overall illness rates, as functions of combinations of demographic and test score categories, were computed. The discriminating power of these demographic and test measures was demonstrated for both petty officer and nonrated personnel. (See Military Medicine, 1972, 137, no. 6, 224-227.)

283 Rahe, Richard H.
AD-A006 795 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Life Change and Subsequent Illness Reports Nov 1972 24p

A review of life changes and illness prediction studies, both retrospective and prospective, carried out at the Research Unit over the past eight years. Populations studied have included officers and enlisted men aboard ship, underwater demolition team trainees, and Royal Norwegian Navy enlisted men. Results from several samples have suggested significant but low order correlations between assessments of Ss' recent life changes and their numbers of illness encountered over the next six to eight months.

284 Rahe, Richard H.
AD- 760 227 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Subjects' Recent Life Changes and their Near-Future Illness
Reports: A Review Aug 1972 18p

A review of the past decade's research into subjects' life changes and their subsequent illness reports is given. When dealing with select groups of men likely to develop at least relatively severe illnesses, measurement of their recent life changes can be of predictive value in determining their subsequent illness rates. (See Annals of Clinical Research, 1972, 4, 250-265.)

285 Rahe, Richard H.
AD- 754 039 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Subjects' Recent Life Changes and Their Near-Future Illness
Susceptibility 1972 21p

The article summarizes over five years of life changes and illnesses research carried out on over 5,000 subjects. The background and the derivation of a life changes questionnaire is presented. This is followed by the results of prospective studies in prediction of subjects' near-future illness patterns. Promising psychologic and physiologic measures of subjects' reactivity to their recent life changes are then presented. Finally, current directions of the life changes research, especially in the study of subjects prone to coronary heart disease, are outlined. (See Advances in Psychosomatic Medicine, 1972, 8, 2-19.)

286 Rahe, Richard H.; Gunderson, E. K. Eric; Pugh, William M.;
AD- 754 286 Rubin, Robert; Arthur, Ransom J.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Illness Prediction Studies: Use of Psychological and
Occupational Characteristics as Predictors Feb 1972 10p

Fourteen psychosocial and occupational illness predictors were assessed for utility in predicting illness reporting over a six- to eight-month period. Ss were 4,463 Navy men aboard 6 large ships. Eleven of the 14 predictors showed significant correlations with the illness criterion. In a cross-validation study multiple regression identified a best predictive equation which involved three psychosocial and three occupational variables and produced a multiple correlation of 0.27. (See Archives of Environmental Health, 1972, 25, 192-197.)

287 Rahe, Richard H.; McHugh, William B.; Kaplan, Nathan; Rimon,
AD- 754 489 Ranan; Arthur, Ransom J.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Serum Lactic Acid Variability in Subjects Experiencing Stress-
ful Training Jan 1972 9p

Eighty-four U.S. Navy enlisted men enrolled in underwater demolition team (UDT) training were investigated as to serum lactic acid variability surrounding a selected portion of their stressful training. In contrast to reports by other authors, no significant correlation was seen between subjects' serum lactic acid levels and a psychological questionnaire's indices of psychoneurotic symptomatology. A significant correlation was seen between a measure of physical fitness of the men and their serum lactic acid concentrations. (See Diseases of the Nervous System, 1972, 33, 403-408.)

288 Rogers, D. B.; Holden, F. M.; Replogle, C. R.; Potor, G.;
AD- 755 636 Day, C. N.
Aerospace Medical Research Lab, Wright-Patterson AFB, OH
Performance Measurement Using Pilot Controlled GZ Maneuvering
with a Simulated Operational Task 1972 6p

A technique for human performance measurement using a closed loop centrifuge was validated, using the Dynamic Environment Simulator operating in a closed loop mode. The measurement criterion was hits on target using a display-generated heads-up gunsight on a maneuvering target aircraft. Two important demonstrations are: (1) there is a significant difference in the ability of subject pilots to perform in closed (active participation) vs. open-loop (passive rider) configurations, and (2) it is feasible to provide a mission-related performance metric in a selective simulation in which the +Gz forces are dynamically realistic.

289 Rubin, Robert T.; Gunderson, E. K. E.; Arthur, Ransom J.
AD- 757 819 Milton S. Hershey Medical Center, Department of Psychiatry,
Hershey, PA
Life Stress and Illness Patterns in the U.S. Navy. VI.
Environmental, Demographic, and Prior Life Change Variables
in Relation to Illness Onset in Naval Aviators During a
Combat Cruise Mar 1972 15p

Patterns of illness occurrence were examined in aviators flying combat missions from an aircraft carrier. Demographic and symptom questionnaires were administered at the beginning of the cruise; the cruise activities, work assignments, and illnesses developed by the aviators during the cruise were tabulated. The mean illness rate varied with operational conditions and personnel characteristics. Higher illness rates occurred in younger age groups and among those more preoccupied with their health. The findings parallel those for several ships' enlisted crews. The civilian scoring system for the schedule of recent experience, measuring recent life change, was effective in discriminating future illness in this officer sample. (See Psychosomatic Medicine, 1972, 34, no. 6, 533-547.)

290 Sommer, Henry C.; Harris, C. Stanley
AD- 755 635 Aerospace Medical Research Lab, Wright-Patterson AFB, OH

Combined Effects of Noise and Vibration on Cognitive and
Psychomotor Performance 1972 11p

Five studies on the combined effects of noise and vibration on psychomotor (tracking and reaction time) and cognitive (short-term memory/subtraction). Study 1 suggested an additive effect on tracking, but this was not confirmed in Study 2. Studies 3 and 4 concerned cognitive performance and showed an effect only for combined stresses; also the effect seemed related to frequency of vibration. Study 5 showed that time of day does not interact strongly with combined stresses to affect cognitive performance.

291 Wilkins, Walter L.
AD-A006 796 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Social Stress and Illness in Industrial Society Nov 1972
16p

Studies of men aboard naval vessels deployed at sea illustrate how hazards in the environment, physical or social, affect accident and acute illness rates. Chronic illness, perhaps typical of our times, may be etiologically linked with excessive stress, which may be a product of social factors in advanced technological societies. Rahe's studies show how social crises are correlated with subsequent illness, and Lennart Levi's studies provide physiological foundations for understanding the phenomena.

1975

292 Cobb, Steven M.
AD-A000 700 Letterman Army Institute of Research, San Francisco, CA
Relation of Structural and Background Social Factors to Job
Tension Among Military Mental Health Technicians May 1973
126p

55 were 136 social work/psychology specialists on active duty in the Army Mental Health Service. By means of an anonymous mailed questionnaire the study examined relationships between job tension (the DV) and two situational social factors (frequency of interaction with individual classes of role-senders, and role-set diversity) and two background social factors (age and education).

293 Forgays, Donald G.
AD- 777 156 University of Vermont, Department of Psychology
Isolation and Sensory Communication Aug 1973 80p

A 1968-1973 study was made of a factor common to sensory and perceptual deprivation, isolation, and confinement: a stress to the subject. Subjects indicate this influence by low tolerance for the condition, self-report, and by physiology change. Stress is also common to many military systems.

The investigation was concerned with the evaluation of special training methods and additional experiences in the reduction of stress or in the more efficient adjustment to stress. The final report is composed of the summary of findings in six subject fields of experimentation.

294 Gunderson, E. K. Eric; Sells, Saul B.
AD-A037 326 Naval Health Research Center, San Diego, CA
 Organizational Stresses and Health Oct 1973 15p

Describes a large-scale research program initiated to investigate the relative importance of individual characteristics, environmental factors, and organizational stresses in illness incidence, job satisfaction, and organizational effectiveness in naval and civilian settings. Utilizes a social systems model and multivariate analysis techniques. Describes a pilot study which discriminated among three types of ships, and a major study now underway which provides a comprehensive set of descriptors of naval organizations and relates them to health, satisfaction and effectiveness.

295 Hodge, David C.; Garinther, Georges R.
AD- 765 419 Human Engineering Lab, Aberdeen Proving Ground, MD
 Noise and Blast Jun 1973 67p

Data are presented dealing with physical acoustics, the characteristic of sound and appropriate noise measurements. Hearing loss resulting from both steady-state and impulse noise is discussed. Subjective and behavioral response to noise is discussed in terms of masking of auditory signals and speech, annoyance and general observation. Current research on nonauditory effects is reviewed, varying from cardiovascular alterations to the risk of death.

296 Mayer, Richard E.
AD-A000 576 University of Michigan, Human Performance Center
 Acquisition and Resilience Under Test Stress of Structurally
 Different Problem Solving Procedures May 1973 95p

Two different procedures for solving binomial probability problems were taught in a three-part booklet; one emphasized calculating with the formula, the other the meanings of variables in the formula. A multileveled transfer post-test was administered after S had read one, two, or three parts of the booklet, and amount of stress during testing was varied. Results indicated a clear pattern of treatment vs. post-test interaction (abstract says nothing about stress effects).

297 Phatak, Anil V.
AD- 773 856 Systems Control, Inc., Palo Alto, CA
 Improvement in Weapon System Effectiveness by Application of
 Identification Methods for Determining Human Operator
 Performance Decrements under Stress Conditions Dec 1973
 119p

The report considers the development of realistic models for weapon system controllers which could be used to predict the effectiveness of manned weapon systems under stress conditions. Two types of models are considered: (1) input-output stochastic linear state-variable models, and (2) an optimal control model. The maximum likelihood identification technique was used in estimating model parameters from input-output data.

298 Rahe, Richard H.; Bennett, Linda; Romo, Matti; Siltanen,
AD- 774 355 Pentti; Arthur, Ransom J.
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Subjects' Recent Life Changes and Coronary Heart Disease in
Finland 1973 9p

Recent life changes data were gathered on 279 survivors of myocardial infarction (MI) and on 226 victims of abrupt coronary death in Helsinki, Finland. Both survivors of MI and coronary death victims indicated significantly increased recent life changes over their final six months prior to infarction or death than compared to the comparable time period one year earlier. The distribution of subjects according to marked, moderate, or no recent life changes increase was compared to data for American coronary heart disease subjects' distribution for marked, moderate, and no elevations of serum cholesterol level and systolic blood pressure. (See American Journal of Psychiatry, 1973, 130, no. 11, 1222-1226.)

299 Rahe, Richard H.; Romo, Matti; Bennett, Linda; Siltanen,
AD- 781 009 Pentti
Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Finnish Subjects' Recent Life Changes, Myocardial Infarction,
and Abrupt Coronary Death Sep 1973 11p

Ss were 226 cases of abrupt coronary death and 279 survivors of a documented myocardial infarction, in Helsinki, Finland. Recent life changes data were gathered from the survivors (and in half the cases also from their spouse); spouses provided the life changes data for the dead Ss. Spouses agreed moderately well with the surviving respondents on life change data. Significant elevations in life changes over the six months prior to infarction or death were seen, compared to life changes during a one year earlier six-month period. In all but one group the elevation was particularly apparent for sudden death victims. Women showed elevations similar to those of men. (See Archives of Internal Medicine, 1974, 135, 221-228.)

300 Replogle, Clyde R.; Day, C. N.; Holden, F. M.; Rogers, D. B.
AD-A011 574 Aerospace Medical Research Lab, Wright-Patterson AFB, OH
Practical Problems in Using Human Operator Performance Data
Jul 1973 4p

During the past two years human performance has been investigated within two generic system contexts: manually controlled antiaircraft artillery against high-performance aircraft, and air-to-air combat in air superiority

fighters. The broad objective of this research was to assess the effectiveness of proposed air weapon systems, combat strategies, and countermeasures techniques. In meeting these objectives it was necessary to address many problems associated with the use of human performance data. This paper describes six problem areas: system vs. operator effectiveness; performance feedback; attrition modeling; stress tolerance; human operator identification; system simulation.

301 Schuckit, Marc A.; Daly, Veronica; Herrman, Gerard; Hineman,
AD-A021 040 Sherry
Naval Health Research Center, San Diego, CA
Premenstrual Symptoms and Depression in a University Population
Sep 1973 4p

Ss were 105 college freshmen. A correlation was established between an emotionally based premenstrual syndrome and primary affective disorder (depression). Ss with emotional PMS were twice as likely as controls to have had a serious depressive episode and to have a close family member with depression. Seven percent (vs. 0 percent) had an affective episode during the ensuing year. The inconsistent results of prior research are probably due to use of differing definitions. (See Diseases of the Nervous System, 1975, 36, no. 9, 516-517.)

302 Schuckit, Marc A.; Gunderson, E. K. Eric
AD- 774 356 Navy Medical Neuropsychiatric Research Unit, San Diego, CA
Job Stress and Psychiatric Illness in the U.S. Navy 1973
7p

There is an association between mental illness and job stress in the U.S. Navy. However, due to the strong association between SES background and occupation it has not been possible to determine the relative importance of predisposing SES factors and job environment, in the precipitation of psychiatric hospitalization. Specific measures of job satisfaction and environmental stress do not appear to adequately explain the observed correlations between mental problems and specific occupations. (See Journal of Occupational Medicine, 1973, 15, no. 11, 884-887.)

303 Smith, Robert W.; Armstrong, Terry R.
AD- 771 728 American Institutes for Research, Coral Gables, FL
Laboratory Studies of the Effects of Physical Hazard on
Shelter Management Behavior Oct 1973 68p

The purpose of the project was to experimentally identify and validate predictors of effective management behavior under threat by developing and implementing a research methodology utilizing a shelter manager selection battery and a management performance battery. Recruited subjects were given medical examinations, psychiatric screening, and scuba training, and were confined in an underwater habitat as a source of physical threat stress. Data collected during confinement and under control conditions included

heart rate, temporary anxiety as measured by the MAACL, and several tests of cognitive performance.

304 Tappan, Donald V.; Madden, R. O.; Jacey, M. J.
AD- 780 094 Naval Submarine Medical Research Lab, Groton, CT
Urinary Indicators of Stress: Effects of Exposure to
Simulated Sonar Noise for 8 to 23 Days Oct 1973 16p

Techniques are proposed for the evaluation of stress responses from information more readily available than from the more complex and protracted steroid measurements. Studies have been made of the relationships among excretion rates of urinary steroid hormones and a variety of other urinary metabolites in healthy young men subjected to mild laboratory-controlled stress of simulated sonar noise and continuous confinement for 8 to 23 days. Estimation of steroids (and thus of stress) can be made from any of several combinations of metabolic data.

305 Zalkind, Sheldon S.
AD- 767 383 Baruch College
A Study of the Social Psychological Consequences of the
Announcement to Close Naval Shipyards. Study 1. Relation
of Personality Measures to Job Satisfaction and Cohesive-
ness Items. Study 2. Reports of Physical Ailments Under
Three Conditions of Job Stress Sep 1973 41p

Two small studies used data from civilian employees of three Naval Shipyards: Brooklyn, New York, Portsmouth, New Hampshire, and Norfolk, Virginia. In study one, the relationships were slight of personality to job satisfaction and cohesiveness. For the yards, only the anomie measure showed some (low) consistency. In study two, contrary to expectations, the results showed more reports of ailments from the Norfolk (no stress) group than from the Portsmouth or Brooklyn longitudinal subsamples. A discussion is also included concerning dilemmas about definitions and taxonomies for stress, and some final points on the data from the project.

1974

306 Bloom, Richard F.
AD-A002 557 Dunlap and Associates, Inc., Darien, CT
Validation of Suggestion-Induced Stress Oct 1974 287p

Sixty college men, divided into three equal groups, attended two induced stress sessions in which their physiological, psychological, and performance reactions were measured. It was demonstrated that valid stress reactions can be induced with the aid of suggestion, especially if the real stress situation has been experienced before. The closest resemblance to real stress is found in the subjective or psychological measures; less similarity is found in the physiological measures and the least is found in the performance measures. (Suggestions offered while subject was hypnotized.)

307 DeLorge, John
AD-A000 078 Naval Aerospace Medical Research Lab, Pensacola, FL
A Psychobiological Study of Rhesus Monkeys Exposed to
Extremely Low Frequency-Low Intensity Magnetic Fields
May 1974 31p

Magnetic fields between 8.2 and 0.00093 T alternating at 45 or 15 Hz had no consistent effects on operant behavior in 4 rhesus monkeys. No hematological changes were found to relate to the presence or absence of the fields although such changes were related to food deprivation.

308 Elster, Richard S.
AD- 776 309 Naval Postgraduate School, Monterey, CA
Responses of Military Reservists in Two Simulated Crises
Feb 1974 27p

Responses of military reservists in two simulated crises situations are presented and compared with the responses made by college students in experiments conducted by other researchers at Columbia University. Statistical methods are used to compare the responses of single reservists with those of groups of reservists. The results are then compared with those from the students at Columbia.

309 Gunderson, E. K. Eric; Sells, Saul B.
AD-A006 899 Naval Health Research Center, San Diego, CA
Organizational and Environmental Factors in Health and
Personnel Effectiveness: I. Introduction Dec 1974 23p

A general introduction to a large-scale study of environmental and organizational influences on health and personnel effectiveness. Background and history of the project are summarized and the development of a social systems model for analyzing relationships between the individual and his environment in an organizational context is reviewed. The possible importance of environmental and social factors in the etiology of diseases and injuries is emphasized, and the special problems of assessing environmental characteristics are considered. Theories of social stresses in disease etiology are described.

310 Hixson, W. Carroll; Niven, Jorma I.; Spezia, Emil
AD-A001 710 Naval Aerospace Medical Research Lab, Pensacola, FL
Major Orientation-Error Accidents in Regular Army UH-1 Air-
craft During Fiscal Year 1970: Accident Factors Jun 1974
33p

The 4th in a series dealing with the pilot disorientation/vertigo problem in regular Army UH-1 helicopter operations. Individual case history data extracted from the USAAVS master aircraft accident files are presented. Summary listings involving a variety of operational and pilot-related accident factors are presented for each of the 42 cases.

311 Hunter, Edna J.
AD-A025 295 Naval Health Research Center, San Diego, CA
The Prisoner of War: Coping with the Stress of Isolation
Dec 1974 17p

SS were the total population of Navy/Marine POW returnees who had been held captive in South East Asia for five years or longer (N=100). Independent variable was degree of social isolation during captivity (seven months or less vs. more than seven months). Dependent variable: mental status (psychiatrists' ratings) at repatriation. A number of statistically significant differences were found between the groups and are discussed.

312 Kimball, Kent A.; Frezell, Thomas L.; Hofmann, Mark A.;
AD-A001 683 Snow, Allen C., Jr.
Army Aeromedical Research Lab, Fort Rucker, AL
Aviator Performance During Local Area, Low Level and Nap-of-
the-Earth Flight Sep 1974 25p

The paper presents baseline data concerning aviator performance and aircraft state variables during local area, low level and nap-of-the-earth flights. Further, information is provided concerning differences in aviator control inputs per unit of time across the three profiles. From the data, it is evident that NOE flight places more demands on both crews and aircraft than the other two types of flight.

313 Ledbetter, C. Burgess
AD-A000 692 Cold Regions Research and Engineering Lab, Hanover, NH
Cold Regions Habitability: A Selected Bibliography Sep
1974 30p

The effects on people of isolation and confinement in man-made structures in cold regions, commonly termed 'cabin fever,' also occur in other environments, such as spacecraft, underwater vessels, and elements of the urban environments such as hospitals and prisons. Habitation characteristics of cold regions are discussed and literature dealing with a variety of types of isolation and confinement environments is segregated into topical areas.

314 Noel, Charles Edward
AD- 787 375 Naval Postgraduate School, Monterey, CA
Pupil Diameter Versus Task Layout Sep 1974 29p

Using pupil size as an indirect measure of mental activity, this experiment investigated a spatially compatible and noncompatible forced choice task. It was found subjects could process a higher presentation rate in the compatible layout than in the noncompatible layout without going into an overload condition. Also, when subjects were already in a pupil constricted condition (overloaded) in a noncompatible arrangement, it was found the constriction could be significantly reduced by switching to a compatible arrangement.

315 Pachella, Robert G.
AD-A038 196 University of Michigan, Human Performance Center
Intellectual Performance under Stress Sep 1974 56p

This is a final report covering 1971-76 but the original contract goes back to 1963 and was given to establish a permanent research facility for the investigation of human performance capabilities and limitations, important for performance in a wide variety of man-machine systems. The most recent contract period has been directed mainly toward perception and memory, with increasingly heavy emphasis on cognitive and intellectual factors and skills.

316 Rahe, Richard H.
AD-A010 809 Naval Health Research Center, San Diego, CA
Liaison Psychiatry on a Coronary Care Unit 1974 12p

Presents several of the author's experiences as a liaison psychiatrist on coronary care units. . . Results are given from an experimental program of group therapy as an adjunct to the treatment of post-myocardial infarction patients. Finally two case histories are briefly presented which exemplify serum acid and serum cholesterol variability associated with psychological stresses during hospitalization. (See Journal of Human Stress, 1975.)

317 Repko, John D.; Brown, Bill R.; Loeb, Michel
AD- 785 740 University of Louisville, Performance Research Lab
Behavioral Effects of Prolonged Exposure to Continuous and Intermittent Noise Jun 1974 142p

Ninety db continuous and 96 db intermittent noise were separately presented as environmental or situation stressors, and effects studied in a synthetic work situation in which several tasks, selected to test both individual and small-group (crew) performance, were combined into a multiple-task performance battery. Mean percentage of baseline performance was enhanced by the periodic 96 db intermittent noise.

318 Rubin, Robert T.
AD- 781 604 Pennsylvania State University
Biochemical and Neuroendocrine Responses to Severe Psychological Stress: 1. U.S. Navy Aviator Study. 2. Some General Observations 1974 17p

Ss were highly trained pilots (active) and radar intercept officers (passive) attempting their first day and night carrier landings. Two different dimensions of biochemical and neuroendocrine responses were investigated: the influence of role (active vs. passive) on the adrenal cortical stress response, and the effect of heightened arousal and vigilance during a complex task on an indirect measure of brain norepinephrine metabolism. (See Life Stress and Illness, 1974, 226-241.)

319 Rubin, Robert T.
AD- 787 824 University of California, Department of Psychiatry, Torrance
Chemical Index to Fitness (Biochemical Correlates of Stress
in Specialized Populations) Nov 1974 9p

The report discusses studies on the characteristics of the release of both anterior and posterior pituitary hormones as well as their target organ hormones, in human subjects under several different conditions of central nervous system activity. These studies are encompassing the biorhythms of these hormones and the specific interrelationships of pituitary hormones interacting on their target organ glands.

320 Rubin, Robert T.; Rahe, Richard H.
AD- 781 603 Pennsylvania State University
U.S. Navy Underwater Demolition Team Training: Biochemical
Studies 1974 20p

The report documents that the changes in each biochemical variable studied--uric acid, cholesterol and cortisol--could be logically related to the various day-to-day requirements and challenges of the UDT programs. Uric acid increased during times of high motivation and confidence; cholesterol was elevated when the men felt overburdened and close to the limits of tolerance as well as when they were physically less active; elevated cortisol reflected continuing global stresses as well as the anticipation of intense but transient stress superimposed on the ongoing training activities. (See Life Stress and Illness, 1974, 208-226.)

321 Shivertaker, Lawrence W.
AD- 780 097 Naval Submarine Medical Research Lab, Groton, CT
Cholesterol Levels in Submariners: A Pilot Study Feb 1974
15p

Cholesterol levels were compared between two groups of submariners during the postconversion shakedown cruise of a fleet ballistic missile submarine. The subject group was comprised of men qualified in submarines. The control group was comprised of men new to submarines. Five samples of blood were drawn during the cruise. The data shows that there may be a trend toward hypercholesterolemia in those exposed to sea duty. The possible hypercholesterolemia may be a result of the separate or combined effects of emotional stress, high cholesterol diet, and/or inactivity.

322 Stephens, Mark W.; Nelson, Don; Hudgens, Gerald A.
AD- 776 332 Purdue University
Aggressiveness and Performance in a Mini-System Context
Feb 1974 15p

Four experiments were run to test the hypothesis that aggressive disposition and/or past reinforcement for aggressive responses disrupts performance in stressful situations which require new learning. Ss were (1) pre-schoolers, (2) college males, (3) college football players, and (4) teenage ghetto gang members. No strong evidence supported the original hypothesis. However, "internal-external control expectancies" correlated significantly with performance and may therefore be useful for predicting Ss' future performance in stressful situations.

1975

323 Bollinger, Ralph R.; Crigler, Joseph C.; Hartman, Bryce O.
AD-A013 101 School of Aerospace Medicine, Brooks AFB, TX
 Crew Stress and Fatigue in Prolonged Helicopter Missions.
 The Crested Rooster Program Jun 1975 28p

Aircrew stress and fatigue are being evaluated throughout prolonged helicopter (HH-53C) flights, as part of joint research by the School of Aerospace Medicine and the Air Force Satellite Control Facility (SAMSO, Los Angeles, California). Data concern such factors as: crew comfort modifications; fatigue and sleep; feeding systems; workload; heart rate; endocrine-metabolic indices of stress; and effects of a high noise/vibration environment. Information in this report is based on data from single long recovery missions. Tolerance to frequent long flights is not yet known, and will require further study.

324 Britson, Clyde A.
AD-A005 423 Dunlap and Associates, Inc., La Jolla, CA
 Longitudinal Study of Environmental Variables and Aviation
 Performance Effectiveness Jan 1975 24p

Physiological, psychological, sleep and performance data were collected in a combat environment to describe and predict the influence of prolonged periods of stress on pilot landing performance. Significant predictions were obtained from sleep, experience, biochemical and mood data, but substantial shrinkage was found in a cross validation. A description of Landing Signal Officers' perceptual skills and their potential relation to the LSO fleet environment is presented. Research recommendations and future programs related to environmental psychology are suggested.

325 Bullock, Sybil H.
AD-A033 284 Army Aeromedical Research Lab, Fort Rucker, AL
 Effects of Stress on Estimate of Time. Select Bibliography
 Oct 1975 6p

(No abstract available)

326 Clark, Dale A.; Arnold, E. L.; Foulds, E. L., Jr.; Brown,
AD-A017 156 D. M.; Eastmead, D. R.
School of Aerospace Medicine, Brooks AFB, TX
Serum Urate and Cholesterol Levels in Air Force Academy
Cadets 1975 7p

The dependent variables were measured in 150 young men at 2- to 4-month intervals during their first 18 months as cadets. Rises in serum urate levels beyond normal limits were common (44% of Ss rose above 8.5/100 ml) and could be attributed to acute psychosocial stress. One month after basic military training mean levels were again within normal limits. Urate levels appeared raised by fear or insecurity, while cholesterol levels were raised when individual perceived a need to sustain an increase in physical or mental performance. (See Aviation, Space and Environmental Medicine, 1975, 1044-1048.)

327 Cowings, John S.
AD-B006 734 Army Command and General Staff College, Fort Leavenworth, KS
Reaction of Combat Service Support Troops under Stress: The
Small Maintenance Support Unit in a Combat Environment
Jun 1975 165p

This report is directed toward the manager assigned to a small maintenance support unit, and strives to acquaint him (or her) with the various psychophysiological reactions apparent in combat service support personnel during periods of combat. The author hypothesizes that in a combat situation such personnel will exhibit a definite pattern of organizational behavior. The report provides an illustration of the pattern and incorporates this pattern into an analytical model of organizational behavior.

328 Hale, Henry B.; Garcia, Jesus B., Jr.; Ellis, James P., Jr.;
AD-A008 227 Storm, William F.
School of Aerospace Medicine, Brooks AFB, TX
Human Amino Acid Excretion Patterns During and Following
Prolonged Multistressor Tests 1975 8p

As a feasibility study, two men were tested in a series of simulated flights which comprised a factorial experiment. Physiologic data were collected during a two-day baseline period, four 36-hour experimental periods, and four recovery periods (flight complicated by environmental dryness, mild hypoxia, and both). Five other men were tested under baseline and a 48-hour flight simulation with hypoxia. Certain of the amino acids had high stressor sensitivity, clearly differentiating the effects of the single, double, and triple stressor complexes, and also differentiating the flight and recovery periods. (See Aviation, Space and Environmental Medicine, 1975, 46, no. 2, 173-178.)

329 Pachella, Robert G.
AD-A027 292 University of Michigan, Human Performance Center
Intellectual Performance under Stress Jun 1975 23p

Reports experimental results and theoretical progress under these topic headings:

- role of cognitive structure in elimination of information overload
- manipulation of control processes in memory
- retrieval of factual information under speed stress
- validation of a test battery of performance
- attention demands and motor performance
- learning structured material and subsequent performance under speed stress
- qualitative analysis of errors under speed stress
- cognitive and response factors, effect of degraded stimulus input

Lists publications.

330 Rahe, Richard H.
AD-A027 999 Naval Health Research Center, San Diego, CA
Stress and Strain in Coronary Heart Disease 1975 11p

Definitions for the terms 'stress' and 'strain' are presented, along with notes on the historical derivation of these terms in medical research. Examples of a stress questionnaire and a strain questionnaire used in the Stress Medicine Division of the Naval Health Research Center are presented. Selected results utilizing these questionnaires are given and implications of research in the field of psychological aspects of coronary heart disease are discussed. (See Journal of the South Carolina Medical Association Supplement, 1976, 72, no. 2, 7-14.)

331 Rubin, Robert T.
AD-A028 470 University of California, Department of Psychiatry, Torrance
Mind-Brain-Body Interaction: Elucidation of Psychosomatic
Intervening Variables 1975 13p

Given this broader conceptual framework for the 'psychosomatic viewpoint' (that is, for mind-brain-body interaction), are the multiple components of any illness inextricably interwoven or can they be dissected? The answer is, of course, that for some illnesses the interplay of factors has been elucidated to a far greater degree than for others. Some of the underlying neurophysiologic mechanisms in greater detail are examined. (See Pasnau: Consultation-Liaison Psychiatry, 1975, 73-85.)

332 Theorell, Tores; Rahe, Richard H.
AD-A016 588 Naval Health Research Center, San Diego, CA
Life Change Events, Ballistocardiography and Coronary Death
Sep 1975 10p

Ss were 36 men and women who had a documented myocardial infarction; half died and half survived for a 6-year period. Data were longitudinal recent life changes, and ballistocardiographic data. Fatalities showed a buildup on both independent variables in the six months prior to death; survivors showed no such buildup. (B-cardiographic data reflect cardiac contraction force.)

333 West, Vita; Parker, James F., Jr.
AD-A008 405 Biotechnology, Inc., Falls Church, VA
A Review of Recent Literature: Measurement and Prediction of
Operational Fatigue Feb 1975 80p

The report presents an overview and selected bibliography of recent research dealing with the measurement and prediction of fatigue and stress. The impetus is the need by military medical personnel for procedures which might be used to evaluate 'operational fatigue.' Two broad lines of study are being followed: either neurosensory or biochemical correlates of fatigue. . . . Performance can be maintained, within certain limits, in spite of limited sleep and high subjective fatigue.

1976

334 Marsh, R. W.; Perry, C. J. G.
AD-A037 519 School of Aerospace Medicine, Brooks AFB, TX
Anniversary Reactions in Military Aviators 1976 5p

The anniversary reaction is a timed, specific psychological response arising on an anniversary of a psychologically significant experience which the individual attempts to master through reliving rather than remembering. An individual response to anniversary stress may emerge in symptom formation, in dreams, in associations, or through behavior. (See Aviation, Space and Environmental Medicine, 1977, 48, no. 1, 61-64.)

335 McCubbin, Hamilton I.; Dahl, Barbara B.; Lester, Gary R.;
AD-A030 481 Benson, Dorothy; Robertson, Marilyn L.
Naval Health Research Center, San Diego, CA
Coping Repertoires of Families Adapting to Prolonged War-
Induced Separations 1976 14p

Studied the adjustment of 48 families of servicemen missing in action in the Vietnam conflict. Developed the Coping with Separation Inventory (Q-sort) to obtain wives' perceptions of the coping behaviors they found valuable. Factor analysis of the 46-item CSI gave 6 coping behavior patterns: (1) seeking resolution and expressing feelings, (2) maintaining family integrity, (3) establishing autonomy and maintaining family ties, (4) reducing anxiety, (5) establishing independence through self-development, and (6) maintaining the past and dependence on religion. These patterns were analyzed in relation to other measures taken in '72 and '75, and theories of coping are discussed. (See Journal of Marriage and the Family, 1976, 461-471.)

336 Sarason, Irwin G.; Johnson, James H.
AD-A034 168 University of Washington, Department of Psychology
Coping with Academic Stressors: A Pilot Study Dec 1976
43p

Subjects displaying serious academic difficulties were assigned to a coping skills training group or to a no-treatment control group. This training provided subjects with information about the nature of stress, and with skills to enable them to deal more effectively with the cognitive and physiological components of anxiety (relaxation training, attentional training, inhibiting self-interfering responses) plus practice in using these coping skills in mildly stressful situations. Training reduced test anxiety and increased general ability to cope with stressful situations. Implications for stress management programs are discussed.

337 Sarason, Irwin G.; Johnson, James H.
AD-A027 527 University of Washington, Department of Psychology
The Life Experience Survey: Preliminary Findings May 1976
34p

Describes the development of a measure of life changes, the Life Experiences Survey--a 57-item scale listing numerous events which individuals may experience and call for social readjustment. Ss indicate which ones they have experienced in the previous year, which were positive and which negative, and ratings of degree of impact on a 7-point scale. The last two features are in contrast with earlier scales of this type. Preliminary data are presented.

338 Segal, Julius; Hunter, Edna J.; Segal, Zelda
AD-A031 554 Naval Health Research Center, San Diego, CA
Universal Consequences of Captivity; Stress Reactions Among
Divergent Populations of Prisoners of War and Their
Families 1976 20p

Major thesis: the physical, psychological and social costs of incarceration experiences are to some extent predictable, no matter what nations find themselves in the roles of captors and captives. Notes that captivity has positive as well as negative consequences: has led many survivors to rethink philosophies and to develop a finer sense of self-worth and of life's values, turning a malignant and cataclysmic experience into an instrument for growth and emotional maturation. (See International Social Science Journal, 1976, 28, no. 3, 593-609.)

1977

339 Clark, John E.; Bonen, C. Anne
AD-B020 503L Air Command and Staff College, Maxwell AFB, AL
The Air Force Medical Technician Providing Services under
Stress May 1977 71p

AD-A080 348

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Used an attitude survey and a training course to attempt to show that interpersonal relations training can be used to favorably affect the attitudes of technicians in a USAF hospital emergency room. The research did not confirm this desired effect, but did help identify management challenges at the unit level from the effects of the organizational structure, communications and recognition.

340 Collins, Aila; Frankenhaeuser, Marianne
AD-B024 603 Ensco, Inc., Satellite Beach, FL
Effects of a Cognitive-Conflict Task on Psychophysiological
Stress Reactions in Male and Female Engineering Students
Jun 1977 11p

Male and female engineering students were studied under stress induced by a cognitive-conflict task and in a control condition spent in inactivity. Results showed that: (1) in the control condition the sexes did not differ in A, nor-A, or cortisol excretion, whereas heart rate was significantly higher in females; (2) A excretion and heart rate increased significantly in both sexes during the cognitive task; (3) the rise in A excretion was more pronounced in the males, whereas the rise in heart rate was significantly greater in the females; (4) cortisol excretion increased during the task in the male group only; (5) males reported a greater rise in perceived effort during the task and better subjective performance than the females, but this was not reflected in actual performance. The interaction of biological and social factors in the development of sex differences in stress reactions is discussed.

341 Dahl, Barbara B.; McCubbin, Hamilton I.; Ross, Kenneth L.
AD-A044 377 Naval Health Research Center, San Diego, CA
Second Generational Effects of War-Induced Separations:
Comparing the Adjustment of Children in Reunited and Non-
Reunited Families 1977 7p

The present study, based on data gathered after the first year of a longitudinal investigation, is designed to compare the second generational effects of long-term father absence on children who have been reunited with their fathers and children who have not been reunited with their fathers. The study was undertaken with 99 children of reunited families and 105 children of non-reunited families and focused on three major variables: (a) sex of the children, (b) age of the children, and (c) length of father absence.

342 Deaton, John E.; Berg, S. William; Richlin, Milton; Litrownik,
AD-A049 647 Alan J.
Naval Health Research Center, San Diego, CA
Coping Activities in Solitary Confinement of U.S. Navy POWs
in Vietnam 1977 22p

A questionnaire was developed and administered to 137 Navy repatriated prisoners of war (RPWs) to investigate the usefulness of specific 'time-killing' activities or adaptational strategies for coping with solitary confinement. Factor analysis of the scores resulted in four factors accounting for 32% of the variance: (1) Captor-Captive Relationship, (2) Reliving the Past, (3) Repetitive Behavior, and (4) Self-development Activities. Factor 1 coping activities were rated as most useful, and Factor 3 at least useful. Factor 2 activities were used by most RPWs during the first few weeks in solitary, while Factor 4 activities were not used until later. In addition, the usefulness of all four factors increased significantly over time. The results were discussed in terms of theoretical formulations emphasizing the individual's need for optimal stimulation.

343 Garland, Hugh A.
AD-8019 711L Air Command and Staff College, Maxwell AFB, AL
Executive Emotional Stress May 1977 50p

General stress characteristics are discussed and the major stress causes, symptoms, and coping measures are presented. The Life Change Unit Scale (Holmes and Rahe) is described. Stresses impinging on the Air Force executive are considered. Recommendations include stress education for Air Force executives and more research on the effects of emotional stress in Air Force executives.

344 Hibler, Neil S.
AD-A051 505 Air Force Institute of Technology, Wright-Patterson AFB, OH
The Effects of Stress on State Anxiety in Air Traffic
Controllers Dec 1977 89p

The effects of perceived shift difficulty and air traffic density on the state anxiety (A-State) of USAF air traffic controllers (ATC's) were evaluated. ATC's rated the difficulty of day, swing and mid-shift work periods at the middle and end of selected work shifts. The A-Trait Scale was administered at the beginning of the study and the A-State Scale was given at the beginning, at the middle, and the end of selected work shifts. Increases in state anxiety over time were found within the day and swing shifts, while levels of A-State were low and relatively stable in the mid-shift. While estimates of shift difficulty indicated that high traffic density shifts were harder than low traffic density shifts, surprisingly, low traffic density work periods aroused higher levels of state anxiety than high TD periods.

345 Hunter, Edna J.; Hutchins, Charles W.; Richlin, Milton
AD-A051 325 Naval Health Research Center, San Diego, CA
The Longitudinal Studies of Prisoners of War and Their
Families. The Prisoner of War and His Family. The
Captivity Experience of American Prisoners of War in South-
East Asia. Positive and Negative Residuals of Prolonged
Stress Aug 1977 46p

Center for Prisoner of War Studies. Four papers bound together.

346 Johnson, James H.; Sarason, Irwin G.
AD-A047 927 University of Washington, Department of Psychology
Life Stress, Depression and Anxiety: Internal-External
Control as a Moderator Variable Nov 1977 14p

It was predicted that significant correlations between life change and depression and anxiety would be found only with subjects external in their locus of control orientation. The results of this investigation were in line with this hypothesis. Further, the findings provide support for conceptualizing life stress primarily in terms of negative life change rather than in terms of change per se.

347 Krahenbuhl, Gary S.; Marett, James R.; King, Norman W.
AD-A041 734 Arizona State University, Human Performance Lab
Stress and Performance in T-37 Pilot Training May 1977
26p

When viewed as the dependent variable, catecholamine excretion patterns support the conclusion that the basic cockpit training emergency procedures unit was not stressful. However, the remaining units resulted in a pronounced stress response (especially power-on stalls and spin recoveries). The relative production of epi- and norepinephrine was correlated with success in nearly all phases of the training; superior students usually showed a pattern suggesting more successful coping behavior.

348 Snyder, Alice Ivey
AD-A045 424 Naval Regional Medical Clinic, Pearl Harbor, Hawaii
Sea and Shore Rotation: The Family and Separation Sep
1977 6p

This report is a brief review of research techniques and conclusions drawn from 14 months of study of submariners' wives and families.

1978

349 Fine, Bernard J.; Kobrick, John L.
AD-A052 565 Army Research Institute of Environmental Medicine, Natick, MA
Human Performance under Climatic Stress and the Fallacy of
the 'Average' Soldier: Potentially Serious Implications
for Military Operations in Extreme Climates Mar 1978 17p

Normative research grossly misconceives the extent of differences among soldiers and leads to the fallacy of the average soldier. Research examples clearly illustrate the fallacy and its potential for exposing certain individuals to unwarranted life-threatening risks. An alternative to normative research assumes and studies the systematic differences between

people. A comparison of the orientation of American and Soviet research on human behavior in extreme cold suggests that cultural and other background factors can account for the Soviet emphasis on individual differences. A change in research emphasis in this country from normative to individual is stressed as essential for military effectiveness in extreme environments.

350 Fortner, William F.
AD-B030 672L Air Command and Staff College, Maxwell AFB, AL
Can the Air Force Afford the Price of Stress Apr 1978 90p

The objective of this study is to emphasize the immediate need for the Air Force to openly recognize the effects of stress on its personnel and take action to offset these effects. This study defines stress, shows some examples of studies done in the civilian, Army and Naval communities, and what factors are affecting the stress levels of the people in the Air Force. A survey was utilized to point out the effects of stress on the 500 officers attending Air Command and Staff College (ACSC). The cost in loss of manpower and productive labor hours is reflected and four methods to reduce these losses are recommended.

351 Johnson, James H.; Sarason, Irwin G.
AD-A059 771 University of Washington, Department of Psychology
Recent Developments in Research on Life Stress Sep 1978
61p

The present paper provides an overview of a program of life stress research conducted during the past three years. Findings related to the assessment of life stress, the role of moderator variables, and the issue of causality in life stress research are reviewed. Major conceptual and methodological issues related to this area of research are also considered.

352 Kantor, Jeffrey E.; Klinestiver, Lawrence; McFarlane, Terry A.
AD-A053 474 Air Force Human Resources Lab, Brooks AFB, TX
Methodology to Assess Psychological Stress and Its Impact in
the Air Combat Environment Mar 1978 15p

A Combat Stress Questionnaire was developed for administration to combat-experienced fighter pilots. A trial administration was conducted and these preliminary findings are presented. Written comments were solicited from these respondents and combined with the preliminary findings; there appear to be indications that while combat per se generates the most severe stress, it is stress experienced prior to combat which is associated with performance. Plans for extended data collection and the usefulness of these data to scientific inquiry, training, and the operational environment are discussed. A copy of the Combat Stress Questionnaire is provided in the appendix.

353 Sarason, Irwin G.; Johnson, James H.
AD-A055 153' University of Washington, Department of Psychology
Life Stress, Organizational Stress, and Job Satisfaction
Mar 1978 13p

The present study was designed to investigate the relationship between changes, within the personal lives of individuals and within the work environment, and job satisfaction. Results suggest that negative life changes in one's personal life are related to lower levels of satisfaction while both positive and negative changes within the work environment are correlated with satisfaction, positive changes being related to higher levels and negative changes being related to lower levels of satisfaction. The implications of these findings for assessing organizational stress and for the prediction of attrition from organizations are discussed.

354 Sarason, Irwin G.; Johnson, James H.; Berberich, John P.;
AD-A054 982 Siegel, Judith M.
University of Washington, Department of Psychology
Helping Police Officers Cope with Stress. A Cognitive-
Behavioral Approach Feb 1978 27p

Stress management training took place in 6 two-hour sessions and included instruction and practice in the self-monitoring of reactions to stressful situations, muscular relaxation, and the development of adaptive self-statements. Self-report measures of anxiety and anger were obtained before and after the stress management program. In addition, self and observer ratings of trainees' performance in stressful simulated police activities were utilized as post-treatment dependent measures. In comparison to a control group, the treatment group was rated as superior in several of the simulated police activities. The results of the present study suggest that stress management with law enforcement officers may be most effective when the program focuses on the specific situations which are likely to be encountered by trainees. Limitations of the present program are examined and suggestions for future efforts with law enforcement personnel are discussed.

355 Siegel, Judith M.; Johnson, James H.; Sarason, Irwin G.
AD-A054 285 University of Washington, Department of Psychology
Mood States and the Reporting of Life Changes Apr 1978
20p

By experimentally manipulating the depressive mood state in the present study, it was possible to assess the impact of mood state on responding to a measure of life stress, the Life Experiences Survey (LES). Subjects completed two life stress protocols: One during an introductory psychology class session, and a second after their participation in a mood induction technique. The results indicated that mood state was successfully manipulated, yet did not differentially affect responses to the LES.

These findings suggest that life stress may be causally related to depression, rather than depressive states increasing the probability of endorsement on life stress inventories. Subjects identified as high sensation seekers were particularly sensitive to the mood manipulation, however, the LES protocols of high sensation seekers were not affected by mood state.

356 Spurger, James R.
AD-R029 6231. Air Command and Staff College, Maxwell AFB, FL
Stress Adaptation Training for UPT Apr 1978 oop

. . . research into emotional stress adaptation training methods and make recommendations concerning incorporation into the Undergraduate Pilot Training Program. Books, articles, research papers, interviews, and personal experiences were utilized to define stress, its effects in the flight environment, and compare Transcendental Meditation, Electromyograph Biofeedback, and Verbal Relaxation Instruction. The report concludes emotional stress is an important factor in flying. Verbal Relaxation Instruction should be incorporated into the training program to help pilots cope with stress. Severe cases of stress-related problems should continue to be referred to medical authorities.

VI. Research in Progress

Information about research still in progress was obtained from the Defense Documentation Center by requesting information on current Work Units under the heading of Stress (Psychology). The printout provided (dated 2 August 1979) consisted of 40 Work Units; however, only 16 of these were considered appropriate for reporting here, in the sense that they (a) were primarily concerned with psychological (as opposed to physiological) stress, and (b) used human subjects. These 16 Work Units, along with one culled from a printout concerning Stress (Physiology), are briefly described below; information given includes the DDC accession number, title, start and completion dates, the responsible organization, the performing organization and Principal Investigator's name and phone number, and a summary which is a reworking of the summary provided in the printout.

Among these 17 Work Units, the Air Force is the responsible organization on 4, the Army on 4, and the Navy on 9. Twelve of the 17 are being carried out in-house (2 of the Air Force's 4, all of the Army's 4, and 6 of the Navy's 9).

DAOC6450 Behavioral Variables in Autonomic Function and Disease in Military Personnel (Jul 76 - cont)

Responsible: MDRDC Walter Reed Army Institute of Research
Performing: MDRDC WRAIR, Div. of Neuropsychiatry
PI: CAPT S. R. Hursh (202-576-2483)

Summary, 01 Oct 78: A multidisciplinary effort addressing the development and use of laboratory models to define and describe the organ system responses and disease states caused by stressors in the military environment. Operant and respondent conditioning will be employed in the production of models of both phasic and chronic psychological and emotional stress. Electrophysiological measurements of central and autonomic responsiveness will provide both a means of fully interpreting similar data collected in field or laboratory studies with human volunteers, and a fertile source of hypotheses to identify potentially effective measures for prevention and treatment of this class of disorders in military personnel.

DAOC6453 Military Preventive Psychiatry (Jul 76 - cont)

Responsible: MDRDC Walter Reed Army Institute of Research
Performing: MDRDC WRAIR, Div. of Neuropsychiatry
PI: Dr. D. H. Marlowe (301-427-5210)

Summary, 01 Oct 78: Examines the dynamics of those specific factors within military organizations and environments that conduce to psychiatric illness, operate to produce psychiatric casualties and lead to the generation of dysfunctional behaviors and decrements in military performance, using the methods of clinical psychiatry, social and clinical psychology, social anthropology and field epidemiology. Data gathered in studies of artillery fire direction centers are being analyzed to determine factors that mitigate or contribute to stresses of continuous performance. Special emphasis is being accorded to the relationship of group structure to the stress response. Certain studies will delineate factors of risk for female personnel.

DAOC6457 Military Stress - Circadian and Ultradian Factors (Jul 76 - cont)

Responsible: MDRDC Walter Reed Army Institute of Research
Performing: MDRDC WRAIR, Div. of Neuropsychiatry
PI: Dr. F. W. Hegge (202-427-5521)

Summary, 01 Oct 78: Aims at an understanding of the temporal organization of biological functions attendant upon sustained exposure to stressors in military environments, and at providing indicators of the time, course, and magnitude of stress-induced behavioral and physiological disorders that are the precursors of the production of psychiatric and combat casualties. Time-series analysis techniques are applied to behavioral, electrophysiological, and biochemical measures obtained during sustained operations.

DAOE6102 Military Stress and Combat Effectiveness (Aug 75 - cont)

Responsible: MDRDC Letterman Army Institute of Research
Performing: MDRDC LAIR, Division of Biorheology
PI: MAJ MS P. A. O'Mara (415-561-2905)

Summary, 01 Oct 78: Concerned with the soldier's ability to perform combat-essential activities with maximum efficiency. Animals or human subjects are subjected to conditions which produce stress; the effects of stressor are confirmed biochemically and through observation of physiological and psychological indices; experimental stress is then related to the ability of subjects to perform various tasks. For humans, target acquisition and tracking, communications, endurance, and vigilance tasks are employed; operant techniques are used with animal subjects. A field simulation laboratory has been constructed which will facilitate the controlled investigation of biomedical factors which may influence laser-designator operations.

DF221820 Investigations of Training Methods and Instructional Technology for AF Flying Training (Jan 75 - Dec 78)

Responsible: AF Human Resources Laboratory FTR
Performing: Arizona State University
PI: Howard E. Sullivan

Summary, 26 Oct 78: Areas to be investigated are pre-instructional strategies, cognitive pre-training, student stress, multimedia/programmed instruction, and instructor pilot roles for specified flying tasks. The Final Technical Report, "Stress and Simulation in Pilot Training," has been submitted. Both student pilots and instructors were studied to determine their stress response to (1) a specific undergraduate pilot-training sortie, (2) a high realism simulation sortie, and (3) an actual sortie subsequent to previous simulation training.

DF224200 Stress and Performance in the Flying Training Environment (Sep 78 - Jun 79)

Responsible: AF Human Resources Laboratory FTR
Performing: Arizona State University
PI: Kvabenhaut

Summary, 26 Oct '78: Particular interest is in the stress of simulated flight and the subsequent stress of airborne events. Three studies will examine: (1) physiological indices of stress in A-10 surface attack training, (2) the effect of instructor teaching style on student stress, and (3) the effect of combat experience on stress response to simulated A-10 scenarios.

DF282100 Assessment Procedures for Stress Management Training in an Academic Setting (Oct '74 - Sep '79)

Responsible: Frank J. Seiler Research Lab NC
Performing: USAFA Behavioral Sci Leadership Dept.
PI: Richard L. Hughes

Summary, 26 Oct '78: This research program will specify how to select Air Force cadets for a training program to reduce test anxiety. Electromyographic recordings will be obtained, and cadets will be monitored in actual or simulated evaluations to specify how anxiety adversely affects performance. Initial screening is based on the Test Anxiety Scale, and evaluation of stress management training is based on self-report, electromyographic, and performance measures.

DF321880 Anniversary Stress Study (Oct '74 - Sep '78)

Responsible: USAF School of Aerospace Medicine NG
Performing: USAF School of Aerospace Medicine
PI: Carlos J. G. Ferry

Summary, 26 Oct '78: Will examine a group of aircrew patients with recognized psychiatric problems to uncover any association between major anniversary stress and onset of psychiatric disability. In a retrospective study a review of records will be carried out in search of correlations between recorded anniversary dates and onset of illness. In a prospective study subjects will be interviewed with a standardized format in search of anniversary stress. Eventually, results will help identify background, pre-morbid personality, and environmental factors which may be predictors of disability.

DN575416 Personnel Technology: Effects of Life Stress and Coping Skills on Performance and Organizational Effectiveness (Jun '75 - cont)

Responsible: Office of Naval Research
Performing: University of Washington, Dept. of Psychology
PI: I. G. Sarason (206-543-2100)

Summary, 15 Sep 78: Designed to clarify relationships among situational stressors, life stress, individuals' coping skills, and organizational effectiveness, and to experiment with various individual and organizational procedures for improving the ability to cope with stress in organizational contexts. Of particular interest are techniques for altering cognitive responses.

DN675039 Personnel Technology: Learned Autonomic Control as a Factor in Maintaining Performance Under Stress (Jan 75 - cont)

Responsible: Office of Naval Research
Performing: University of California, Neuropsychiatric Institute, Dept. of Psychiatry
PI: D. Shapiro (213-825-0252)

Summary, 25 Mar 79: Concerned with developing procedures which permit control of autonomic response (especially cardiovascular responses) and the potential impact of such control on increasing or moderating arousal levels during performance of tasks under varying stress levels. Earlier results using the Cold Pressor Test will be followed up, using additional control procedures and exploring the utility of electrodermal and electromyographic feedback. The interaction of individual differences in learning to control physiological reactions and subsequent reactions to stressors will be studied.

DN677178 Factors Related to the Health of Returned Prisoners of War During and Subsequent to Captivity (Jul 75 - Sep 81)

Responsible: Naval Medical Research and Development Command, National Naval Medical Center
Performing: Naval Health Research Center, Center for POW Studies (CPWS)
PI: R. C. Spaulding (714-225-7393)

Summary, 01 Oct 78: Purpose is to analyze the post-repatriation physical and mental health of returned Prisoners of War as a function of their captivity experiences (duration, severity, injuries and illness, geographic location, etc.) and personnel characteristics of the men (age at capture, rank, duty assignment, etc.). A matched control sample will also be studied, and historical comparisons will be made to data from the POW populations of WWII, the Korean conflict, and from the crews of the Pueblo and the USS Banner. Medical exams are being studied in six areas: cardiovascular health, psychiatry, audiology, ophthalmology, laboratory findings, and personality. Five reports have been published; two are in press.

DN677179 Family Health: The Dynamics of Adjustment to Separation (Jul 75 - Sep 79)

Responsible: Naval Medical Research and Development Command, National Naval Medical Center

Performing: Naval Health Research Center, Center for POW Studies (CPWS)
PI: D. S. Nice (714-225-7393)

Summary, 01 Oct 78: The plan is to investigate the impact of routine separation on the health, attitudes, and medical services utilization of Navy families. Three matched samples will be studied: (1) from a ship undergoing routine deployment, (2) from a similar ship, but subjects will receive a program of increased social supports during separation, and (3) from a similar ship not undergoing deployment. Interviews, questionnaires, health diaries, and records will provide the data. Ten reports have been published so far.

DN777301 Stress Tolerance, Psychological Defenses and Coping in the Naval Recruit Setting (May 75 - Sep 79)

Responsible: Naval Medical Research and Development Command, National Naval Medical Center

Performing: Naval Health Research Center, Stress Medicine Division
PI: H. W. Ward (714-225-6363)

Summary, 01 Oct 78: This is a study of stress tolerance (ST) aimed at developing techniques to minimize stress-associated losses due to illness and lowered performance. A longitudinal study of Naval company commanders will permit analysis of within-person and between-person differences in response to varying stress levels. Subjective stress will be measured on a five-point scale, and stress response will be measured by physiological, biochemical, psychological, and behavioral variables.

DN777302 Physical Fitness and Tolerance to Stress in Fleet Studies of Illness, Accidents, and Performance (Jul 76 - Sep 79)

Responsible: Naval Medical Research and Development Command, National Naval Medical Center

Performing: Naval Health Research Center, Stress Medicine Division
PI: J. A. Hodgdon (714-225-2005)

Summary, 01 Oct 78: Addresses the question of whether or not relationships exist among level of physical fitness, health (physical and psychological), job performance, and the ability to cope with job stresses. Using aviators and submariners as subjects, physical fitness will be measured before and after a mission or deployment; health, job performance, and coping measures will be collected during the deployment; and samples of men who engaged in an additional physical exercise program will be compared with control samples which did not engage in the program.

DN797562 Stress Tolerances and Recruit Attrition (Sep 74 - Jun 77)

Responsible: Navy Personnel Research and Development Center (312)

Performing: Navy Personnel Research and Development Center (312)
PI: B. Rimland (714-225-6122)

Summary, 15 Feb 77: Purpose is to evaluate a portable testing device with potential to identify military recruits not sufficiently adaptable to pass recruit training. The device measures stress tolerance by requiring him to track a moving light with one hand while performing a different task with the other hand. The question is whether or not poor performers on this task tend to be training dropouts.

DN875362 Personnel Technology: Career Change Stresses (Apr 78 - cont)

Responsible: Office of Naval Research
Performing: University of Michigan, Institute for Social Research
PI: J. R. French (313-764-8382)

Summary, 10 Jul 78: Enlisted men will be studied before and after a major career change (e.g., retirement) and the psychological effects will be studied as a function of social support and whether the individual's Navy skills are transferable to civilian occupations.

DN977564 The Physiological, Biochemical, and Psychological Effects of 18-Hour Work-Rest Cycles During a 2-Month Submarine Patrol (Oct 78 - Oct 79)

Responsible: Naval Medical Research and Development Command, National Naval Medical Center
Performing: Naval Submarine Medical Research Laboratory, Operational Medicine Dept.
PI: W. L. Hunter (203-449-3896)

Summary, 01 Oct 78: Most types of physiological and psychological stress are regularly accompanied by increased adrenergic nervous system (ANS) activity. Recent development of a highly sensitive technique makes it possible for this pilot investigation to study the effect of work-rest cycle changes during submarine patrols on ANS activity (as reflected by catecholamine excretion). Cyclic variations in the catecholamine measures will be related to oral temperatures, mood state, and measures of sleep quality; adjustment to the 18-hour work-rest cycle will be correlated with submarine qualification, off-duty training performance, and sick call visits.

VII. References Listed by Topic Area

This section identifies those references providing information in each of the several content areas listed in Table 5 (page 7). It takes up each content area in turn and isolates the subset of references which might be important to a user interested in the specific content area. Where it seemed sensible and useful, a particular category of references has been further subdivided by content. The point of all categorizing done has been to make information more readily accessible to busy users.

References are identified in this section by the numbers assigned to them in Section V (the lower the number, the older the reference).

Reviews and Discussions

This heading covers conference and symposia proceedings, literature reviews and surveys, bibliographies, and other references emphasizing broad and general discussion more than the presentation of specific empirical findings. It brings together 25% of the full set of 341 references.

Bibliographies comprise 12% of the subset (four of these appeared in the 1950's and the other six in the 1960's, with the most recent bibliography dated 1965). Literature reviews or surveys comprise another 12% (three reports in the 1950's, six in the 1960's, and one in the 1970's). Six percent of the 88 reports represent proceedings of conferences (3 in the 1950's and 2 in the 1960's).

With regard to subject areas within this category, the largest number concern isolation or confinement (33%); of these the majority review studies of experimental isolation (as opposed to what might be called "natural" confinement, e.g., in submarines, or unnatural confinement, e.g., in a POW camp). The subject areas of social processes, health and well-being, and task performance are each reflected in about 14% of this category, while other content subsets hold only two or three reports each.

The following reports comprise this category:

2	38	72	94	129	176	211	266	333
6	40	74	95	138	180	216	268	338
9	45	75	98	141	185	217	291	343
15	50	76	103	142	190	224	293	345
17	51	81	109	143	199	225	295	349
22	53	86	120	145	202	233	302	351
27	56	89	121	147	204	238	305	
28	58	90	122	169	205	248	324	
30	59	91	123	170	207	249	330	
31	64	92	126	171	208	258	331	

Further subdivisions of this category may be identified. Note that content domains are not mutually exclusive, and some references appear in two or more of these subdivisions; also, not all the reports above were assignable to a subdivision below.

(1) Type of Review

Bibliographies:

9, 30, 38, 51, 72, 75, 120, 122, 123

Literature Reviews:

2, 22, 27, 64, 81, 89, 126, 143, 199, 333

Proceedings:

6, 17, 45, 121

(2) Focus of Review

Experimental Isolation and Confinement:

40, 45, 51, 53, 72, 86, 91, 95, 103, 141, 143, 205, 249, 293

Natural Isolation and Confinement:

90, 94, 109, 129, 142, 185

Captivity:

28, 74, 75, 76, 176, 268, 338, 345

Extreme Environments:

233, 268, 349

Space:

50, 81, 94

Task Performance:

2, 17, 27, 120, 122, 123, 126, 129, 205, 266, 324, 333

Social Processes:

81, 90, 109, 170, 171, 204, 211, 216, 224, 238, 258, 291, 305

Health and Well-Being:

15, 121, 180, 199, 202, 217, 248, 268, 291, 295, 330, 343

Psychophysiology:

56, 331

Task-Induced Stress:

22, 89

Theory

This is a relatively small group of references (14, or 4% of the full 341), the abstracts of which suggest that the author has written about stress at a very general or abstract level, or has attempted to model some aspect of the world.

21	160	211	234	390
34	202	222	238	351
43	204	224	258	

Methodology

This subset of 61 reports comprises 17% of the full set. With only a few exceptions this subset can readily be seen as comprised of two major groups: (1) measurement techniques, and (2) problems and issues.

9	128	183	210	234	251	274	303	349
23	131	184	211	235	255	275	304	351
40	140	189	215	237	256	278	306	352
41	155	190	224	244	261	281	309	355
55	157	196	227	246	267	294	330	
111	168	202	232	249	272	297	333	
114	172	204	233	250	273	300	337	

Below, the two major groups are identified, with the further subdivisions noted.

(1) Measurement Techniques

Physiological:

23, 111, 168, 172, 237, 261, 267, 275, 278, 304, 333

Perceptual:

155, 183, 227

Psychomotor/Performance:

55, 140, 184, 189, 232, 274, 297, 300, 333

Questionnaire:

44, 244, 251, 255, 272, 281, 337

Unobtrusive:

246, 255, 256

Voice:

215, 273

Cognitive:

55

(2) Problems and Issues

Organizational:

204, 211, 294, 309

Isolated Groups:

40, 196, 233, 249, 250

Aerospace:

275

Shelters:

303

Infectious Diseases:

202

Military Environment; Combat:

251, 349, 352

Other:

9, 151, 224

Task Performance

This is the content category containing the largest number of reports (128, or 36% of the total). A bird's-eye view of the category may be helpful.

The largest subgroup within it concerns the effects of stress on performance of a variety of tasks, i.e., these studies emphasize the nature of the effects rather than the nature of the causes. Studies of specific military tasks comprise about half of this group. The Army is represented by a series of studies on the performance of tank crews, a few on factors affecting rifle performance, and a series on "combat-relevant skills." The Air Force is responsible, naturally, for most of the air crew performance studies. The Navy appears not to have been much involved in studies of the effects of stress on particular kinds of tasks (having put its emphasis so far on stress and health). There is a small subcluster concerning factors that tend to counteract the effects of stress on performance, e.g., provision of feedback, attitude and motivation, personal background factors, and drugs.

The next largest subdivision focuses on the nature of the stress itself, and could be thought of as a set of studies searching for variables

with the potential for degrading performance. Fifty-six percent of this causes-oriented set have to do with stressors in the physical environment, and the bulk of these have focused on noise. Confinement and isolation studies comprise the next largest subcluster, which is oriented mainly toward understanding the problems of the POW, the astronaut, or the tank crew.

The two remaining subgroups (methodology, and general review) are small and self-explanatory.

1	25	61	94	130	188	240	288	314
2	26	62	97	137	189	245	290	315
4	27	63	99	140	195	248	292	317
7	29	65	106	143	201	253	294	318
8	32	73	115	146	202	254	295	322
9	35	80	116	149	203	259	296	323
13	36	81	120	151	210	263	297	324
14	39	82	122	152	217	266	300	326
16	46	83	123	157	218	270	301	329
18	47	84	124	159	226	273	303	333
19	49	89	125	161	229	274	306	347
21	50	90	126	174	230	276	309	352
22	55	92	127	184	232	277	310	354
24	57	93	129	186	239	280	312	356

(1) Emphasis on Effects

Specific Military Tasks:

8, 14, 22, 24, 46, 50, 61, 63, 81, 83, 84, 94, 97, 124, 126, 129, 161, 203, 210, 218, 226, 239, 245, 266, 280, 288, 310, 312, 318, 323, 324, 333, 347, 352

Cognitive or Intellectual Tasks:

1, 82, 99, 106, 137, 159, 230, 254, 259, 270, 276, 290, 296, 315, 329

Psychomotor or Man-Machine Tasks:

4, 18, 29, 35, 140, 184, 195, 290

Verbal Tasks:

32, 39, 186, 273

Small Group Performance:

90, 93, 146, 188

Counteractants to Stress Effects:

19, 65, 201, 232, 352, 356

(2) Emphasis on Causes

Physical Environment--Noise:

22, 29, 253, 254, 270, 276, 277, 290, 295, 317

Physical Environment--Heat:

47, 120

Physical Environment--Vibration:

253, 254, 290

Physical Environment--Flickering Light:

25, 26, 277

Physical Environment--Other:

14, 115, 125, 309, 324

Confinement, Isolation:

57, 63, 80, 83, 84, 97, 116, 129, 130, 143, 152, 157, 195, 263,
322

Cognitive Factors:

49, 62, 82, 137, 259

Organizational Stresses:

294, 306, 309

(3) Methodology

Methodology:

9, 13, 55, 122, 140, 189, 210, 274, 297, 300, 352

(4) General Review and Theory

General Review and Theory:

2, 7, 16, 18, 21, 27, 36, 81, 89, 92, 126, 151, 202, 217, 240,
248, 318, 333

Cognitive Factors

This category contains 64 reports, or 18% of the full set of 341. Cognitive factors are here defined broadly, to include a spectrum from perception to brainwashing.

A subdivision of the category reflecting different types of cognitive processes shows the largest number of reports having to do with conventional tests of intellectual performance. Close behind that subset comes reports dealing with short-term memory and an equal number dealing with imagery.

The full list comprising the category:

1	67	92	104	122	163	206	253	311
3	70	94	106	123	174	209	254	314
12	77	98	107	137	183	219	259	315
28	80	99	113	140	189	220	274	325
39	87	100	117	146	192	230	275	329
54	89	101	118	159	193	231	290	340
55	91	102	119	162	205	241	296	354

Specific cognitive processes are represented as follows:

Perception:

87, 159, 183, 205, 253

Time Estimation/Perception:

102, 192, 219, 325

Vigilance:

80, 119, 162, 205

Tracking:

140, 253, 290

Imagery:

70, 80, 101, 107, 118, 205

Short-Term Memory:

1, 91, 100, 137, 259, 290

Learning:

1, 99, 241

Thinking:

3

Information Processing:

163, 205, 231

Problem Solving:

67, 106, 174, 296

Cognitive Structuring:

113

Intellectual Performance:

12, 77, 80, 87, 162, 253, 254, 315, 329

Secondary Load:

189

Decision Making:

98

Opinion Change:

193, 206

Brainwashing:

28

Social Processes

This category includes 58 reports, or 16% of the overall total.

28	93	152	180	206	228	271	309
31	109	153	181	207	243	279	311
62	138	158	185	209	246	291	327
74	142	170	188	211	247	292	335
78	143	171	193	214	251	294	339
85	146	173	200	222	252	302	341
90	149	176	204	225	255	305	348

Clustering to enhance access was based, for this category, on the feature which formed the basis of the social grouping studied, as follows:

Arbitrary:

78, 153, 193, 200, 206, 228, 279

Families:

209, 335, 341, 348

Life Situations:

243, 247

Military Trainees:

85, 251

Ship's Complement:

294, 309

POW's:

28, 74, 176, 311

Shelters:

170, 171

Sports Participants:

271

Personality Types:

149, 152, 158, 173

Occupational Groups:

62, 90, 93, 109, 142, 146, 180, 181, 188, 204, 211, 214, 252, 255,
292, 302, 305, 327, 339

Society:

222

Coping Strategies

This is a small class of references (12, or 3% of the total set).

10	214	336
74	272	339
145	322	342
209	335	347

One clustering that can be perceived in the above list is as follows,
and shows an emphasis on studies relating coping differences to task
performance differences:

Performance and Coping:

10, 272, 322, 336, 339, 347

Separation and Coping:

209, 335

Captivity and Coping:

74, 342

Combat and Coping:

214

General:

145

Personality

This category contains 48 reports, or 13% of the total, as follows:

11	52	85	131	155	177	201	260
12	54	94	148	158	178	219	286
14	56	95	149	161	180	223	305
21	68	100	150	165	181	228	322
36	73	102	151	173	186	233	346
42	79	113	152	174	188	241	

These items do not cluster readily into a few major subgroups. However, all references in the DoD data base that could clearly be identified with regard to the personality dimension(s) studied are listed below. Note that only about half of the category could be so identified, which means that there may be more reports bearing on the subjects below than are listed.

Ability:

73, 100

Abstract vs. Concrete:

149

Aggressiveness:

223, 322

Anxiety (Manifest):

14, 52, 219

Anxiety (Trait):

241

Anxiety (Other):

73

Autonomic NS Variables:

52, 150

Behavior Interpretation Inventory:

11

California Personality Inventory:

174

Certitude:

131

Control, Intellectual:

12

Control; Locus of:

322, 346

Cornell Medical Index:

260

Empiristic vs. Rationalistic:

131

Extroversion-Introversion:

131, 148, 165

Fear of Failure:

178

Field Dependence-Independence:

113, 177

MMPI:

85, 165

N-Ach:

152, 158

N-Aff:

152, 158

N-Dogmatism:

152, 158

N-Dominance:

152, 158

Order (EPPS):

102

Personal Inventory Barometer:

73

Political Conservatism:

131

Situational Confidence:

201

Susceptibility to Anticipated Physical Threat:

155

Health and Well-Being

This category contains 44 references, or 12% of the total.

15	150	217	248	284	298	310
66	182	233	260	285	299	316
68	191	240	265	286	301	330
69	199	242	268	289	302	331
108	202	243	282	291	305	332
121	212	247	283	294	309	338

This list might be subdivided usefully into the following clusters:

General:

108, 150, 199, 268, 294, 301, 309, 331

Life Change:

191, 212, 242, 265, 283, 284, 285, 286, 289, 291, 298, 299

Coronary:

243, 247, 316, 330, 332

Infectious Diseases:

66, 202, 217, 240, 248

Specific Environments:

68, 69, 182, 233, 310, 338

Military Environments:

15, 121, 260, 282, 289, 302

Interventions

This small category contains 15 reports, or 4% of the total.

21	138	171	293	339
37	147	220	316	354
74	153	232	336	356

Life Events

These 28 reports (8% of the total) reflect an approach to the study of stress that has had considerable influence on academic research.

21	243	260	284	298	341	348
191	244	281	285	299	343	351
212	247	282	286	332	345	353
242	255	283	289	337	346	355

Confinement and Deprivation

This category comprises 87 reports, or 24% of the total. It was fed largely by interests deriving from the aftermath of the Korean conflict and the approach of manned space flight, but contains information on other kinds of confinement as well.

20	71	84	104	129	144	170	205	268
40	72	86	107	130	148	171	221	293
48	73	87	112	132	149	176	228	304
50	74	91	113	133	152	177	236	311
51	75	95	114	134	158	192	237	313
53	76	96	115	135	162	194	249	338
54	79	97	116	136	164	195	250	
57	80	101	118	141	165	196	263	
63	81	102	119	142	166	197	264	
70	83	103	124	143	167	198	266	

Because there seems to have been little interest in this topic in recent years, no effort had been made to provide a fine-screen classification of subtopics. However, it may be useful to note the following clusters based on method of study:

Experiment:

40, 57, 70, 79, 80, 86, 87, 91, 95, 96, 101, 102, 103, 104, 107, 113, 118, 119, 132, 133, 134, 135, 136, 141, 148, 149, 152, 162, 164, 165, 166, 167, 177, 192, 194, 195, 196, 197, 198, 205, 221, 228, 236, 237, 249, 250, 293

Simulation:

71, 73, 112, 124, 263, 264, 304

Field Study:

63, 81, 83, 84, 97, 114, 115, 116, 129, 130, 142, 143, 144, 158, 170, 171, 176, 266, 268, 311, 313, 338

Other:

50, 51, 54, 74, 75, 76

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